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THE ROLE OF BILATERAL AND MULTILATERAL ARMS CONTROL AGREEMENTS IN CONTROLLING THREATS FROM THE PROLIFERATION OF WEAPONS OF MASS DESTRUCTION

HEARINGS

BEFORE THE

INTERNATIONAL SECURITY, PROLIFERATION AND FEDERAL SERVICES SUBCOMMITTEE

OF THE

COMMITTEE ON GOVERNMENTAL AFFAIRS UNITED STATES SENATE

ONE HUNDRED SEVENTH CONGRESS

FIRST AND SECOND SESSION

NOVEMBER 7, 2001

CURRENT AND FUTURE WEAPONS OF MASS DESTRUCTION (WMD) PROLIFERATION THREATS

NOVEMBER 14 AND 29, 2001

COMBATING PROLIFERATION OF WEAPONS OF MASS DESTRUCTION (WMD) WITH NONPROLIFERATION PROGRAMS: NONPROLIFERATION ASSISTANCE COORDINATION ACT OF 2001

FEBRUARY 12, 2002

MULTILATERAL NONPROLIFERATION REGIMES, WEAPONS OF MASS DESTRUCTION TECHNOLOGIES, AND THE WAR ON TERRORISM

JULY 29, 2002

STRENGTHENING MULTILATERAL NONPROLIFERATION REGIMES

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CURRENT AND FUTURE WEAPONS OF MASS DESTRUCTION (WMD) PROLIFERATION THREATS

WEDNESDAY, NOVEMBER 7, 2001

U.S. SENATE,
INTERNATIONAL SECURITY, PROLIFERATION,
AND FEDERAL SERVICES SUBCOMMITTEE,
OF THE COMMITTEE ON GOVERNMENTAL AFFAIRS,
Washington, DC.

The Subcommittee met, pursuant to notice, at 2:33 p.m., in room SD–342, Dirksen Senate Office Building, Hon. Daniel Akaka, Chairman of the Subcommittee, presiding.

Present: Senators Akaka, Cleland, Carper, Cochran, Stevens, and Thompson.

OPENING STATEMENT OF SENATOR AKAKA

Senator AKAKA. The Subcommittee will please come to order. I welcome my friend, Senator Cleland, and our first panel.

Today's hearing about export controls and weapons of mass destruction is not a new topic for this Subcommittee. Senator Cochran, our distinguished Ranking Member and good friend, also held hearings on export controls when he chaired this Subcommittee. It is not a partisan issue. I think it is fair to say that our witnesses today, who are all noted experts on the subject of proliferation and export controls, reflect the bipartisan nature of this discussion.

Since September 11, however, developing an effective approach to controlling the spread of weapons of mass destruction to both state and non-state actors has taken a new urgency. The terrorists of the 21st Century are not intent on using one bullet to assassinate political leaders, as did the lone Serbian nationals who triggered the First World War at the beginning of the last century with the shooting of Archduke Ferdinand in Sarajevo. Twenty-first Century terrorists strive to cause the maximum amount of damage to the maximum number of innocent people. Their weapons of choice are amazingly simple and astoundingly deadly. But they are still the few against the many.

As one of our witnesses today notes, contemporary terrorists have a mystical fascination with chemical, biological, and radiological weapons. Osama bin Laden and his followers would use these weapons to harm us all without regard to age, gender, or nationality. Men, women, and children from over 50 nations died on September 11. We cannot forget this fact as we prepare for future

conflicts during the rest of this century, which has begun as sadly as the last.

The technology that has made us rich, however, also threatens to be the technology that destroys us. High-speed computers, Internet access, dual-use materials, equipment, and know how are essential ingredients of these simple but deadly devices. Unfortunately, we know from sad experience with the recent anthrax attacks that these threats are real.

Our hearing is about how we can prevent more laboratories with dangerous weapons capabilities from being developed. Some might argue that it is too late. Technology is loose. Dual-use items are too difficult to control, or trying to control dual-use exports will only hinder our own economy.

I do not think we have the luxury of indulging in any of those arguments anymore. Our enemies are using our own technology and our own open society against us.

We cannot declare war against international terrorism while saying at the same time that we should conduct business as usual. There is no more time for business as usual. We need to examine every aspect of our society to see how we can harden ourselves against terrorist attack and we need to examine every aspect of our international transactions to see how we can inhibit our enemies from gaining technologies to use against us.

In World War II, export controls were not "dirty words." They were an essential part of our defense. In today's war, there is also a role for export controls because if we do not do everything we can do to deter our enemies from gaining deadly weapons, then we all will pay the ultimate price in our own backyards. This is the terrible message from today's terrorists.

This hearing is an effort to start identifying those technologies and the means to prevent them from hurting us later.

I am pleased to welcome my colleague, Senator Cleland, and ask him for an opening statement.

OPENING STATEMENT OF SENATOR CLELAND

Senator CLELAND. Thank you very much, Mr. Chairman, and members of our panel, thank you for coming. I am pleased that this Subcommittee is addressing this critical issue today and that we are further scheduled to address the Nonproliferation Assistance Coordination Act next week.

I note that a dear friend of mine, former Senator Sam Nunn, in his recent testimony before the Senate Armed Services Committee called once again for enhancing the cooperative threat reduction measures that he helped put in place several years ago. I strongly support such action. There is no more important topic for our national security than addressing the threat posed by proliferation of weapons of mass destruction. I have long advocated a comprehensive national strategy for dealing with this threat and I believe that our strategy must be based on the likelihood of each type of incident as well as on our vulnerability to it.

For many years, I have argued that we were too focused on low probability, high-tech threats and not focused enough on high probability, low-tech threats. Regardless of the threat, I am convinced

that we must enhance the mechanisms for coordinating our response to WMD.

Coordination is essential. It is my conviction that we must better coordinate the efforts of all players that led me to develop legislation I am introducing today, the Public Health Emergencies Accountability Act. This act puts in place a procedure that allows clear assignment of responsibility in cases where the public health is threatened. It further mandates the exchange of information between institutions primarily responsible for public health, such as the Centers for Disease Control and Prevention, and those primarily responsible for countering criminal and terrorist activities. We must also resource these agencies to enable them to carry out this essential coordination. Coordination is particularly important in the tough areas where the lines of responsibility and definition blur.

This hearing addresses another such arena, the dual-use technologies that lie at the heart of chemical, biological, even nuclear infrastructures that exist around the world today. To achieve the necessary coordination, we must tackle the hard questions that arise when talking about technologies that provide legitimate commercial opportunities, but which in the wrong hands can also mask potential threats.

It is no longer enough to throw up our hands and walk away from the table when the establishment and enforcement of necessary counterproliferation protocols conflicts with legitimate commercial interests. We have got to find a way to strike a balance that allows commercial enterprises a reasonable degree of autonomy while ensuring the greater public good is not compromised.

Thank you very much, Mr. Chairman.

Senator AKAKA. Thank you for your statement, Senator. Senator Stevens.

Senator STEVENS. I have no statement, Senator. I wish I could stay longer. I am just here for a little while. Thank you very much.

Senator AKAKA. Thank you for being here.

We are glad to have our panel this morning. I am pleased to welcome you. Dr. Moodie is co-founder and President of the Chemical and Biological Arms Control Institute and former Assistant Director for Multilateral Affairs of the U.S. Arms Control and Disarmament Agency.

Dr. Jonathan Tucker is Director of the Chemical and Biological Nonproliferation Program and was a member of the biological weapons inspection team in Baghdad, Iraq, with the United Nations Special Commission.

Ms. Rose Gottemoeller is a Senior Associate at the Carnegie Endowment for International Peace. She holds a joint appointment, the Russian and Eurasian program and global policy program, and is former Deputy Under Secretary for Defense, Nuclear Nonproliferation, in the U.S. Department of Energy and former Assistant Secretary for Nonproliferation and National Security.

I would like to at this time, before I call on Dr. Moodie, to yield to Senator Thompson for any statement he may have.

Senator THOMPSON. Thank you, Mr. Chairman. I do not have any statement to give. I am looking forward to hearing the testimony of these fine witnesses. This is, of course, a continuation of a series

of hearings that this Committee and Subcommittee has had for a long time on this subject, and, of course, it is much more timely now in a lot of people's minds than it has been in times past, but I commend you for keeping the spotlight on this important area. Hopefully, people will now pay attention. Thank you.

Senator AKAKA. Thank you very much.

Dr. Moodie, we welcome any opening statement you may have.

TESTIMONY OF MICHAEL L. MOODIE,[1] PRESIDENT, CHEMICAL AND BIOLOGICAL ARMS CONTROL INSTITUTE

Mr. MOODIE. Thank you very much, Mr. Chairman. I appreciate the opportunity to appear before the Subcommittee as it addresses this very important topic.

In the summary of my statement, in the few minutes that I have, I would like briefly to address three interrelated issues, the need for better threat assessments, the linkage between state and non-state threats, and the need for a strategic response in which export controls continue to play an important role. My remarks today will focus on the chemical and especially the biological weapons threats.

My starting point is the recommendation of the Gilmore Commission that we must improve our threat assessments. This is true not only with respect to the chemical and biological terrorism threat, but also for the challenge of proliferation at the state level. Traditionally, threat assessments have been overly simplistic. They have tended to focus on only a single factor, such as the agent that might be used or the motivations of the state or terrorist who might use them. In addition, these more simple threat assessments have emphasized vulnerabilities rather than genuine risks, which are a combination of vulnerability and likelihood.

But conducting more complex threat assessments is not easy. It demands good intelligence and creative analysis. But better threat assessments would do three things. First, they would describe a threat envelope that identifies the most plausible contingencies.

Second, they would provide a means to identify those contingencies that require hedging in that due to the severity of their consequences, some preparation for them should be undertaken even if they are relatively unlikely, and this combination of a plausible threat envelope and the hedging contingencies should give to policy makers some measure for making decisions regarding policy priorities and resource allocations.

Third, a good threat assessment will highlight the fact that the threat is not uni-dimensional, rather that it is composed of several elements, including the actor, his motivations, intentions regarding casualties and capabilities, the agent involved, the target, and issues regarding the mode of attack and other operational considerations.

The key to a successful threat assessment is disaggregating the threat into these component elements and assessing the possibilities that various combinations of them produce. Some combinations of factors will yield significant consequences, others will produce no consequences at all.

[1] The prepared statement of Mr. Moodie appears in the Appendix on page 145.

This approach to threat assessment leads to important conclusions that should inform policy decisions. First, the degree of risk declines as the level of desired casualties increases insofar as the contingency involving higher levels of casualties become less likely.

Second, we should not take great comfort from this conclusion because, despite the low probability of catastrophic attacks in the United States, there is still ample cause for concern because we do not know how massive a mass attack has to be. Worst case scenarios need not happen to stress the response system to the point of collapse. Moreover, the danger and harm inherent in the use of chemical and especially biological weapons is not limited to physical casualties. As we have seen with the anthrax attacks, psychological impacts and social and economic disruption are also potentially severe.

Third, the events of September 11 and subsequent anthrax attacks suggest that the connections between state and non-state actors warrant increased attention. Analysts have tended to conceptualize and address the state CBW proliferation challenge and chemical and biological terrorism along separate tracks.

Today, the distinction between war and terrorism has become blurred and they have become inextricably linked. Our adversaries have declared war on the West and the United States in particular and they are using terrorist tactics as part of their campaign. We confront an adversary that is not necessarily a State, although it might be, but nevertheless has chemical and terrorism weapons potential, at a minimum.

As this war unfolds, then, the United States may find itself at war against one or more chemical and biological armed adversaries, whether a state or non-state. How do they think about the strategic and tactical utility of such weapons? Saying that chemical and biological capabilities will be part of an asymmetric strategy of either a state or a terrorist is not enough. Different strategic goals point to different chemical and biological weapons uses and a number of possibilities, each of which has both a limited and an ultimate form, suggest themselves as examples.

One, the desire to generate fear among the U.S. population, ultimately pushing such fear to the point that it raises questions about the integrity of U.S. society.

Second, slowing military action or ultimately crippling U.S. strategies that depend on power projection and coalition warfare.

Or third, disrupting the U.S. economy or ultimately undermining it by attacking such critical components as the agricultural sector, a threat that I believe has received insufficient attention, or the financial centers of the country. The willingness of terrorists or states to resort to chemical or biological capabilities depends on these kinds of strategic objectives, and our response depends, in part, on understanding what those strategic objectives might be.

What does this approach to defining the threat suggest about the needs for responding effectively? First, that because the threat is a multi-dimensional one and a complex one, an effective response must be strategic in nature, one that addresses requirements that span a spectrum from deterrence through prevention, defense, and preparedness to responses.

To perform each of these strategic missions effectively, difficult challenges must be overcome. Effective responses, for example, whether on the battlefield or in terms of homeland defense, demand meeting both short-term needs, such as adapting military concepts of operations or upgrading the Public Health System, and long-term measures, including an effective research and development program.

Second, a strategic response is also a multi-faceted response. A range of tools must be exploited. These include intelligence, defenses, both active and passive, diplomacy, legal measures, preparedness, financial measures, military options, and arms control. Each of these tools of policy contributes something to an effective response to the CBW proliferation challenge, but each tool has shortcomings that must be overcome and none of them constitutes a silver bullet that provides the total answer.

In this context, export controls have an important role to play, but it is not necessarily the traditional contribution of the past. Export control regimes can be effective in delaying the acquisition of sensitive technologies by a committed proliferator. But in the longer term, they cannot realistically be expected to stop the transfer of technology that may be used for weapons purposes, particularly since so much of that technology also has legitimate commercial medical and other uses.

This does not mean that export controls should be abandoned. They perform other functions. Regulation through export controls, for example, facilitates the global dissemination of materials and equipment. By defining the rules of the game by which companies must abide, for example, export controls make it easier for those companies to engage in international trade and cooperation.

It is this kind of newly defined role for export controls that should be emphasized in the future. At the same time, the United States must maintain open markets and avoid neo-protectionist practices that deny or severely limit access to markets or appropriate technology which would make key states less inclined to pursue cooperative measures.

Thank you very much, Mr. Chairman.

Senator AKAKA. Thank you for your statement.

Dr. Tucker, we welcome your statement.

TESTIMONY OF JONATHAN B. TUCKER, Ph.D.,[1] DIRECTOR, CHEMICAL AND BIOLOGICAL NONPROLIFERATION PROGRAM, CENTER FOR NONPROLIFERATION STUDIES, MONTEREY INSTITUTE OF INTERNATIONAL STUDIES

Mr. TUCKER. Thank you. Mr. Chairman, distinguished Members of the Subcommittee and guests, many thanks for the opportunity to appear before you today on a topic of great importance and concern in the aftermath of September 11: The proliferation of chemical and biological weapons to states and terrorist organizations. The recent series of anthrax attacks through the U.S. mail indicates that the global spread of dual-use technologies, materials, and scientific know how relevant to the production and delivery of

[1] The prepared statement of Mr. Tucker with an attached table appears in the Appendix on page 155.

chemical and biological weapons poses a clear and present danger to U.S. national security.

The anthrax that was mailed to Senator Tom Daschle's office contained dried spores that were milled to an extremely fine powder and treated with chemical additives so they would readily become airborne and infect through the lungs. These facts suggest that the perpetrators, whoever they are, had access to specialized military technology and expertise related to the weaponization of anthrax. Although to date the exposures have remained limited, a large-scale attack by the chemical or biological agent against U.S. targets at home or abroad is now a real possibility.

Because the senders of the anthrax-tainted letters may have received assistance from former weapons scientists or from a state sponsor, it is important to assess which states possess chemical and biological weapons capabilities and the extent to which trade in dual-use materials and technologies contributes to clandestine CBW programs. Evidence from open sources indicates that roughly 13 countries are actively seeking biological warfare capabilities and closer to 20 are seeking chemical warfare capabilities. Proliferant states of particular concern to the United States include Iraq, Iran, Libya, North Korea, Sudan, and Syria. More information on state-level proliferation is contained in a table attached to my written testimony.[1]

Furthermore, over the past decade, sub-state groups have been increasingly interested in acquiring chemical and biological weapons. The Japanese doomsday cult Aum Shinrikyo, the Kurdistan Workers' Party, and bin Laden's al Qaeda are only a few of the groups actively pursuing weapons of mass destruction capabilities.

In recent years, the growing availability of dual-use technologies, materials, information, and expertise associated with production and delivery of chemical and biological weapons has exacerbated the problem of CBW proliferation. Indeed, the relative ease of acquiring these weapons when compared to advanced conventional or nuclear weapons has increased their attractiveness to states that cannot afford more advanced weapons or are technically incapable of developing them. Nearly all the materials and equipment used to make chemical and biological weapons are dual-use, complicating the control, detection, and interdiction of proliferation-relevant exports.

Attempts to regulate trade in dual-use technologies to countries of proliferation concern are extremely difficult. They face intense opposition not only from non-aligned states that claim that such controls are discriminatory, but also from international suppliers, companies, and research institutes that benefit from the commercial sale and transfer of such technologies.

The Chemical Weapons Convention and the Australia Group, an informal forum of 33 exporting counties, restrict trade in chemical weapons precursors, dangerous biological pathogens, and certain types of dual-use equipment. Even so, proliferant states have often been successful in circumventing these controls by purchasing the materials from unscrupulous suppliers and evading interdiction efforts by means of trans-shipment points and front companies.

[1] The table referred to by Mr. Tucker appear in the Appendix on pages 167–170.

Given the dual-use dilemma and the rapid diffusion of legitimate chemical, pharmaceutical, and biotechnology industries around the globe, strengthened dual-use export controls can buy time, but they do not offer a long-term solution to the CBW proliferation problem. Accordingly, export controls should be seen as one of a set of policy tools for addressing the proliferation threat, together with active interdiction efforts, passive and active defenses, strengthened consequence-management capabilities, cooperative threat reduction efforts in the former Soviet Union, and multilateral arms control.

Although the Bush Administration has taken a skeptical attitude towards arms control, a strengthened international legal regime banning the possession and use of these weapons, backed by a credible threat of economic sanctions and military action against violators, offers, in my view, the best hope of reversing the spread of these heinous weapons.

Because of the dangerous precedent that has been set by the actual use of biological weapons against civilian targets in the United States, it is vital for the international community to continue to strengthen the existing international norm against possession and use of chemical and biological weapons. Although the Chemical Weapons Convention and the Biological Weapons Convention impose a blanket prohibition on such weapons, both regimes have serious weaknesses that undermine their effectiveness. Accordingly, both regimes must be strengthened if they are to promote the international norm of non-use and non-possession by states of concern, and by extension, sub-state actors, as well.

For example, the United States has repeatedly accused Iran, a party to the Chemical Weapons Convention, of systematically violating its treaty obligations. To date, however, the United States has failed to request a challenge inspection of Iran as permitted under the Chemical Weapons Convention, undermining the credibility of this key element of the treaty's verification regime.

With respect to the Biological Weapons Convention, the Bush Administration decided in July 2001, earlier this year, to withdraw from a 6-year effort to negotiate a legally binding compliance regime. Although the administration has recently proposed an alternative package of voluntary measures, they appear insufficiently intrusive or effective to deter violations or to enhance compliance with the treaty. The administration should work with our European allies to make legally binding the proposed measure for investigation of alleged use of biological weapons and suspicious outbreaks of disease.

To achieve these goals, the United States should devote greater political and financial capital to strengthening the Chemical and Biological Weapons Conventions, make more effective use of existing treaty instruments, for example, by requesting a challenge inspection of Iran and other suspected violators, and seek to brand the possession and use of chemical and biological weapons as a crime against humanity under international law.

That concludes my oral testimony and I would be happy to answer your questions.

Senator AKAKA. Thank you for your testimony. Ms. Gottemoeller.

TESTIMONY OF ROSE GOTTEMOELLER,[1] SENIOR ASSOCIATE, CARNEGIE ENDOWMENT FOR INTERNATIONAL PEACE

Ms. GOTTEMOELLER. Thank you, Mr. Chairman, and thank you for the honor of appearing today before the Subcommittee before you and Senator Thompson.

Suddenly, the press is full of terrible scenarios of suitcase bombs spewing detonation in the middle of the Golden Gate Bridge, a radiological bomb spreading plutonium over the White House, creating a "keep out" zone in central Washington that could last for many years. After reading about threats such as these and scenarios such as these, many people are worried, so I commend the Subcommittee for confronting these complex and difficult issues in the search for new answers in export controls as in other areas.

A simple device of the Hiroshima design is actually not the easiest nuclear capability for a proliferator to acquire, be he a terrorist or a rogue state actor. A simple device of this kind actually requires a large amount of nuclear material to achieve a nuclear explosion. We assume that 15 to 30 kilograms of highly enriched uranium, or three to four kilograms of plutonium are needed for a sophisticated nuclear device, and for a cruder device, a great deal more material may be required.

For this reason, international proliferation policy has stressed keeping nuclear material production and enrichment technologies out of proliferators' hands. Following the break-up of the Soviet Union in 1991, the possibility that large amounts of weapons-usable material could be stolen from former Soviet nuclear facilities has also become a major concern for nonproliferation policy worldwide. What would have been achieved through years of arduous and expensive production, enrichment, and separation work, that is, a sufficient amount of material to build a bomb, could be acquired in an instant through thievery.

Therefore, in the past decade, an enormous amount of attention and significant U.S. dollars, $173 million in fiscal year 2001 alone, have been spent on cooperating with Russia and the other states in the region to enhance the physical protection of weapons-usable material in facilities that house the Soviet weapons complex.

In contrast to bombs that would produce a nuclear detonation, however, radiological weapons are a simpler capability for a proliferator to acquire, if only because the threat in the case of a radiological device exists across a wide spectrum. The spectrum could range from a low-level nuclear waste package planted in an urban location through a highly toxic nuclear material explosion in the form of a dirty bomb, using conventional explosives to spread material over a wide geographic area. At the very end of the spectrum could be an aircraft attack on a nuclear facility that would turn the facility itself into a radiological weapon.

It is important to stress in looking at this spectrum the different types of radioactive materials that might come into play in a radiological attack. Since 1993, the International Atomic Energy Agency has tracked 175 cases of trafficking in nuclear materials and 201 cases of trafficking in radioactive materials. These are the kinds of materials used for medical and industrial purposes.

[1] The prepared statement of Ms. Gottemoeller appears in the Appendix on page 171.

Of all of these cases, only 18 involved small amounts of plutonium or highly-enriched uranium, the so-called weapons-usable material that is required to make a nuclear bomb. But even a small amount of low-level nuclear waste, if planted in an urban setting, would have the potential to sow considerable panic unless authorities were quickly able to neutralize the incident in the public mind. For that reason, I believe that quick action to analyze and clarify for the public the nature of radiological threats should be an important goal of public policy in the current environment, whether here in the United States or in other countries around the world where such incidents might occur.

Now let me turn my attention quickly to nuclear and radiological threats deserving more attention. In my view, we must now strike a balance between the most dangerous nuclear threats and the less lethal but profoundly disruptive radiological threats. I would like to suggest in my spoken testimony today that we focus immediately on four priorities as threats that would deserve more attention, and I will pay a little more time on the radiological threat because I think that is essentially a new priority coming to play now. But I also wanted to note that given the demand on U.S. budgetary resources, we should also be considering new methods of funding such projects, which I will specifically remark on, as well.

The four priorities that I would suggest are: Halting the production of weapons-grade plutonium in Russia; securing nuclear facilities that remain vulnerable in the former Soviet Union on a quick fix, quick turnaround basis; closing down nuclear warhead production plants in Russia, that is, the production of warheads and maintenance of warheads at plants in Russia; and improving the security at nuclear reactors and other sites where lower-level, that is, non-weapons-usable nuclear material is stored. I offer these four in no particular order of priority. That is not a relative list, but I do believe that all should be given serious and urgent attention.

Before I turn for a moment to the radiological priority, the fourth on my list, I would like to mention a new kind of funding that I think we should consider, given that there are many demands on the U.S. budget at the present time. One good idea, I believe, has already been suggested by Senators Biden and Lugar in some recent legislation, that is the so-called debt-for-security swaps. Under this concept, we would forgive Soviet-era debts that the Russians are holding in exchange for Russia putting more rubles into nonproliferation programs, and sir, I believe that should be an overall priority for U.S. policy at this point, emphasizing urging Russia to put more of their own budgetary resources into these important programs.

Now let me say just a few words about my priority with regard to improving security at nuclear reactors and other sites where lower-level nuclear material is stored or used, because, as I mentioned at the outset, I believe it addresses the radiological threat that has taken on new importance in the wake of September 11.

Traditionally, U.S. cooperation with the countries of the former Soviet Union to reduce the risks of nuclear proliferation have emphasized so-called higher-value nuclear materials and facilities, sites associated with the weapons complex and especially with nuclear material that can be used in the manufacture of weapons. But

given that radiological threats have taken on new importance, programs should be emphasizing these particular kinds of threats, and I believe that one simple step the United States could accomplish would be to restore funds for international nuclear safety in the Federal budget.

For nearly a decade, the United States has been working with countries of the former Soviet Union to upgrade the safety of Soviet-built nuclear reactors and prevent another Chernobyl-style incident. This has been a largely successful program, and, in fact, the permanent shut-down of the last unit at Chernobyl occurred in December of last year. For that reason, the program is slowly ramping down, dropping from over $30 million in fiscal year 1999 to just $10 million in fiscal year 2002. The program, I believe, could be quickly ramped up in order to improve security at nuclear reactors and other sites where low-level non-weapons-usable nuclear materials are stored, and these efforts could be undertaken not only in Russia and the former Soviet Union but also other countries around the world where such facilities are vulnerable.

Mr. Chairman, in closing, I would like to note what I believe is a potential important development in nuclear technology that will, I think, impact in important ways on the future of export controls with regard to nuclear systems. Increasingly, those who are engaged in nuclear technology development, particularly for electricity generation purposes, are interested in new approaches that would limit the cross-over between peaceful uses of nuclear technology and the weapons sector.

They want to avoid the kind of situation that has been inherent, for example, in the Soviet Union, where the Tomsk and Krasnoyarsk reactors produced plutonium for the weapons system at the same time they were producing heat and electricity for the local urban areas, and this continues today. In fact, the civilian use of these reactors continues apace while these reactors are still pumping out plutonium that adds to stocks of plutonium available potentially for weapons purposes in Russia, although Russia, of course, says that no longer they are used for that purpose.

For that reason, the nuclear industry today, and here and around the world, is beginning to concentrate on developing so-called proliferation-resistant technologies, particularly in the reactor arena, that will minimize the production of weapons-usable material in their cycles. Ideally, proliferation-resistant reactors, for example, would burn plutonium, dispose of plutonium, rather than breeding it.

Although such reactors may be 20 years or more from commercial application, I think it is important that there is a new strategic approach developing in the nuclear industry. The industry is emphasizing proliferation-resistance along with other attributes such as minimization of nuclear waste and stringent design for safety and security. If this trend develops successfully, it will simplify the export control problem for nuclear technologies, and, in fact, may also prove to be the best way to fulfill the promise of peaceful nuclear uses under the Nonproliferation Treaty.

Thank you, sir, for this opportunity.

Senator AKAKA. Thank you for your statement.

I would like to yield to the Ranking Member and friend, Senator Cochran, for any statement. Following his statement and before the questions, I am going to ask that we recess. There is a vote that is on now that is on the floor, and then we will be back shortly. Senator Cochran.

OPENING STATEMENT OF SENATOR COCHRAN

Senator COCHRAN. Mr. Chairman, thank you very much. I congratulate you for organizing and calling this hearing. It is a very important subject for us to learn as much as possible about.

I wonder, while we are over voting, whether the panelists can be thinking about whether the recent experiences that we have had with the anthrax attacks have led them to reach any new conclusions about the proliferation of bioterrorism capabilities and what, if anything, we should plan to do about it.

One of the major efforts that we have made is to reach agreements with other countries to try to prevent the export of weapons or technologies that could be made into weapons of mass destruction, especially in the chemical and biological area. Do you think any of these agreements can serve as guides for the future and have we prevented any terrorist acts or activities by reason of these conventions and agreements that countries have joined to use as a way to combat proliferation of weapons, particularly the Chemical Weapons Convention and the Biological Weapons Convention? Have they kept states or terrorist groups from acquiring weapons of mass destruction?

Mr. Chairman, I think, since we have jurisdiction over the proliferation subject, it is certainly important for us to begin a set of hearings on this subject and I congratulate you for leading that effort.

Senator AKAKA. As I mentioned, you have worked on this before in this Subcommittee and we are still continuing this.

We all have questions for you, and I would ask that we recess and come back to ask you the questions. In the meantime, I want to say that your full statements will be printed in the record. Are there any further comments before we recess?

[No response.]

Senator AKAKA. The Subcommittee recesses.

[Recess.]

Senator AKAKA. The Subcommittee will be in order.

I want to thank you again for your testimony. I am impressed with the work you have accomplished on nonproliferation issues.

Let me begin with some questions for Dr. Moodie, and you mentioned this, so I am asking the question about this. I agree that the threat of agriculture terrorism has been given little attention, as you mentioned. Do you believe that USDA has access to the intelligence reports and information required to perform a full risk assessment of American agriculture?

Mr. MOODIE. Mr. Chairman, I do not know the inner workings of the Department of Agriculture to be able to say exactly whether they have access to that material or not. I do think that the appreciation of the agricultural dimension of this problem was slow in developing, and therefore, the Department of Agriculture as a player in the development of our response was slow to come to the

table. As a consequence, I think they are still trying to establish the kind of relationships among the other players, probably including the intelligence community, that they need to do the job that they have to do.

So while I cannot be specific, my hunch would be that they probably need to improve their access, not just in terms of looking at the information or the intelligence, but dealing with the intelligence community on an ongoing basis so that they have an ongoing, evolving appreciation of the nature of the challenge that they confront.

Senator AKAKA. You suggest that smallpox is unlikely to be a threat, if you would mention something about that again. Which kinds of chemical and biological threats do you see as more likely at this time?

Mr. MOODIE. Well, first, Mr. Chairman, with respect to the smallpox threat, I would put smallpox into that category within the threat assessment that I talked about of contingencies against which we have to hedge. Certainly, the consequences of a smallpox attack are potentially so great that we have to have taken some measure of preparation. But you can have a smallpox scenario that either is—that is so horrific that it either causes policy paralysis because it is too hard to do or that you put so much money against it that you never have enough.

And I think that for those of you who are responsible for allocating limited resources, this kind of open-ended vulnerability assessment that has huge consequences is not the best scenario on which to do your planning and to make the kinds of decisions with respect to limited resources that you have to make. Having said that, as I mentioned, I do think you have to get a hedge against that possibility.

I think, though, that we have not necessarily, in our focus on smallpox on anthrax, necessarily examined the full range of other biological agents that have traditionally been examined as potential biological weapons, including hemorrhagic fevers, plague, tularemia, and things of that kind.

I also do not think that we have necessarily looked, especially on the chemical side, looked at some of the low-tech threats. We have been fascinated by the higher-end, VX, sarin, the nerve gases, when, in fact, a contingency or a couple of contingencies that we have not really looked at in as much detail as perhaps we should are simple things like somebody hijacking a chlorine tanker and blowing it up outside Wall Street or somebody trying on a deliberate basis to produce the kind of consequence at a chemical production facility that we saw in Bhopal, essentially a deliberate Bhopal that caused enormous loss of life. Those do not involve sophisticated or exotic agents, but they are the use of chemicals to create mass disruption and potentially mass casualties.

Senator AKAKA. Dr. Tucker, in your testimony, you mentioned that many developing countries have obtained or might develop chemical and biological weapons capabilities as a result of foreign investment by chemical and biotechnology industries. Just as we have laws against bribery by American companies in the Foreign Corrupt Practices Act, should we be considering restrictions on American companies investing in certain countries?

Mr. TUCKER. I think we should with respect to countries of proliferation concern, though it may be difficult. If we do not invest in such a country, it is very likely that our competitors will do so. So the problem with unilateral U.S. action in this area is that we can be very easily undercut by other countries, not only our allies, but also countries that are not friendly to the United States but that are increasingly investing in the developing world.

So that is why I view the utility of U.S. export controls with some skepticism. I think this is a threat that has to be dealt with in a multilateral context. We have the Australia Group, but it encompasses only 33 like-minded countries that export chemical or biological-relevant materials and equipment. But there are other countries that are now in a position to provide equipment and materials to countries of proliferation concern, so it is a broader problem that we need to look at in a multilateral framework.

Senator AKAKA. You mentioned the Bush Administration several times in your testimony. The Bush Administration has recently made proposals to enhance the enforcement of the Biological Weapons Convention. You recently stated that these efforts are insufficient, since they would not be part of a treaty with rights and obligations. What other measures would you recommend the administration take in this area or in regard to other unilateral actions?

Mr. TUCKER. Well, I should say that the proposals by the Bush Administration would be useful. I do not criticize them. I just do not think they go far enough. For example, the idea of urging countries to pass uniform domestic laws that would regulate access to dangerous pathogens to make sure that these materials are only accessible to legitimate scientists and not terrorists or people who would misuse these materials to make weapons, I think that is a very desirable goal and should be encouraged.

But as you know, the United States withdrew in July from a 6½-year effort to negotiate a formal treaty that would provide measures to enhance compliance and deter violations of the Biological Weapons Convention. I do not think that the alternative U.S. proposals, at least as far as we know, will be effective. The details of these measures have not been released yet, but from the press release that the White House released last week, it appears that these measures are all voluntary, they are not legally binding, and, hence, they really depend on the good will of the participating countries.

My concern is, for example, if we set up a mechanism to investigate alleged use of biological weapons or suspicious outbreaks of disease and if this is done, let us say, within the context of the United Nations but not in a treaty context, then any country that is accused could simply refuse access to the investigation team. It would have no legally binding obligation to grant access to the inspectors or investigators to determine that it is, in fact, in compliance or noncompliance with the Biological Weapons Convention.

So my concern about the Bush Administration approach is that it is too weak, and clearly, we are facing a real threat. These anthrax attacks have made it very clear that this is not a hypothetical threat, that this is a real threat. The actual use of anthrax against civilians is challenging the norm that has existed for many, many years and we must reinforce that norm. If we do not, then

I think a growing number of states and terrorist groups will be attracted to these weapons and we will face a much more serious proliferation problem in the future.

Senator AKAKA. Thank you. Ms. Gottemoeller, you mentioned the danger of a terrorist developing a so-called dirty bomb using nuclear waste. There are about 440 nuclear reactors in the world and countless facilities with other types of nuclear materials. What should we be doing now to secure those plants or to monitor their use so terrorists cannot take them? Do we need a new international agency or a new agreement?

Ms. GOTTEMOELLER. Sir, I think the International Atomic Energy Agency already has responsibility for many related types of missions and the Director General of the IAEA, Mr. el Baradei, called last week for enhanced funding for surveillance of nuclear sites around the world, nuclear reactor and research sites, related industrial sites, as you have stated. So I think for certain missions, certainly, there is already an international agency well experienced in this arena. I do not think we need to create anything new.

I do think that we need to set some priorities. I mentioned that the IAEA would like to enhance its capability for surveillance of threats around plants. I think we also need to pay attention to those research reactors, for example, where the highest level of nuclear material is currently stored. Few people know, for example, that there is a research reactor at Belgrade where not so long ago U.S. bombs were dropping in the vicinity, and at that site is stored a significant amount of highly enriched uranium to fuel that reactor.

So I think it is important to look at some of the higher-priority sites in order to get that material out of there. I would urge for Soviet-built research reactors in Eastern Europe, for example, that such materials be moved back to Russia and down-blended so they no longer pose such a proliferation threat in the future.

And then in regard to the radiological threats that I mentioned, again, you do point to a good fact, sir, and that is there is an enormous number of sites around the world where such materials might be stored or used in one way or another. So it does require some prioritization, as well, but I think particularly with regard to training of facility operators and some other perhaps lower-cost options, there are ways to proceed that would not cost an enormous amount but could overall increase and improve the security at these sites.

Senator AKAKA. Thank you. Senator Carper is here. I would yield to the Senator for any statement or questions.

Senator CARPER. I have no statement, but a question or two, if I could, Mr. Chairman.

Welcome one and all. I am glad you are here and thank you. Obviously, I have missed your statements, and I would just ask, if I could, for each of you just to maybe take a minute and share with me, with respect to the issues that are before us today, what should the Congress be doing? What is our appropriate role? Dr. Moodie, we will start with you, if you will.

Mr. MOODIE. How much time do you have, Senator?

Senator CARPER. Well, I have about 5 minutes. The Chairman is in a good mood.

Mr. MOODIE. I think, first of all, conceptually, we have to recognize that the problems we are dealing with with respect to chemical, biological, radiological, and nuclear weapons are a single problem now. It is not the state problem on one hand and the terrorists on the other. They are two sides of the same coin, and to begin from that point.

Second, I think we have to focus on a strategic response that ensures that, first of all, all the tools we have in our toolbox—intelligence, diplomacy, defenses, military options, arms control, and export controls—each individual tool is as strong as it can be, but at the same time that our strategy is one in which we allow those tools to work together to achieve the same objective, not at cross purposes, and that is not always an easy task.

Third, I think the Congress in terms of its own organization should look at where it is. The Congress suffers from the same problem the administration does in terms of the vast number of people who are stakeholders in this and who have responsibility for doing it, and just as the administration is being called on to streamline their decision making processes with respect to some of these issues, that Congress may take a look and streamline how it does its business in this area, as well.

Senator CARPER. Good. Thanks very much. Dr. Tucker.

Mr. TUCKER. Yes. I would endorse everything that my colleague, Michael Moodie, has said, and I would add that the United States really cannot go it alone in the field of nonproliferation.

Senator CARPER. You said can or cannot?

Mr. TUCKER. Cannot go it alone in the field of nonproliferation. I mean, we can enhance our defenses. We can improve our intelligence, develop better consequence management in case we are attacked, but if we are going to try to attack this problem at the roots, we need to do it through multilateral instruments and mechanisms, including existing treaties that are in force, the Chemical Weapons Convention and the Biological Weapons Convention, that are potentially useful tools but have been underutilized by the United States.

For example, they have been underfunded. We have instruments such as the opportunity to request challenge inspections of countries that we believe are violating the convention and we have not used those instruments. And as a result, they——

Senator CARPER. Could I ask, why do you think that is?

Mr. TUCKER. I think there are a number of reasons, concern that, for example, there might be a retaliatory challenge. If we challenge Iran, which we have openly accused of violating the Chemical Weapons Convention, they might challenge us back, and I think there has been some concern about a harassing type inspection.

But I think we should be able to deal with that contingency—there are mechanisms within the Chemical Weapons Convention to manage access and to protect legitimate national security information and proprietary information, and there is a provision under the treaty for a three-quarter majority of the Executive Council to block a frivolous or abusive inspection request. If we make a compelling argument that a retaliatory challenge is, in fact, frivolous and abusive, then it could be blocked.

I also think that there are some concerns that if we challenge a country and the inspectorate does not come up with a "smoking gun," or very compelling evidence of a violation, then we will create a false sense of security that country is in compliance. So I think we have to lower the bar of expectation about what can be accomplished through challenge inspection.

But I still think it is a very powerful mechanism. Even if it does not find a smoking gun, I think it can find a pattern of evidence that is indicative of a treaty violation and it is probably the most powerful instrument within the Chemical Weapons Convention verification regime. If we do not make use of it, it will atrophy, lose its credibility, and any deterrent effect it might have on would-be violators.

Senator CARPER. Thank you, sir. Ms. Gottemoeller.

Ms. GOTTEMOELLER. Senator, I believe that the Congress now has both an opportunity and a responsibility to draw together the struggle against international terrorism with regard to weapons of mass destruction and are already establishing cooperation with Russia and the countries of the former Soviet Union to address what we commonly call the "loose nukes" problem, but it also refers to loose biological agents, and loose chemical agents, as well.

And I think up to this point, quite frankly, there has not been sufficient attention to placing new resources to the service of this particular fight against terrorism, that is, ensuring that all of these weapons of mass destruction resources are safely and securely held in facilities where they can be responsibly guarded by the countries that currently own them or hold them in one way or the other.

I want to underscore, I believe that, in general, Russia is a responsible custodian, for example, of nuclear materials, but they are short on resources to ensure that those materials do not go walking out of those facilities and into the hands of those who might use them as instruments of terror.

So I think the Congress really has an important role to play in drawing together the counterterrorism struggle with our struggle to ensure threat reduction in the nuclear, chemical, and biological arena.

Senator CARPER. Great. Thank you. Thanks to each of you. Mr. Chairman, thank you.

Senator AKAKA. Thank you very much for your questions.

I have further questions. Dr. Moodie, we have been talking about multilateral arms control and you mentioned that classic multilateral arms control such as the Chemical Weapons Convention is unlikely to yield significant results. So my question to you is, how would you strengthen the CWC, and just as importantly, what would you propose in terms of new multilateral approaches?

Mr. MOODIE. Mr. Chairman, my comment really was to the biological side, and to me, the Chemical Weapons Convention is classical arms control and I think it is appropriate for dealing with the chemical weapons problem. I had the good fortune, I guess it is, to have worked on negotiating the Chemical Weapons Convention during the administration of the former President Bush and I think that we accomplished something in that.

But I think to take the same approach in the biological area is not going to accomplish what we were able to do in the chemical

area because I think the chemical problem and the biological problem are quite different and the politics and the science and technology and the language of the treaty that surround the biological side, to me are so complex that classic arms control is not the way to go forward.

I think what we have to do is redefine the problem and redefine the environment within which solutions can be found, and what I mean by that is to take it out of being a classic security arms control problem, but define the biological weapons as part of a broader challenge that has to do with the appropriate use of the life sciences to serve the public safety and security and to create an environment in which the misuse of that science is diminished to the point that you can manage. It includes not just biological weapons but other kinds of challenges that we have in looking at where the incredibly rapid advances in the life sciences are going to be going in the next two decades.

I think that if we approach the problem from that redefinition, that we will, in fact, find more acceptable mechanisms for dealing with the problem. One of the issues, for example, in the arms control approach and the protocol negotiations that was mentioned earlier was a difficult relationship between industry and the negotiators and the role of industry in this. I think if we set the problem on a different footing, we will have a different basis in which to engage industry to ensure that their contribution in this area, because they are such a driver of the science and technology at this point, that if we redefine the problem in that way, we will have a better basis for engaging industry in looking at solutions.

So I think some of the measures that the Bush Administration has proposed to strengthen the Biological Weapons Convention move in this direction. I think they provide a basis for moving forward. They are not the total answer. They are not where we want to go or should go. But I think they give us a starting point for that kind of redefinition of the problem that will yield some more creative solutions.

Senator AKAKA. Thank you so much for that. There is a need to review these and come out with other solutions.

Dr. Tucker, you just stated that export controls buy time for diplomacy but do not offer a long-term solution. Are there any changes to our current export control policies you would advocate?

Mr. TUCKER. Well, I think some of the controls probably could be made more targeted on technologies that are really critical, that provide bottlenecks to the acquisition of chemical and biological weapons. Increasingly, of course, these technologies are becoming widely available as they diffuse to more and more countries in the developing world. So we have to identify those really key critical technologies that are not widely available that are really still a monopoly of the highly-advanced countries and which by withholding, we will place significant impediments in the path of proliferators.

So it may be a form of "smart" export controls or more targeted export controls, which I think will be welcomed by industry because they will be less affected by more targeted controls. That will require quite a bit of thought, because it is the conventional wisdom that this technology is all dual-use. That is not strictly true. There are some specialized technologies and certain types of patho-

gens, for example, weaponized pathogens, whose access should be very tightly restricted. So I think there is a need to rethink export controls in a way to make them more targeted and, hence, more effective.

Senator AKAKA. Thank you.

Ms. Gottemoeller, in your written testimony, I think you raised a good point on the priorities we should take to prevent further proliferation of nuclear material from the former Soviet Union. Many are also concerned about the proliferation of nuclear expertise and know how. We are familiar with examples of nuclear scientists being offered substantial sums of money either to train others or to develop nuclear weapons.

The Subcommittee is going to hold a hearing on this subject next week, but some would suggest that it is already too late. For example, there is no doubt Iran's nuclear program being developed with Russian assistance has a weapons component or potential. What should we be doing to ensure that Iran complies with its Nuclear Nonproliferation Treaty obligations?

Ms. GOTTEMOELLER. Sir, I hesitate to say what the future will bring, but I would say the first step, if U.S. relations improve with Iran, as there have been some hints recently in Washington they may improve, I think the first step we should undertake is to take up these issues directly with Tehran.

We have been working this issue through and with Moscow. It has been a difficult issue. Apparently, President Putin in an interview that will appear this evening on television has denied pretty firmly that there is any official Russian government involvement in nuclear technology trade with Iran. Well, I think we have long felt that it is not a matter of an official Russian government policy, but that there are some organizations in Russia that are perhaps not paying the attention to export control laws that they should be paying attention to, first of all. And second of all, I believe there is also disagreement among some Russian experts about the danger inherent in particular dual-use technologies, and so there is a disagreement and discussion between the United States and Russia in that regard.

I believe we should continue very vigorously to pursue these issues with Russia and I hope that we will do so at the upcoming Washington Crawford Summit. But I believe in addition to that that should our relationship improve with Iran, this is something we need to take up directly with the Iranians, as well.

Senator AKAKA. Thank you. Senator Carper do you have any further questions?

Senator CARPER. No, I do not.

Senator AKAKA. Thank you very much. Thank you, Dr. Moodie, Dr. Tucker, and Ms. Gottemoeller. Thank you for all of your testimony and for your cooperation, also. Some of what you said will certainly be helpful to us in what we are trying to do here. So thank you again and you may be excused.

Mr. MOODIE. Thank you, Mr. Chairman.

Mr. TUCKER. Thank you.

Ms. GOTTEMOELLER. Thank you, sir.

Senator AKAKA. Thank you. I just received a call that there is another vote on, but I want to prepare for the second panel and ask the second panel to come forward, please.

The Subcommittee will be in recess.

[Recess.]

Senator AKAKA. The Subcommittee will be in order.

Thank you, Mr. Christoff, Dr. Cupitt, Dr. Lewis, and Dr. Milhollin for being part of our second panel, and at this time, I invite you to make any statement or comments you wish, beginning with Mr. Christoff.

TESTIMONY OF JOSEPH A. CHRISTOFF,[1] DIRECTOR, INTERNATIONAL AFFAIRS AND TRADE, U.S. GENERAL ACCOUNTING OFFICE

Mr. CHRISTOFF. Mr. Chairman, thank you. I am pleased to be here today to discuss the efforts of the United States and the international community to stem the spread of weapons of mass destruction.

Historically, the United States has used four important tools to combat WMD proliferation: International treaties, multilateral export control arrangements, U.S. export control laws, and security assistance to other countries. My bottom line is that each tool is important to U.S. nonproliferation policy, but each tool has limitations, and I would like to briefly describe and comment on each of these tools.

First, the international community has established treaties to eliminate chemical and biological weapons and prohibit the spread of nuclear weapons. Three treaties are of particular importance, the Nuclear Nonproliferation Treaty, the Chemical Weapons Convention, and the Biological Weapons and Toxins Convention. These treaties share similar objectives. They are legally binding and they include most countries. However, their effectiveness depends on the mechanisms for verifying and enforcing them and the integrity of those countries party to them. For example, the Biological Weapons Conventions lacks the inspection and enforcement provisions that might have detected the Soviet Union's massive biological weapons program in the 1970's and the 1980's.

Limitations in membership also constrain the effectiveness of these treaties. Key states remain outside the treaties. For example, India, Israel, and Pakistan are not party to the Nuclear Nonproliferation Treaty, while Iraq and Syria have not signed the Chemical Weapons Convention.

The second tool for controlling sensitive technologies is multilateral export control arrangements. Both the Executive and Legislative Branches have affirmed support for strengthening these arrangements. However, their effectiveness has been challenged in recent years.

As part of GAO's ongoing work on these arrangements, we are examining the following important questions. Does the voluntary nature of these arrangements and the dependence on member nations to impose export control limits affect their effectiveness? Do

[1] The prepared statement of Mr. Christoff with attachments appears in the Appendix on page 178.

member nations abide by their commitments to refrain from exporting items other members have denied? How do member nations share information about their export decisions? And how do the arrangements ensure that non-member nations do not transfer sensitive technologies to countries of concern?

The third tool is U.S. export control policy, which is intended to constrain the transfers of WMD technology. In GAO's past work, we have identified problems with U.S. policy. First, the Executive Branch has not assessed national security risks for important dual-use items, such as high-performance computers and semi-conductor technologies.

Second, the government does not adequately screen proposed recipients of sensitive U.S. technologies. For example, the government does not always have complete intelligence information on license applicants who may serve as fronts for proliferators or terrorists.

And third, the government cannot always ensure that recipients of sensitive technologies comply with the conditions of the license. This is most important in countries of concern, such as China, which restrict U.S. officials' access to facilities that house U.S. technologies.

And finally, the fourth tool is the security assistance to other countries that we provide, most importantly to the former Soviet Union. At the time of its collapse, the Soviet Union had, by some estimates, 30,000 nuclear weapons, 40,000 tons of chemical weapons, and an extensive biological weapons program. The collapse also left 30,000 to 75,000 Soviet weapons scientists without full-time employment.

Since 1991, the United States has helped Russia eliminate and secure weapons of mass destruction and provide part-time employment to former Soviet scientists. U.S. efforts have helped make large quantities of WMD-related materials more secure and they have supplemented the incomes of several thousand former Soviet scientists.

However, it has been difficult to assess the effectiveness of these programs, which have cost about $5.5 billion since 1991. Russian officials continue to limit U.S. access to certain WMD facilities. In addition, the part-time employment provided by the United States may not necessarily deter Russian scientists from selling their weapons knowledge to rogue states or terrorists.

So in conclusion, Mr. Chairman, the events of the past 2 months provide the impetus for reexamining all these tools that are used to restrict the spread of weapons of mass destruction. Ten years ago, the international community made major changes in its controls over nuclear technology after revelations about the Iraqi nuclear weapons program. We may be at a similar point today. We need to reassess the adequacy of our current policy tools to address the vulnerabilities and the changed perceptions of the threat that we currently face.

That concludes my statement, Mr. Chairman. Thank you.

Senator AKAKA. Thank you very much, Mr. Christoff. Dr. Cupitt, please?

TESTIMONY OF RICHARD T. CUPITT,[1] ASSOCIATE DIRECTOR, CENTER FOR INTERNATIONAL TRADE AND SECURITY

Mr. CUPITT. Thank you very much, Mr. Chairman. I appreciate you calling and organizing this hearing on what I think is a very important topic. I have submitted some additional remarks that represent my personal views on several of the broader export control questions raised by the Subcommittee staff, so I would like to focus this testimony on some problems the U.S. Government will face in coordinating nonproliferation anti-terrorism export controls with its allies and on some possible steps to address these difficulties.

Senator AKAKA. At this time, may I say that all of your full statements will be made part of the record.

Mr. CUPITT. Thank you, Mr. Chairman. The tragic events of the last 2 months not only emphasize the need to reform the multilateral export control system, they have shaken the international community sufficiently, I believe, that reform initiatives may actually succeed. So this is a moment of opportunity for us, because the importance of limiting the weapons of mass destruction capabilities of terrorists and states that support international terrorism has never been more clear.

Nonetheless, many of the same problems that plagued efforts to improve multilateral coordination of proliferation-related export control systems in the late 1990's will hamper attempts to coordinate nonproliferation anti-terrorism export controls now. Let me mention five likely problem areas—and I will be happy to go into detail about them perhaps in the question and answer period—and then raise some possible responses to these problems.

First and foremost, there is a very weak infrastructure for coordinating nonproliferation anti-terrorism export controls internationally. The Australia Group, the Missile Technology Control Regime, the Nuclear Suppliers Group, and the Wassenaar Arrangement, for example, have pretty primitive methods and mechanisms for gathering and sharing information, resolving disputes, and enforcing group norms.

Second, the list of sensitive anti-terrorism items appears to be based mainly on delaying state-sponsored weapons of mass destruction programs and not with a view towards delaying or preventing the development of non-state weapons of mass destruction programs.

Third, there are very divergent national nonproliferation anti-terrorism export control systems now, even among key U.S. allies.

Fourth, there are divergent views on the targets of nonproliferation anti-terrorism export controls.

And finally, there are very divergent approaches to industry-government cooperation on nonproliferation anti-terrorism export controls.

Based on these concerns, I would like to take the opportunity to recommend that the U.S. Government consider five steps in the near term to begin to address these problems.

First, I think the U.S. Government should consider doing more extensive assessments of foreign export control policies related to

[1] The prepared statement of Mr. Cupitt appears in the Appendix on page 196.

nonproliferation anti-terrorism export controls, starting with the policies and programs of the G–8 and other key members of the supplier arrangements. Frankly, we simply do not know enough. A critical lack of information and analysis of these policies, as well as broader export control policies, exists. We need to do more.

Second, the U.S. Government should consider providing more funding, technical assistance, and critical information to help U.S. partners implement and coordinate their intelligence, licensing, and enforcement activities related to nonproliferation anti-terrorism export controls. This includes an increase in efforts and support for U.S. export control outreach programs worldwide. We do have an extensive program through the Department of Commerce and also the Department of Energy to do work in the former Soviet Union and elsewhere and there has been some work now in China and India, but it needs to be much more extensive in order to succeed—and the United States has to take the lead on this.

Third, the U.S. Government should consider creating priorities in its list of items of greatest nonproliferation anti-terrorism concern as a basis for international negotiations. It is not clear from our current list of, for instance, dual-use items, which items are more important than others to control for anti-terrorism purposes. There are very few items that are controlled for anti-terrorism purposes alone. For most of the others, it appears that if there is a requirement related to chemical, biological proliferation, nuclear nonproliferation, or missile proliferation, we just tack anti-terrorism on to that as well, and I am not sure that that is an appropriate way to address the problem. Some items may be more important to control than others, and if we do not see that, maybe some of our allies will.

Fourth, the U.S. Government should also consider creating priorities for listed terrorists and terrorist organizations that pose the greatest weapons of mass destruction threat as a basis for negotiations. I think one might start by differentiating among those individuals and entities on the specially designated terrorist list or the foreign terrorist organizations list according to the weapons of mass destruction risk they present.

Finally, I think the U.S. Government should consider creating new standards for industry export control compliance programs, including certification of the substantive knowledge of export administrators regarding nonproliferation anti-terrorism controls. Export administrators in several of the national laboratories, for example, have expressed keen interest in certification as a means of ensuring the highest standards of compliance with nonproliferation export controls, and I think this would also hold true for related anti-terrorism controls.

Again, let me thank the Subcommittee both for holding the hearing and for allowing me to present my views. Thank you very much.

Senator AKAKA. Thank you for your statement. Mr. Lewis.

TESTIMONY OF JAMES A. LEWIS,[1] SENIOR FELLOW AND DIRECTOR OF TECHNOLOGY POLICY, CENTER FOR STRATEGIC AND INTERNATIONAL STUDIES

Mr. LEWIS. Let me thank you for the opportunity to testify on this important subject. I think that since September 11, we have an opportunity and a need for a new look at nonproliferation and controlling export of technology.

Changes in international security and the global economy have made export controls less effective in preventing technology transfer. In particular, technological change and economic integration pose real challenges for both nonproliferation and counterterrorism. This decline in effectiveness is less noticeable in the nonproliferation regimes because of their strength. The Missile Technology Control Regime, the Australia Group, and the Nuclear Suppliers Group have strong support from their members. They focus their efforts on key proliferation technologies and they have good mechanisms for information exchange.

In contrast, there is another arrangement called the Wassenaar Arrangement. It is ineffective. There is little consensus. This would be a problem except for the fact that most of what Wassenaar controls is unimportant for nonproliferation purposes, and I think we would get more benefit if we paid less attention to Wassenaar and more attention to strengthening both our own national catch-all controls and helping foreign countries strengthen their catch-all controls, as well.

Another problem that we have with the export control debate in the United States, Mr. Chairman, is that we have not spent enough time perhaps looking at some of the larger problems. First, the rationale for nonproliferation export controls needs to be reexamined, and hearings like this are very helpful in advancing the thinking of the United States.

Export controls were designed, as many of my colleagues have said, and it is amazing to me how, at least with the first panel and I think some of the others, I will be repeating many of the things they said, which is the problem for being last, but export controls for nonproliferation were designed to make programs more costly and to buy time for diplomacy. This worked very well for the last 10 years, but we are now facing a hard core of countries—Iraq, Iran, and North Korea—where export controls are going to be very less effective and we will need some new approach.

In addition to that level of problem, we face new problems with non-state actors who seek to acquire weapons of mass destruction. They pose a serious challenge to current nonproliferation controls, which are aimed at countries and large government programs. Nonproliferation is now more than an arms control problem that can be approached in the traditional diplomatic and military context.

Export licensing will be less important for dealing with terrorist organizations. Terrorists will not be applying for licenses and they may not even try to export materials. A more plausible scenario is that terrorists will attempt to acquire WMD-related materials in

[1] The prepared statement of Mr. Lewis appears in the Appendix on page 206.

the country where they intend to use them, bypassing all of our current export control mechanisms.

For example, many of the previous speakers have noted the dangers of radiological weapons. While all countries have good export controls on nuclear fuel, it is not clear that they have all taken the necessary steps to safeguard this fuel from theft, and this includes Western European countries. A terrorist organization could steal spent nuclear fuel and use it to build radiological weapons.

Similarly, security measures at U.S. and foreign laboratories may not be adequate to prevent the theft of dangerous biological samples, and in this sense, internal security measures are important to nonproliferation as are export controls.

Nonproliferation must become part of the larger system of homeland defense and the response to terrorism that the administration is building. Proliferation regimes can make an important contribution to this by identifying the key WMD-related items that need additional safeguards and by coordinating effective security measures. Efforts to ensure that WMD does not fall into the hands of terrorists must become part of the multilateral defense against terrorism, and the support we have received since September 11 could be channeled into reinvigorating nonproliferation.

Let me just touch on one of the issues that your staff raised, which is deemed exports. Making nonproliferation a part of the larger counterterrorism and homeland defense effort has implications for deemed exports. Students coming to the United States to study and do research have been a problem for proliferation here and in other countries for many years. The important thing to realize is that the benefits we receive from having these people in the United States probably outweighs the costs of any potential leak of technology, and when I say this, I am reiterating a conclusion that the Reagan Administration came to in its National Security Decision Directive 189.

The answer to deemed exports may lie less in export controls, but thinking in terms of the larger approach to homeland security. Immigration control is one of the most serious vulnerabilities revealed by September 11. All of the terrorists were able to enter the United States, passing through multiple checkpoints both here and in allied countries. Some sort of improved screening for people coming to the United States that included some nonproliferation criteria would probably be more useful than export licensing.

In conclusion, Mr. Chairman, I think export controls can still play a role in nonproliferation and national security, but this role is shrinking. In looking at where we might want to move ahead, it would help to reexamine the fundamental approach to nonproliferation export controls. It would be good to find ways to use the strengths of the three nonproliferation regimes to support homeland defense and counterterrorism. Deemed exports would probably be better treated as part of a broader solution to screening immigrants. And finally, when we move ahead with building export controls, picking up on what Dr. Moodie and Dr. Tucker said, we probably should start with the lists and procedures of the regimes, the use of catch-all controls, and improved immigration procedures.

I would like to thank you and I will be happy to take any questions.

Senator AKAKA. Thank you very much, Dr. Lewis. Dr. Milhollin.

TESTIMONY OF GARY MILHOLLIN,[1] DIRECTOR, WISCONSIN PROJECT ON NUCLEAR ARMS CONTROL

Mr. MILHOLLIN. Thank you, Mr. Chairman. It is both an honor and a privilege to appear before this distinguished Subcommittee and testify on this important topic.

I would like to address my remarks to four points: First, whether export controls are succeeding in protecting our security; second, whether they are now being weakened; third, whether violations are being punished; and fourth, what could be done to make export controls stronger.

First, it is very important to realize that export controls can work if they are given a chance. There are success stories in the world that export controls can claim. Argentina and Brazil decided to give up nuclear weapons because, in large part, export controls were imposing great costs on the development of those countries. We know from U.N. inspections in Iraq that Saddam Hussein's nuclear weapon developers could not import certain parts. They had to reverse engineer them, which took time and it is not even clear that they worked. Also, export controls pretty much stopped Saddam Hussein's most ambitious rocket program.

Today, export controls are slowing down India and Pakistan in their efforts to miniaturize their warheads and to build more effective long-range missiles. As long as we have export controls that work decently, that will be true in the future.

However, despite clear successes, American export controls are now weaker than they have ever been in history. Since 1998, when Saddam Hussein was building his mass destruction arsenal, export controls in the United States have been cut about 90 percent. Today, the Commerce Department is receiving about a tenth as many applications as it received in the late 1980's, and when the applications do come in, they are almost always approved. In the last fiscal year, only 4 percent of the applications were denied.

This system imposes virtually no burden on industry and it is a system that seemed to please us quite well in peacetime. Now, however, we are not in peacetime and we know that there are terrorist organizations that want to do us harm and we know that weapons of mass destruction in their hands would threaten our way of life.

I would just like to give you some examples of cases in which our export control system has allowed technology, American technology, to threaten American Armed Forces. Perhaps the most recent case is that of Huawei Technologies, a Chinese company that was caught earlier this year helping Iraq improve its air defense network. These air defenses are designed to shoot down our pilots.

This Chinese firm helped Iraq in defiance of the international embargo against this kind of transaction. At the time the assistance was discovered, Motorola had an export license application

[1] The prepared statement of Mr. Milhollin with an attachment appears in the Appendix on page 212.

pending at the Commerce Department to help this company improve its ability to build high-speed switching and routing equipment, which would be ideal for an air defense network.

In the recent past, the Commerce Department has licensed a series of sensitive items to Huawei Technologies. Huawei was allowed to buy high-performance computers from Digital Equipment Corporation, IBM, and Hewlett Packard, and Sun Microsystems. In addition, Huawei got $500,000 worth of telecommunication equipment from Qualcomm. Other U.S. firms have helped Huawei by setting up joint operations. These include Lucent Technologies, AT&T, Motorola, and IBM.

As a result of all this American assistance, Huawei's sales are projected to reach $5 billion in 2001. This company began as a $1,000 start-up in 1988, so the result is that U.S. technology, some of which is controlled for export but licensed, and other technology going through joint operations, has built out of virtually nothing a Chinese company that now is able to help Iraq improve its air defenses and put the lives of U.S. servicemen and women at risk. These exports no doubt made money for American companies, but at a cost of threatening our pilots.

Huawei, unfortunately, is not an isolated case. There are two others mentioned in my testimony. One is a situation in which the Commerce Department approved exports to a company in China that supplied anti-ship missiles to Iran and was sanctioned for missile proliferation. We, the United States, sold that company computer equipment for simulating wind effects. If you are building anti-ship missiles, a computer to simulate wind effects is quite useful.

Also, only last month, the *Washington Times* reported that Iran was installing another large JY–14 radar near its border with Afghanistan. This radar is a very aggressive and powerful air defense radar. It was sold to Iran by a Chinese company called China National Electronics Import-Export Corporation. Before that sale occurred, the U.S. Government approved a series of exports to that company that would be very useful for making that very radar. So again, we are facing a situation where our pilots, if we ever get in a fight with Iran, will have to face equipment probably made with our own technology.

The second point I would like to make is that export controls are now being weakened. In response to the attacks on September 11, the U.S. Government dropped export control sanctions on a series of Indian and Pakistani companies. In my testimony, I provided descriptions and photographs of some of the companies that were dropped from the control list.

One of them is Hindustan Aeronautics. It makes major components for India's largest rockets. In my testimony, there is a photograph of nose cones made by that company.

Another company is Godrej and Boyce. It also makes components for India's largest rockets. It makes a rather powerful liquid fuel rocket engine, which is depicted in a photograph in my testimony.

A third firm is India's National Aerospace Laboratory. It conducts missile research. In my testimony, I have a picture of a missile being tested in this company's wind tunnel.

And fourth, there is Walchandnagar Industries. It produces major components for Indian nuclear reactors that are not inspected by the International Atomic Energy Agency. The absence of inspections means that the plutonium that those reactors make is free for use in atomic bombs. This company, too, was dropped from export control sanctions.

So we have this serious situation where we have a terrorist attack on American soil, and in response to that attack, the U.S. Government drops export controls on companies in developing nations that are making weapons of mass destruction. It seems to me that this is a mistake. It is not the right way to respond to a terrorist attack.

Also, I would like to draw the Subcommittee's attention to the problem of export enforcement. It is very rare for a big company that breaks export control laws in the United States to be punished. I have cited two cases.

One involves the company Silicon Graphics. In 1996, it sold high-performance computers without the required export license to one of Russia's leading nuclear weapons laboratories. After the computers arrived, one of Russia's leading nuclear scientists announced that the Russians were going to start doing simulations like we did with computers instead of doing actual tests. This is a case where it is undisputed that the export needed a license. It was made without the license and nothing has happened. It went to a grand jury years ago and has simply disappeared.

More recently, in 1999, the Cox Committee found that Hughes Electronics and Loral Space Communications—I am sure the Subcommittee is familiar with that case—the Cox Committee found that they deliberately acted without the legally required licenses and violated U.S. export control laws. That case has been in a grand jury for nearly 4 years without any results.

Senator AKAKA. Dr. Milhollin, there is a vote that has been in progress. How much more time do you need?

Mr. MILHOLLIN. I need about 1 minute, perhaps 2 minutes. Perhaps I can do it in 1 minute.

Senator AKAKA. Yes. I have questions, but go ahead.

Mr. MILHOLLIN. I think there are things we can do which would be very easy. In my testimony, I have indicated that we could list the dangerous companies abroad that are trying to make weapons of mass destruction. We know who they are. Their names are well known. I have attached to my testimony a list of 50 Chinese companies that could easily be added to the Federal Register list of dangerous buyers. I recommend that be done as soon as possible. That concludes my testimony.

Senator AKAKA. Thank you very much, Dr. Milhollin.

I am so sorry. We have a rash of votes going on, so let me ask this question of Mr. Christoff and GAO. Has GAO ever looked at which items are of greatest concern for WMD? Is it your experience that an industry compliance program, voluntary or obligatory, can work?

Mr. CHRISTOFF. Mr. Chairman, let me just talk to you about what we have done in GAO. I think one of the important areas that we have addressed is how to balance the risk in determining what

are the national security implications when you try to decontrol an item and balancing it against the market availability.

The work that we did for this full Committee on high-performance computers is a good example in the sense that Executive Branch agencies, I think, do a good job of determining that many of these high-performance computers are available elsewhere, but they do not look at the national security implications. As we said in the past, that is an important balancing act that oftentimes does not occur within the Executive Branch.

Senator AKAKA. Thank you.

Let me ask a final question so I have a few minutes left to get to the floor. Dr. Cupitt, in your written testimony, you made a strong argument for a comprehensive study of the anti-terrorist export control policies of key U.S. allies. Should we make changes in the way our current government agencies charged with dual-use export controls work? Do we need a new agency or new interagency process?

Mr. CUPITT. As you may know, I think S. 149, for instance, was going to set up an Office of Technology Assessment that would have as part of its mandate a requirement to assess the export controls systems of other countries. I think that might be an example of one of the things that might be done.

Even though we spend, I know at our Center, we spend a lot of time assessing other countries' export control systems, we are frequently asked, have you assessed country X, and we have to say, no, and we have to say, no one else has and, at least in a comprehensive or systematic way. And for us, I think, to make good policy decisions and good strategies in terms of building a coalition of partners that would have complementary export control systems, we need to know a lot more than what we currently do.

Related to that, I want to mention that I think Dr. Lewis's point about catch-all systems, one of the successes that we have had in recent years is to promote catch-all as a means of addressing some of the items that may not be listed or may have moved off the list, not only here in the United States but in other countries, and that has been an important step. But even there, we do not know that much about who is implementing the catch-all control policies.

Even very basic data like that, we do not really have a good idea, and I think that would be something that would be very useful. Again, I think that S. 149, setting up that Office of Technology Assessment in the Commerce Department, is an example of one of the ways that this might be achieved, that we might improve our data capabilities.

Senator AKAKA. Dr. Lewis, would you make any comments on the same question?

Mr. LEWIS. The question being, do we need a new export control agency? Was that the question?

Senator AKAKA. Yes, whether we need a new agency or new interagency process.

Mr. LEWIS. One thing that would help, Mr. Chairman, and thank you for the question, is that we could definitely use a new law. The law we have now dates from 1979, and so it is an interesting historical artifact, but it does not work very well and the system of export controls it sets up with national security regimes is com-

plicated and ineffective. So that would be one area that I hope the Congress will be able to return to next year.

We have looked in a couple of studies about whether or not there would be a benefit from having an individual agency that was responsible for export controls. I would agree with anyone who said that none of the agencies now do a particularly good job. It is very hard to get consensus on where you should move it. And a new agency may not have the power or the clout of an office that is linked to a cabinet member. So it probably would not hurt to shake up the system, but I am not sure we are ready to identify what the outcome would be.

Senator AKAKA. I have to go, but we have questions for you. We will send the questions to you for your responses. But I want to thank you so much for coming today and appearing as our second panel and for sharing your statements with us. There is no question, what you have said will help us do a better job here in the U.S. Senate. Thank you very much.

The meeting is adjourned.

[Whereupon, at 4:59 p.m., the Subcommittee was adjourned.]

COMBATING PROLIFERATION OF WEAPONS OF MASS DESTRUCTION (WMD) WITH NONPROLIFERATION PROGRAMS: NONPROLIFERATION ASSISTANCE COORDINATION ACT OF 2001

WEDNESDAY, NOVEMBER 14, 2001

U.S. SENATE,
INTERNATIONAL SECURITY, PROLIFERATION,
AND FEDERAL SERVICES SUBCOMMITTEE,
OF THE COMMITTEE ON GOVERNMENTAL AFFAIRS,
Washington, DC.

The Subcommittee met, pursuant to notice, at 2:31 p.m., in room SD–342, Dirksen Senate Office Building, Hon. Daniel Akaka, Chairman of the Subcommittee, presiding.

Present: Senators Akaka, Cleland, Domenici, and Cochran.

OPENING STATEMENT OF SENATOR AKAKA

Senator AKAKA. The Subcommittee will please come to order. The Subcommittee is here to discuss the threats we face from insecure critical equipment and discontented scientists from the former Soviet nuclear, chemical, and biological weapons complex.

I want to thank our colleague, Senator Hagel, for joining us today. I also wish to thank our other witnesses for being here, Ms. Gary Jones, the Director of Nuclear Nonproliferation Issues at GAO; Ms. Laura Holgate, Vice President of the Russian Newly Independent States Program of the Nuclear Threat Initiative; and Mr. Leonard Spector, Deputy Director of the Monterey Institute of International Studies Center for Nonproliferation Studies.

President Bush and President Putin yesterday announced historic cuts to the nuclear stockpiles in the United States and Russia. For the future of both our nations and the prospect of a more secure world, I hope they are successful in addressing another legacy of the Cold War, the materials, facilities, equipment, and people used to make these and other weapons in the former Soviet Union.

We have faced a major national security problem since the 1991 breakup of the Soviet Union. Control of chemical, biological, and nuclear weapon materials was suddenly spread out among a number of newly independent nations. We could no longer be assured of adequate control of these weapons or the people who had designed them.

Prior to 1991, international nonproliferation policy stressed keeping weapons of mass destruction out of the hands of a few states. Since 1991, we have been faced with the possibility the information

and materials which would have taken years to acquire to build a WMD weapon could be stolen in an instant.

Since the terrorist attacks on September 11, the problem of preventing WMD proliferation has gained both a new urgency and a greater complexity. The FBI's assessment of the anthrax attacks which have plagued the Senate and the Nation's mail may have been perpetrated by a lone disgruntled scientist, demonstrates how a weapon that had only been in the hands of a state can now be wielded by a single terrorist. Weapons that we previously worried about being delivered by an intercontinental ballistic missile we now know can be infiltrated into our midst without any advance warning.

We are faced with the prospect of spending billions of dollars to protect our homeland against multiple threats from multiple sources. Nonproliferation programs, the subject of today's hearing, are a critical means to prevent weapons, materials, equipment, and technology from falling into the wrong hands.

I want to thank again our colleague, Senator Hagel, for being here to discuss this proposal to achieve a national strategy and improve coordination between the various nonproliferation programs. His legislation, the Nonproliferation Coordination Assistance Act, would establish a coordinating body to ensure that nonproliferation activities are efficient, effective, and further national interests.

The Departments of State, Defense, and Energy have asked that their testimony be postponed until after President Bush's summit with President Putin. We have agreed to this and will reschedule their testimony in the near future.

In our discussion of current and future nonproliferation plans and the ways to improve and better coordinate them, we must keep in mind two questions. First, how can we adapt to ever-changing WMD threats? And second, are our plans and policies making the world more secure? I look forward to hearing our witnesses' comments on these two questions.

At this time, I would like to yield to my friend, Senator Domenici, for his statement.

OPENING STATEMENT OF SENATOR DOMENICI

Senator DOMENICI. Thank you very much, Mr. Chairman. Senator Hagel, I am pleased to be here adding some positive thrust to your legislation. I want to compliment you and the Chairman for holding this hearing. In addition, I want to compliment Senator Hagel for his proposed legislation. It has a very simple title but a very profound process is involved in this. It is called Nonproliferation Assistance Coordination Act of 2001.

The importance of nonproliferation programs with the former Soviet Union should not be open to question. The collapse of the Soviet Union ended the Cold War, but it also tremendously increased the risk that materials and expertise for weapons of mass destruction could contribute to new threats to global stability. For a country which relied on guards and guns to protect secrets and material, it was a jolting transition to a new situation where it was not clear if the guards, that is, if they were even still present, were being paid.

The current war on terrorism is critically dependent on minimizing the extent of the threat that terrorists can mount. Preventing their access to weapons of mass destruction must be one of our highest priorities.

Many nonproliferation programs were created, all with the best of intentions. Each program has well-stated goals. But these programs frequently are intertwined and interrelated in various complex and difficult ways. There could be no question that better coordination among the programs would lead to enhanced effectiveness, as well as potential cost efficiencies.

The Nunn-Lugar-Domenici legislation—it is also obviously in Nunn-Lugar, but this followed it by a few years, in 1996—called for a nonproliferation coordinator for all these programs. The administration at that time chose to ignore that. After the legislation's call for a coordinator expired in 1999, I helped with further legislation for this coordinator in amendments to previous Defense Authorization Acts, again to no avail. There was nobody worried enough about it, and clearly the Executive Branch did not think it was a big enough or a powerful enough issue.

Numerous committees have called for this coordination and have studied it. John Deutch chaired one of these committees. More recently, the superb effort from Senator Howard Baker and the Hon. Lloyd Cutler again called for this coordination. That is a current report, Mr. Chairman. For everybody on this staff that is interested in moving this issue along, that is "must reading." It is very current and has many current evaluations and studies in it. My friend, Chuck Hagel, is totally familiar with it, I am sure.

In an amendment to the current defense authorization bill, I called for tighter coordination. I was pleased to develop that amendment with Senator Hagel, he might recall, building on the same bill that you are discussing here today. In addition to Senator Hagel, Senators Lugar, Biden, Bingaman, and Landreau joined us in cosponsoring it. All I can say is that it was unfortunate, but no action was taken on that amendment due to confusion in the minutes before the Senate voted on the defense authorization bill.

Now I understand that the Armed Services Committee is working in conference to incorporate the themes of that amendment. But I am very pleased that while that is stalemated somewhere, you are giving birth to the idea with your bill here today. I do hope it is given every consideration and I hope you pursue it with vigor. It is very, very important.

We can't forget about this coordination as terrorism gets closer and closer on the television monitors of Americans. There is an awful lot of terrorism potential when you think about what can be put together with all of the leftover Soviet materials and all of the material that comes from dismantlement programs. Clearly there are risks that come with the Soviet Union's turning out to have a very different amalgamation of programs. Clearly they have a difficult time finding money to pay just the ordinary kinds of expenditures to maintain control over these materials and expertise to avoid it spreading all over the world.

There can be many examples where we needed this improved coordination. One of the immediate concerns involves the very vital plutonium disposition programs, which require coordination be-

tween the United States and Russia. The recent suggestion from the National Security Council that this program might be modified, along with strong budget signals that we are wavering in our support for the program, has introduced some great uncertainties. Failure to coordinate this complex program has led to some very serious issues which threaten to derail the entire effort in terms of plutonium disposition with Russia.

We are now seeing the Governor of South Carolina, incidentally, refusing to accept plutonium from Rocky Flats and a German company withdrawing their offer to assist Russia with the MOX program because the administration has injected some really serious uncertainty by saying the program did not work by not having one to take its place. We saw a collapse of the efforts to obtain international funding for the program in Russia. Coordination could have avoided all these problems.

In conclusion, I strongly concur, Mr. Chairman, with Senator Hagel and many of our colleagues that a far better coordination is needed across the government for our nonproliferation programs with the former Soviet Union.

I might say that I am privileged to serve on a board of directors of a nonprofit corporation that is called the Nuclear Threat Initiative. That was set up with a $50 million a year pledge, I do not know how many years, but it will be a number of years, perhaps 5 years, or $250 million. I note that one of those who are working with Sam Nunn is Laura Holgate, sitting in the front row. She is going to be on our next panel. It has been a pleasure working with Ted Turner, Senator Lugar, and former Senator Nunn, and some other distinguished people, and we are going to make some real headway in terms of getting the world moving with reference to nonproliferation.

We commented at our last board meeting that does not mean that we do not need government's action. Quite to the contrary. The reason some of the things are being done by that nonprofit is because our government has failed and they have not done some things they ought to be doing. So this is one of them, to get started on coordinating our own programs.

Thank you very much, Mr. Chairman. Thank you, Senator Hagel.

Senator AKAKA. Thank you very much, Senator Domenici. Thank you for your statement.

Senator Cochran, may I yield to you if you have a statement.

OPENING STATEMENT OF SENATOR COCHRAN

Senator COCHRAN. Thank you very much. I ask unanimous consent that my prepared statement be placed in the record as if read.

Senator AKAKA. Without objection, it will be placed in the record.

[The prepared opening statement of Senator Cochran follows:]

PREPARED OPENING STATEMENT OF SENATOR COCHRAN

Mr. Chairman, I am pleased to join you in welcoming Senator Hagel and our other witnesses to today's hearing on the United States' nonproliferation and threat reduction assistance programs in the former Soviet Union. I appreciate the fact that Senator Hagel is taking the time to be here with us despite the fact that he has another hearing to attend and so I will make just a brief statement.

We have in place already several nonproliferation programs which are important tools that contribute to the effort to control the proliferation of weapons of mass de-

struction. But, I think we must do more to deal with this serious problem which threatens our nation and other nations as well.

The bill before us today is designed to strengthen and improve the implementation of these programs by the U.S. Government. S. 673 would create a committee within the Executive Branch with the responsibility of monitoring and coordinating U.S. policies in the former Soviet Union.

I commend Presidents Bush and Putin for their statements yesterday reiterating their strong commitments to cooperation in this area of concern. It is clear that the Bush Administration places a high priority on these programs and is working, as the White House press release stated, to "ensure that existing efforts serve priority threat reduction and nonproliferation goals, as efficiently and effectively as possible. . . ."

I look forward to today's testimony on this very important topic and to our future hearings on this subject.

Senator COCHRAN. Mr. Chairman, let me just welcome my good friend and colleague from Nebraska. I appreciate the fact that he is here today to talk about his new initiative in the proliferation area, trying to control more effectively the spread of weapons of mass destruction. I cannot think of a more important subject for him to work on than that, and to looking at who is cosponsoring the legislation with him, it makes me realize that we need to take this very seriously. I am certain that it is a proposal that has been carefully reviewed and thought out and the Congress should pay close attention to this suggestion. We appreciate your taking time to come and testify before the Subcommittee.

Senator AKAKA. Thank you very much, Senator Cochran.

Again, I want to welcome you, Senator Hagel, and I want to thank you for taking the time to be with us today to discuss S. 673, the Nonproliferation Coordination Assistance Act of 2001. If you are ready for your statement, we will be glad to hear it.

Senator HAGEL. I am, Mr. Chairman.

Senator DOMENICI. Mr. Chairman, could I become a cosponsor? Would you let me do that today and you note it in the record? Senator, I would like to be a cosponsor.

Senator HAGEL. Thank you.

Senator AKAKA. Fine.

Senator DOMENICI. Thank you very much.

TESTIMONY OF HON. CHUCK HAGEL,[1] A U.S. SENATOR FROM THE STATE OF NEBRASKA

Senator HAGEL. Mr. Chairman, thank you, and to my friends, Senator Cochran, and Senator Domenici, thank you. What I am going to present today, Mr. Chairman, is essentially an effort that has worked from and off of the leadership of Senators Domenici, Lugar, Nunn, and Cochran and so many of my senior colleagues who have been not just working on this general issue, but trying to frame it in a way to call attention to the relevancy and the real dynamic of the threat of terrorism. That, of course, as Senator Domenici noted, has now been moved from a threat to a reality as of September 11, and hence, the timeliness and the importance of these kinds of issues, most specifically nonproliferation, is beyond just urgent but it is now of necessity that the Congress of the United States deal with this.

[1] The prepared statement of Senator Hagel with an attachment appears in the appendix on page 219.

What I have done in the bill that I put together a few months ago was essentially reframe much of the work of Senators Domenici, Lugar, Biden, Cochran, and others with their support, with their concurrence, and with their encouragement. And so I want to acknowledge them as I begin to lay out what my bill would do, Mr. Chairman, because essentially, it is because of their efforts and those who have gone before me that I have been able to do this.

A few months ago, I introduced, as you noted, the Nonproliferation Assistance Coordination Act to address the coordination of nonproliferation efforts in Russia and the former Soviet Union. Senators Lugar and Biden were original cosponsors of this legislation and we will include, of course, Senator Domenici, as well.

This legislation was divided into eight sections. Section four of this bill establishes a Committee on Nonproliferation Assistance at the assistant secretary level or higher, to be chaired by a senior representative of the National Security Council and comprised of representatives from the Departments of State, Defense, Commerce, and Energy.

I would also note, Mr. Chairman, that I take no particular pride in my colleagues' or others' efforts to strengthen, improve, restate, and restructure what I have laid out here and I am certain that can be done. I introduced this bill not because of any territorial sense of prerogatives as to who chairs anything, but rather to try to bring some accountability to this issue, and you will hear from witnesses, especially GAO and other administration witnesses that you noted later on, that will have their own sense of this bill and will come forward, I am sure, with a more effective way to structure the bill.

Section five sets out the duties of the Subcommittee. Section six relates to administrative support. Section seven protects confidentiality of information.

Mr. Chairman, it has been 10 years since the Congress took the important step to help reduce the threat of nuclear chaos emerging from the disintegration of the Soviet Union. Under the foresight and leadership of Senators Nunn and Lugar, Congress established the Cooperative Threat Reduction Program, authorizing funding through the Department of Defense budget to assist with the safe and secure transportation, storage, and dismantlement of nuclear, chemical, and other weapons in the former Soviet Union.

We are aware of that. It has been alluded to especially in the remarks of Senator Domenici. And upon that first important piece of legislation, we build the next stage of the Nunn-Lugar effort. And as Senator Domenici noted, the next stage of that came in 1996, when Senator Domenici joined with Senators Lugar and Nunn to further define and refine Nunn-Lugar.

Thousands of nuclear warheads have been deactivated and missiles dismantled in Belarus, Ukraine, Kazakhstan, and Russia. In the past 10 years, the Nunn-Lugar initiative has grown into a multi-pronged effort by the Departments of Defense, State, and Energy to ensure that weapons of mass destruction, weapons-usable material and technology, and weapons-related knowledge in Russia and the Newly Independent States remain beyond the reach of terrorists and weapons proliferating states.

The investments we have made in this area have yielded an impressive return. By assisting Russia in this area, we have reduced, not eliminated, nuclear threats we face in the United States and the world and have enhanced our national security. But just as the Nunn-Lugar initiative has changed over the last decade, so, too, has the world changed, especially since the terrorist attacks on this country on September 11.

Nonproliferation is one of the key components of the war on terrorism. On November 6, President Bush stated, "Al Qaeda operates in more than 60 nations, including some in Central and Eastern Europe. These terrorist groups seek to destabilize entire nations and regions. They are seeking chemical, biological, and nuclear weapons. Given the means, our enemies would be a threat to every Nation and eventually to civilization itself."

Last January, a bipartisan task force led by former Senator Baker and former White House Counselor Lloyd Cutler, which Senator Domenici mentioned, released a report calling for improved coordination within the U.S. Government on nonproliferation assistance to Russia. In particular, the report noted, "Coordination within and among U.S. Government agencies is now insufficient and must be improved. Although the task force focused on the DOE nonproliferation programs, the members heard from many interlocutors that the programs would be improved and could be improved, as would the counterpart programs in other agencies, if there were more coordination at all levels among all U.S. Government programs."

That, Mr. Chairman, is what my legislation intends to do. President Bush recognized the need for greater coordination in our domestic security policy, as evidenced by the appointment of Governor Ridge as Director of the Office for Homeland Security. The Baker-Cutler report recommended establishing a new position for nonproliferation coordination within the National Security Council or creating a high-policy-level nonproliferation czar.

My legislation does not impose such a mandate on the President, but instead calls for coordination of our nonproliferation programs through a senior level coordinating committee. And again, I would say that if there are suggestions, particular points that could improve and would improve the structure of this accountability, I certainly would welcome those.

A second aspect of my legislation is the inclusion of efforts undertaken by private sector programs in this area, such as corporations and nongovernmental organizations, or NGOs. And again, Senator Domenici alluded to one of those organizations a few minutes ago.

This Subcommittee will hear testimony today from the Nuclear Threat Initiative, a private organization founded by Ted Turner and former Senator Sam Nunn to reduce the threat from nuclear weapons. You will also hear from NGOs and their efforts through testimony from a representative of the Russian Newly Independent States Nonproliferation Program at the Monterey Institute. Currently, this private spending is small, but it is registering positive results. It will continue to increase. We should ensure that government and non-government spending on nonproliferation programs complement each other and are not duplicative.

Our previous efforts have yielded significant results, but there is far more work yet to do. Yesterday, Senator Dodd and I wrote in the *New York Times* that Presidents Bush and Putin should use the current summit as an opportunity to discuss effective ways to ensure that weapons and materials of mass destruction in and around Russia remain safe, accounted for, and secure.

In conclusion, Mr. Chairman, the discussions between Presidents Bush and Putin are already yielding agreement in this area. As you noted, yesterday afternoon, President Bush noted that the United States and Russia will strengthen our efforts to cut off every possible source of biological, chemical, and nuclear weapons, materials, and expertise. Presidents Bush and Putin also announced yesterday that they will dramatically reduce nuclear arsenals in both countries. This will probably require more spending from the United States.

If we in Congress are asked to spend more of our budget on this effort, then we must ensure these funds are spent efficiently, effectively, and not on repetitive efforts. And again, Mr. Chairman, that is as much the focus of my legislation as any other part.

I appreciate the Subcommittee's serious review of this timely and relevant issue and I would say, Mr. Chairman, that if there is anything I can do to further that effort, I look forward to working with you and the members of this Subcommittee. Thank you.

Senator AKAKA. Thank you very much, Senator Hagel. Thank you for your leadership in this area. I really appreciate what you have said. It will be helpful to the Subcommittee and with you, too, in looking for ways of preparing us to deal with whatever threats that might be coming, so I thank you very much again for your statement.

Senator HAGEL. Mr. Chairman, thank you. Now you will hear from the real pros.

Senator AKAKA. Thank you.

At this time, I will call our next panel, Ms. Gary Jones from GAO, Ms. Laura Holgate from the Nuclear Threat Initiative, and Leonard Spector from the Center for Nonproliferation Studies. They have been asked to discuss current nonproliferation programs, how they are coordinated with Federal, private, and international efforts, and how S. 673, the Hagel bill, would make these programs and efforts more effective.

Ms. Jones, please proceed with your statement at this time. I want all of you to know that your full written statements will be entered into the record.

TESTIMONY OF MS. GARY L. JONES,[1] DIRECTOR, NUCLEAR AND NONPROLIFERATION ISSUES, NATURAL RESOURCES AND THE ENVIRONMENT, U.S. GENERAL ACCOUNTING OFFICE

Ms. JONES. Thank you, Mr. Chairman. We are pleased to be here today to discuss our recent work on U.S. nonproliferation programs and to comment on S. 673, a bill to establish an interagency committee to review and coordinate U.S. nonproliferation programs.

[1] The prepared statement of Ms. Jones appears in the appendix on page 223.

As others have said, the events of September 11 have heightened the importance of these nonproliferation programs to our national security. Let me first briefly summarize the results of our work on several of the U.S. Government's nonproliferation programs. We have found that they have achieved some success, but more needs to be done to keep nuclear weapons, materials, and technologies out of the hands of terrorists and countries of concern.

Successes include improved security systems, which have reduced the risk of theft of nuclear material in Russia; the purchase of weapons grade uranium that is equivalent to 4,000 nuclear warheads that has been turned into fuel for commercial nuclear power reactors; and the creation of non-military jobs for some weapons scientists.

But the task is far from over. Hundreds of metric tons of nuclear material remain at some risk because improved security measures have not yet been installed. This is because DOE's program to secure this material has experienced problems with access to sensitive Russian sites. Further, DOE does not know how much and for how long additional assistance will be needed to sustain the operation and maintain the new security equipment already involved.

Two DOE programs and one at the State Department share the goal of employing Russia's weapons scientists in non-military work and thereby preventing them from selling their knowledge to terrorists or countries of concern. With hundreds employed by one program and several thousand employed part-time by another, these programs are a long way from reaching the 30,000 to 75,000 senior nuclear, chemical, and biological weapons scientists without full-time employment.

Even when jobs are created, these programs face difficulty in conclusively demonstrating that they are achieving their intended goal of preventing the spread of weapons-related knowledge and expertise. Our reports on these DOD nonproliferation programs made numerous recommendations to improve their overall management and DOE has addressed or is in the process of making changes to address these recommendations.

Let me turn to the bill, S. 673, that the Subcommittee has under consideration. There is some debate among officials, both within and outside government, about the need for more coordination of U.S. nonproliferation programs. To prepare for this hearing, we spoke with representatives from the Departments of Defense, Energy, and State, and some private interest groups. They all believe that coordination among Federal agencies implementing nonproliferation programs is already taking place and the mechanism envisioned by the bill may not be needed.

However, based on our work and the findings of two independent groups that recently examined these programs, the Deutch Commission and the Baker-Cutler Task Force, we believe that additional coordination would be helpful. For example, some officials told us that better coordination is needed between the United States and international programs, such as those implemented by the European Union. Further, program officials have also noted that although coordination does occur at some level, it is frequently informal and subject to changes in program personnel. We believe that greater coordination could minimize duplication, leverage

resources, and focus programs more clearly on common goals and objectives.

However, the legislation did not address a number of other problems that I have just talked about, such as limited access to sensitive Russian sites and various program management concerns. However, the coordinating body envisioned by the legislation could serve as a vehicle to share information and best practices for addressing these types of problems.

We also believe the bill could be strengthened by mandating development of an overarching strategic plan that clearly identifies overall goals, time frames for meeting these goals, and ways to set priorities for allocating resources government-wide to address nonproliferation concerns. Both the Deutch Commission and the Baker-Cutler Task Force believe that such a strategic plan was the missing element from the U.S. Government implementation of nonproliferation programs.

Building on the individual programs' strategic plans, a government-wide plan could also address questions such as are the end dates for the completion of the various nonproliferation programs, such as securing nuclear materials in Russia, still viable? How can the security improvements made be sustained beyond the completion of the programs? And in light of September 11, do we continue to have the right mix of nonproliferation programs needed to address the varying security problems facing our Nation?

Thank you, Mr. Chairman.

Senator AKAKA. Thank you very much, Ms. Jones.

At this time, I would like to yield to Senator Cleland.

OPENING STATEMENT OF SENATOR CLELAND

Senator CLELAND. Thank you very much, Mr. Chairman. I would like to thank particularly our colleague, Senator Hagel, and the witnesses who appear here today to testify about this important subject.

The threat posed by the weapons of mass destruction that are retained in the states comprising the former Soviet Union is actually mind boggling. I was struck by the fact that a bipartisan task force headed by Howard Baker and Lloyd Cutler has recently called this, "the most urgent unmet national security threat to the United States," and called for a four-fold funding increase for our threat reduction efforts.

In the wake of September 11, we cannot hesitate to take strong action to implement this recommendation. We are indeed fortunate that 10 years ago, a group of distinguished Senators, including my friend and the former Senator from Georgia, Sam Nunn, put in place what has come to be known as the Nunn-Lugar Cooperative Threat Reduction Act. The programs that have been carried out under this legislation have, without a doubt, profoundly improved the security of the United States and may well have prevented a far worse catastrophe than what we have recently experienced. I reiterate my support for these programs and call for the enhanced funding recommended by the bipartisan task force mentioned previously.

To the purpose of this hearing, I say that the proposed legislation is fully consistent with the requirement to provide additional re-

sources for cooperative threat reduction and I support it. I also believe that the committee proposed by the Nonproliferation Assistance Coordination Act of 2001 will need a highly-placed advocate to ensure that its mandate is effectively carried out.

To that end, I endorse Ms. Holgate's recommendation for the creation of a Deputy National Security Advisor committed exclusively to reducing the threats we face from weapons of mass destruction. This threat is far too grave to go without such an advocate. I am convinced that our national security depends upon the effective coordination and resourcing that this position will enable.

Thank you, Mr. Chairman.

Senator AKAKA. Thank you very much for your statement and your support.

I would like to now call on Ms. Holgate for her testimony.

TESTIMONY OF LAURA S.H. HOLGATE,[1] VICE PRESIDENT FOR RUSSIAN NEWLY INDEPENDENT STATES PROGRAMS, NUCLEAR THREAT INITIATIVE

Ms. HOLGATE. Thank you very much, Mr. Chairman and other Subcommittee Members for the opportunity to testify today about how the U.S. Government can strengthen its efforts to prevent the spread of nuclear, biological, and chemical weapons and keep them from falling into the hands of groups and states who would do us harm.

The Nation and the world discovered on September 11 that there are terrorist forces in the world who will stop at nothing in their efforts to take innocent lives. The work that the U.S. Government does to reduce the threat from nuclear, biological, and chemical weapons and materials is our first line of defense in keeping these weapons out of terrorist hands.

Dismantling weapons, securing material, eliminating infrastructure, and directing know-how to peaceful pursuits, all of these play an essential role in fighting the spread of weapons of mass destruction. We have taken important steps towards these problems, but to protect the security of the American people, we need giant strides, so I would like to thank the Chairman and the Members of the Subcommittee for putting the spotlight on this issue and giving me and others a chance to contribute our ideas.

President Bush clearly shares the concern that has been noted by Howard Baker, Lloyd Cutler, and many others in the introductory comments to this hearing. Two years ago at the Reagan Library, candidate Bush praised, "the foresight and statesmanship of Senators Lugar and Nunn for their legislation to improve security at many Russian nuclear facilities," and then he added, "A great deal of Russian nuclear material cannot be accounted for. The next President must press for an accurate inventory of all this material and we must do more. I will ask the Congress to increase substantially our assistance to dismantle as many of Russia's weapons as possible as quickly as possible."

Sadly, the administration's actions in the first months of its tenure fall short of the vision and purpose articulated by President Bush. Earlier this year, the administration announced a review of

[1] The prepared statement of Ms. Holgate appears in the appendix on page 233.

nonproliferation programs, then cut the program budgets back before it even began the review. The review itself stopped action in its tracks. Travel was halted. Work was postponed. Momentum was lost. And program managers felt they lacked the authority to go forward. The review was undertaken without even the courtesy of telling our partners in Russia. Now we are told the review is complete, but we have not seen its outcome.

I strongly support a review of our nonproliferation programs. We have not had one since 1993. But it needs to be broad and it needs to be strategic. The review that was recently completed appeared to be aimed merely at finding inefficiencies in individual program activities. That is a worthy purpose in its own terms, but it is no substitute for strategic thinking about U.S. national security goals and how threat reduction programs can help achieve them.

I worked for many years in many capacities, first at the Department of Defense in the Cooperative Threat Reduction Program, then at the Department of Energy, and now at the Nuclear Threat Initiative, to implement and advance these programs to prevent nuclear, biological, and chemical weapons from falling into the wrong hands. It is my view that these programs are critically important, largely effective, and because of the obvious urgency, more in need than ever of high-level attention, increased funding, greater staffing, and continuous fresh thinking to help speed up the pace and widen the scope of these programs. If terrorists are racing to acquire weapons of mass destruction, we ought to be racing to stop them.

Ten years after the passage of the landmark Nunn-Lugar Act to establish the legal basis of nonproliferation cooperation with Russia and other former Soviet States, U.S. Government activities in this area approach $1 billion annually and involve multiple agencies from Defense to Health and Human Services, myriad contractors, and over a dozen Congressional committees and subcommittees. This growth has been, by and large, organic, with each agency pursuing its own contacts and relationships in recipient countries, assembling and justifying its own budget, implementing programs based on its own culture and approaches, and interacting with its own Congressional oversight committees.

This is a complex task. Some point to the involvement of so many agencies as evidence of poor management. It is not. It is evidence that such a program requires wide-ranging expertise and, therefore, will always be a challenge to administer, a challenge that can be fully met, in my view, only with high-level leadership and coordination. This leadership and coordination has been hard to come by since the early days of these programs.

Where it has worked well, it has been a consequence of personalities, committees, or commissions that are not enduring features of the organizational structure, either within the U.S. Government or in relations between the United States and states of the former Soviet Union. Coordination with nongovernmental organizations like mine also occurs primarily ad hoc, based on personal relationships and our own initiative. Relationships with other countries working in these areas tends to be intermittent and opportunistic.

Despite the complexity of these nonproliferation cooperation activities, programmatic duplication has been remarkably low and

program implementation is, in general, very effective. In spite of proceeding without a comprehensive and coordinated vision administered from the top, these programs taken collectively have massively improved U.S. national security. Improving the coordination and accountability of these programs should result in even greater improvements.

What is missing in the process is a definitive statement of strategy and consistent advocacy of administration goals. This must include holding agencies accountable for financing and implementing programs that accomplish these goals. Without this clear high-level direction and the interagency process that creates and maintains it, agencies have set and articulated their own priorities, resources have not always been aligned with those priorities, even within agencies, and differences among agencies' rhetoric and programmatic actions have created perceptions of inefficiency and contradiction which are exploited by opponents of the programs and missions.

To address these structural flaws, I recommend the creation of a Deputy National Security Advisor committed explicitly and exclusively to reducing the threats we face from weapons of mass destruction. This individual would be responsible for leading and enforcing interagency decisions and for creating a unified programmatic budget presentation.

In whatever manner Congress and the Executive Branch decide to organize our programs, and there are many effective ways to do so, they must have high-level Presidential attention. Any organizational structure with high-level attention will be better than the best organizational structure with low-level attention.

Thank you very much, and I look forward to your questions.

Senator AKAKA. Thank you very much for your testimony.

Mr. Spector, you may proceed.

TESTIMONY OF LEONARD S. SPECTOR,[1] DEPUTY DIRECTOR, CENTER FOR NONPROLIFERATION STUDIES, MONTEREY INSTITUTE OF INTERNATIONAL STUDIES

Mr. SPECTOR. Thank you, Mr. Chairman, and thank you for the opportunity to testify before the Subcommittee on improving the effective of U.S. nonproliferation programs in the successor states of the former Soviet Union.

I want to try to emphasize three themes today. The first is that the indecision of the administration, and what I think has to be characterized to some degree as "dithering," is damaging our efforts to control weapons of mass destruction material and expertise in the Newly Independent States, especially in Russia. I think this is an especially troubling situation given the new urgency that has emerged to deal with these matters, in light of the September 11 events.

The second theme I want to emphasize is that the programs that are functioning could function much more efficiently and more effectively if they could be better integrated and if there were better planning among them and better oversight from above. I will sup-

[1] The prepared statement of Mr. Spector with attchments appears in the appendix on page 245.

port the current legislation in some of my comments in terms of its approach.

And finally, I want to comment on the private-public partnerships and just note how important a role they have played historically in this area and how important a role they are playing today.

The fundamental goal of the majority of the programs that are operating in Russia today and the other Newly Independent States, especially those whose purpose is to secure and eliminate fissile material and to provide employment for Soviet weapons of mass destruction scientists, is to prevent terrorists and states of proliferation concern from acquiring these materials and getting access to this expertise. As such, the programs are an integral and highly important component of U.S. counterterrorism efforts.

Osama bin Laden, as we know, has been seeking weapons of mass destruction, and, of course, he recently claimed to possess chemical and nuclear weapons, although most observers, disbelieve that latter claim of possession of nuclear weapons. He is also known to have extensive links throughout the former Soviet Union.

It is worth recalling the scale of the Soviet weapons of mass destruction legacy. The Department of Energy estimates that Russia possesses 603 tons of weapons-usable fissile materials, that is plutonium or highly enriched uranium, outside of weapons. That is enough for 41,000 nuclear arms. And to provide a benchmark, let us just consider what North Korea may have. It is said by the U.S. Government to possess enough plutonium for one or two nuclear weapons, and we all know how serious we take that national security threat.

But one or two weapons is less than five-one-thousandths of a percent of the Russian stockpile of weapons-grade material that I described earlier. One shudders to imagine the mischief that Osama bin Laden or a terrorist of his ilk might cause, if he were to obtain a comparably minuscule fraction of the nuclear weapons material in Russia.

Russia also possesses a vast arsenal of chemical weapons that are now currently awaiting destruction with U.S. assistance, if we can get the program moving, and they also possess the ability to manufacture the world's most potent biological weapons. The bulk of these various weapons-of-mass-destruction materials are not subject to adequate security measures.

Despite new evidence of terrorist interest in acquiring and using WMD, the Bush Administration has not acted to accelerate efforts to improve security over these materials and over WMD expertise in the former Soviet States. Indeed, nearly 10 months after taking office, as Ms. Holgate just noted, and really throughout an entire budget cycle, the administration is still "reviewing" U.S. nonproliferation programs in Russia. It is apparently unable to decide whether and/or how to pursue a number of the critically important initiatives that are already underway.

Inexplicably, the one point that the administration has decided upon is that the programs do not need additional funding, and that, accordingly, no monies from the $40 billion in anti-terrorist funds that will be made available by the Congress should be used for the purpose of helping secure weapons-grade materials and expertise in the former Soviet Union.

Let me review with you a few of the programs. I have listed quite a few in my testimony. I will try to just summarize and only hit the highlights. Perhaps the most salient of the programs for dealing with the Soviet nuclear legacy, is the Material Protection Control and Accounting Program at the Department of Energy. As was pointed out earlier by the GAO, to date, this program has made great strides.

It has, I believe, protected about 200 tons of weapons-grade material. It is roughly a third of the 603 tons that now needs to be secured. The remaining material will not receive so-called "rapid upgrades" until 2007 and it will not be comprehensively secured until 2011.

Surprisingly, the Bush Administration's fiscal year 2002 budget reduced the funding for this program to a bit below the fiscal year 2001 levels, (although 2 weeks ago, Congress increased support for this effort above the administration's request, from $143 million up to $173 million). The events of September 11 call for additional funding.

Now, I was at the Department of Energy when we put together the previous administration's budget in this field, and I know that there were other parts of this program that are not going to be addressed in the coming year because of these lower budget numbers. We all know that not every item on the wish list can be funded, but I know that we will not be doing some very important work because of the administration's hesitancy in moving forward.

Now, one way that we can rapidly improve security over tons of material is to complete another one of these material security programs in Russia, and that is to complete the facility at Mayak, known as the Fissile Material Storage Facility. We have already spent $400 million on this facility, and it is supposed to be operational in the coming year, when it will secure 6 tons of weapons-grade material. They will load it at a rate of about 6 tons per year and eventually 25 tons of plutonium will be secured.

What is holding up the operation of this facility is we cannot quite come to conclusion with the Russians on measures for having confidence about what goes into the facility and mechanisms for monitoring it. This has been a problem for a number of years, but it is not moving forward, in part because it is not getting high-level attention at the Pentagon, where this program sits. It is extremely important when you have a high-level official from the Pentagon here to ask what steps he is taking to make this $400 million investment good. We have to take advantage of this facility in the coming year, and I think the ball is very definitely in the court of the Pentagon.

Another program which I think has been an unalloyed success and is widely applauded is the High Enriched Uranium Purchase Agreement. This is an agreement under which weapons-grade material is blended down to non-weapons-grade nuclear power plant fuel in Russia and then purchased by the United States and used to fuel U.S. nuclear power plants. This is where 110 tons of material have indeed been removed from being a problem. This 110 tons is no longer usable for weapons, a very large quantities. But the program itself will last for many more years and needs to be accelerated.

The intellectual father of the program, Thomas Neff of MIT, believes that with some ingenuity, we could double the rate of down-blending from 30 tons a year to 60 tons a year at a cost of roughly $150 million per year, but the bulk of this money will come back to us when that uranium would be sold on the open market some years from now.

The President is looking into this, supposedly. I had an interview with Robert Joseph at the National Security Council, which is an on-the-record interview that we published recently in the *Nonproliferation Review*. He said that this program was "under review." The administration was trying to stabilize it in some fashion. But it was clear there was no impetus, no energy to try to make the program move at a faster pace and to try to introduce some new thinking as to how this might work.

Other programs are also losing momentum, including one that Ms. Holgate used to run at the Department of Energy, is the Plutonium Disposition Program. This program desperately needs leadership and drive from high up in the administration because it requires the participation of foreign governments. Because of uncertainties about funding and the lack of such leadership, the program has lost a year, an entire year, in its efforts to eliminate and dispose of 34 metric tons of Russian weapons plutonium, which would basically be removed from a concern if we could get the program on track and moving forward. Again, the problem, I would say, lies with the administration in its slowness to come to a conclusion about the program and in its reluctance to champion it internationally.

There are several other programs that are worthy of mention. The plutonium production reactor shutdown agreement would end production of new plutonium. Why do we want the Russians making more plutonium? We have a program to end this. Again, it is falling on hard times in the sense that it is not getting the leadership from the Pentagon that it needs: In particular, a solution was reached to actually get this program implemented during the last part of the Clinton Administration. It has not yet been embraced by the Bush Administration, but it is ready and, I think, a very thoughtful solution. This needs to be pried out of the bureaucracy and made to move forward.

Let me only turn to one or two other points here in reviewing some of these programs. A program that I participated in while I was at the Department of Energy was to go around to small research reactors outside of Russia and try to bring weapons-grade material back into Russia to be consolidated and down-blended. The material is used as fuel at these facilities, and one facility of particular concern was in the former Yugoslavia. Now with the change of government there, the dangers are reduced, but it is a significant quantity of material and we need to get this program moving forward. We also need to try to move material out of Belarus and out of the Kharkiv reactor in the Ukraine.

Tactical nuclear weapons, just to change focus a bit, are another area that has not gotten attention under this administration or the previous administration. There are thousands of them in Russia. We have done some work to secure them, but there is no work to eliminate these weapons or to provide transparency to ensure that

Russia is complying with undertakings made in 1992. Urgent work is needed here, but there is no program of any kind in the administration's current initiatives to address this challenge.

If I may, let me turn next to summarize a number of these points and basically say that in all of these cases, the issue really lies with the administration and its inability to decide where it wants to come out and to move emphatically forward with these efforts.

Let me turn now, if I may, to a different part of the proliferation threat in the former Soviet Union, and this is one that is very germane to today's dangers. This is the threat of biological weapons. As we know, the Soviet Union, had the most advanced biological weapons program in the world. We have worked during the Clinton Administration and are continuing to work during the Bush Administration to try to hire as many of these scientists—this program was mentioned earlier—so that they do not go off and share their expertise with others. We have converted some of the biological weapons sites to non-weapons use, but some of these sites remain completely unknown to us. We are not given any access, and we have not had any programs there. These are the programs that are in the Russian military. It is an important gap.

But what came to mind most recently and what a colleague of mine, Sonia Benouaghram, has brought to my attention are the so-called "museums." These are the collections of extremely potent biological weapon agents that remain at many of the sites. The work at the sites now, the ones that the United States has worked with no longer involves offensive biological weapons, but some of the material remains there.

Last night on television, I am not sure how many may have seen this, Senator, but a broadcast showed the refrigerator in which some of these vials were sitting. They were barely labeled. There was very limited security. One only hopes that we can do our work at these sites—and it is underway—more rapidly than others may figure out how to defeat the rudimentary security systems that now exist. This is a major gap and we really need to move this forward dramatically.

Let me turn if I may, now, to the issue of planning and coordination.

Senator AKAKA. Mr. Spector you have exceeded your time, but will you please summarize?

Mr. SPECTOR. Thank you. I would be happy to do that. Planning and coordination has been discussed here, and in my testimony and in the accompanying article, I have identified a number of areas where we simply do not have cross-program coordination the way we need it. The most clear-cut example is that the program to secure nuclear materials uses one number to describe the amount of material that needs to be addressed. Other programs, however, are reducing this quantity of material by moving it, destroying it, or eliminating it in various fashions, and we need a government-wide analysis of this problem, as well as a government-wide analysis of job creation, and of U.S. activities in other areas. If you had this, you could exploit synergies between the programs; you could avoid situations where programs interfere with each other inadvertently; and you could make much more thoughtful planning decisions.

In the interview that Bob Joseph gave, he did indicate that the one element of the administration's review could be announced, and it was that there would be increased planning and that, indeed, the planning process would take place in an interagency group of the very kind recommended in the legislation before the Subcommittee. Now, if this is announced publicly in a more formal way, perhaps during your next hearing, it may mean that the need for legislation is less apparent because the administration, in effect, will have adopted this very strategy. However, I would recommend a number of studies be requested by the committee that would, in fact, push the planning process forward.

Let me conclude just by mentioning the relationship between public and private activities. It really would be worthwhile spending a bit more time on this to appreciate the incredible history of participation by private organizations in this very area. The concept of the Nunn-Lugar program and cooperative threat reduction was first envisioned and described at Harvard by a group up there. My organization has done very important reviews of these programs, and has conducted extensive training programs to support them, to create a cadre of specialists in Kazakhstan and Ukraine and elsewhere. The Nuclear Threat Initiative, of course, will play a very important role, as well.

This has been a very successful partnership and I think it is one that we certainly hope will continue. There is much more work to be done and many more contributions to be made by these private organizations.

Thank you, Mr. Chairman.

Senator AKAKA. Thank you very much, Mr. Spector.

I have some questions for each of you. I would just like to ask your opinion on some of the views of the administration.

A number of critics have praised the administration for undertaking the first comprehensive assessment of our nonproliferation programs in decades. At the same time, they fault the administration for failing to develop a strategic plan for these programs. Do you agree with these views, and if so, what should our strategy be? Ms. Jones.

Ms. JONES. Senator, I think part of our testimony today was basically to say that the legislation currently being considered could be improved by requiring a strategic plan and that strategic plan would talk about the overall goals that we are after government-wide for the nonproliferation program. It would enable us to measure progress, hold particular agencies accountable for meeting those goals, but it would also provide a forum to set relative priorities, particularly from a funding standpoint. So I would agree that a strategic plan is something that we should be looking for here.

Senator AKAKA. Ms. Holgate.

Ms. HOLGATE. I would certainly associate myself with the views that you expressed, Mr. Chairman, in terms of the contrast between a review of existing programs and a strategy for how to move forward and match programs to goals. That strategy can only be created in the context of interagency coordination led by a firm hand at the White House and is desperately needed.

Senator AKAKA. Mr. Spector.

Mr. SPECTOR. I would agree because I, among others, have been urging such planning to take place. When you do such planning, certainly in the fissile material area, you look across a whole spectrum of challenges. I would say by the time the last administration left office, pretty much every challenge was addressed in some fashion, sometimes more successfully, sometimes less successfully. But you need to have that across-the-board approach which a senior-level review that attempted to examine this work strategically could achieve.

So I would certainly support that, and I support the comments of Ms. Holgate that the administration has not done this. They have looked program by program at some of the policy issues, but not at the big picture.

Senator AKAKA. Ms. Jones, in terms of proliferation threats from Soviet chemical and biological weapons facilities, we are concerned with dual-use materials and equipment and expertise being sent to suspected proliferating nations. To what extent can these concerns be met by formal nonproliferation activities and how can such activities be coordinated with multilateral agreements and treaties?

Ms. JONES. If we are talking about expertise going from weapons scientists in the Soviet Union possibly to other countries, I think that the programs that the Department of Energy has in place have been dealing with that, as well as the science center programs at the State Department. I think that a coordinating committee that we are talking about today in terms of this legislation could go a long way to bringing those programs together and possibly leverage the programs and we could be more efficient in terms of their delivery.

Senator AKAKA. Mr. Spector, there has been concern that too much of U.S. assistance was going to the nuclear weapons complex. Some have called for a new program dedicated to chemical weapon scientists and engineers. Do you believe that Federal programs have paid enough attention to chemical and biological weapon scientists?

Mr. SPECTOR. This was one of the occasions on which the programs worked extremely well together. There was a very specialized program during the previous administration, which I know is continuing, to try to address these biological weapons and chemical weapons scientists, institute by institute, and to take every job creation program we had—the Science Centers, DOD, DOE—and surge those programs in. Interagency teams were always used to make the visits implement the overall strategy.

I would say that the job here is to keep these programs going. They have received adequate funding, I think, for the present year, and in this area, you had excellent planning. It is really a model for what you want to see elsewhere. So I think this is a job we have done very well—and with great caution, so that we were not supporting improper activities at these locations.

I would also have to say I was very familiar with the danger of spending too much money in the United States, which I think was the early part of your question. I think most of the jobs creation programs now have ceilings on them limiting the proportion of funds that can be spent here, which though somewhat difficult to meet, are being met. As a result, the bulk of money is spent in the

former Soviet Union, and I think these are good guidelines for us to have.

Senator AKAKA. Ms. Holgate, in Sunday's *Washington Post,* Russian President Putin is quoted as saying categorically that he denied that terrorists could obtain nuclear weapons originating in Russia or the former Soviet Union. He also stated that in the unlikely event that the terrorists in Afghanistan have weapons of mass destruction, "they cannot be of Soviet or Russian origin. I am absolutely sure of that."

What do you think of President Putin's comments? Is he making a distinction between nuclear weapons and nuclear material, as some have suggested that nuclear material is missing from Russia?

Ms. HOLGATE. It is an awkward position to criticize a head of state currently visiting in the United States, but I will say I have no basis myself to be as certain as he is. I think he is not in a position to say anything other than the statements that he made. I do not think he could possibly be seen to be admitting that there are challenges. So I think he made the statements you would expect a President to make.

Based on what I know of the Russian inventory of their weapons, their materials, and the people that are involved with them, I cannot imagine how anyone can make a categorical statement that every gram of weapons-usable material is accounted for and every individual with knowledge is safe in their beds in Russia.

Senator AKAKA. Ms. Jones, Mr. Spector recommends that our Subcommittee use its oversight authority to request that the administration prepare three baseline studies to improve the planning and coordinating process. These studies would include an inventory of cross-program relationships, a year-by-year projection of the inventory of Russian nuclear material not in weapons, and a year-by-year projection of the employment impact of all U.S. nonproliferation programs. Would such an exercise improve planning and coordination, and how useful would this be?

Ms. JONES. Senator, I believe that it would provide a baseline for the administration to begin setting goals. I think the kinds of things that Mr. Spector has pointed out here could be used as part of the goals for this overarching strategy that we are talking about and the administration could then be measured on an annual basis in terms of how effective the programs are in meeting those goals. So I would sign on to the fact that these studies might be useful.

Senator AKAKA. Thank you.

Ms. Holgate, some U.S. nonproliferation goals have been hindered by Russia's strict secrecy standards. The GAO reported in May that U.S. officials had yet to gain access to 104 of 252 nuclear site buildings requiring improved security. While we can appreciate Russia's concerns, access is required to ensure that U.S. tax dollars are being spent appropriately. In your opinion, how do we resolve this conflict?

Ms. HOLGATE. This is a tough one that a lot of smart people have been working on for quite a while, Senator, and it is in some ways a measure of the success of the programs that we are encountering this challenge. The easy stuff has been, by and large, completed and we are getting into the more difficult areas where we are talking about the most sensitive facilities and the most sensitive mate-

rials in Russia. This has happened simultaneously with Putin's rise to power, which has given a boost to the security services within Russia, and at the very same time, our own national security labs have had their security posture raised in the wake of the Wen Ho Lee problems.

The challenge here, therefore, is that even when there can be reciprocal visits, it can be almost more difficult for Russian scientists to visit our facilities for cooperative research than it is for our scientists and implementors to visit Russian facilities. So it is kind of an upward ratcheting process on both sides simultaneously with the increased calls and increased political attention for access.

The first thing that is needed here is a clear statement from both Presidents—and Senator Nunn has called for this to come out of the summit, I do not know whether it will or not—that the mutual monitoring of each country's weapons, excess materials and weapons and stocks, could assure the world that these are taken care of and that will give the Russian system an ability to have access to some of the U.S. systems that will help make it possible for U.S. officials to have access to Russian systems.

So the first step is a presidential determination and enforcement through the bureaucracies that puts the onus on the security people to explain how to make transparency work as opposed to taking the easy way out about why it should not work.

Senator AKAKA. Mr. Spector, and I would like to have Ms. Jones also respond to this question, environmental and local public advocacy groups have gained influence in the former Soviet Union. What problems is this creating for American aid efforts and how can the United States resolve them?

Mr. SPECTOR. Well, I think this really varies program by program. In some cases, such as the material protection program, the environmental concerns are really nonexistent. There are no environmental impacts. This is just improving security.

In other settings where you are moving around radioactive materials or you are proposing to irradiate materials in reactors and so forth, local opposition is very significant and it really must be taken into account. We are observing the Russians now adopting a licensing and environmental impact statement process somewhat like our own. So one program I was involved in—we were hoping to have results in 2 years. It was for storing spent fuel. We gradually were advised, "well, that is not going to happen in 2 years." We are going to have to go by the book and make sure we have looked at all of these issues.

I think virtually every program that I was associated with is very environmentally attuned and has not caused serious consequences, and I think we can make the case when we need to to local Russian groups or through Russian government officials make the case. But it is a factor that has to be weighed and I think we should be sensitive to it. We do not want to have a steamroller here that creates a backlash.

Senator AKAKA. Ms. Jones.

Ms. JONES. Just one other point to add to what Mr. Spector had to say, and that is as these environmental groups are becoming more active, as he noted, it could delay certain activities that the United States might want to have happen, such as opening of a fa-

cility. And I think that as part of the strategic plan, and as part of the funding requirements, you have to look at the sequencing of these activities and whether or not the timing is going to be different now because of some of these environmental interactions. And again, let us make sure that we can spend the money effectively and efficiently, and if a schedule is going to be stretched out, then let us only put the money in that can be spent during the time frame.

Senator AKAKA. Ms. Holgate, Presidents Bush and Putin have agreed to significant reductions in nuclear weapons. One expert on nonproliferation issues, Kenneth Luongo, said that, "Despite the widespread belief that the United States is helping Russia to dismantle its nuclear weapons, it is not true. There is no dedicated program to assist Russia with wide dismantlement." Will you please share your thoughts on Mr. Luongo's statement?

Ms. HOLGATE. His statement is technically accurate, Mr. Chairman. The challenge comes from the confusion in how we talk about these dangerous pieces of equipment. It is true that there is no dedicated program to deal with the warhead dismantlement itself, and sometimes people use the word "nuclear weapon" to talk about the warhead. Sometimes they use it to talk about the entire delivery system, the missile, the silo, the submarine, or the bomber. And while there are massive programs underway in the Department of Defense aiming at the delivery systems, the Russians have so far refused offers of U.S. assistance to help actually dismantle the warhead.

At the Defense Department, when I led the Cooperative Threat Reduction Program there, we orchestrated a package to offer the Russians to help them dismantle nuclear warheads and they were so concerned at that time about what kind of information and sensitive knowledge might be gained by the United States because of our access requirements that they knew would follow from that money, that they refused to accept our assistance to do that. I would expect that if you ask current Department of Defense officials whether that offer would either be reiterated or whether it is still on the table, you would find that it is, but it is not part of a budget and it is not part of a program at this time.

Senator AKAKA. I have a question for all of you. Prior to that, Senator Carnahan has asked me to place a statement into the record, and so without objection, Senator Carnahan's statement will be placed in the record.

[The prepared statement of Senator Carnahan follows:]

PREPARED STATEMENT OF SENATOR CARNAHAN

Thank you, Mr. Chairman. This hearing is especially important today, as the United States examines claims by Osama bin Laden that he has acquired chemical, biological, and nuclear weapons. The implications are quite serious—whether or not this claim is true. the United States must continue improving its efforts to counter the spread of weapons of mass destruction.

Yesterday, the *Washington Post* reported that a chief Pakistani nuclear scientist had been holding talks with bin Laden's followers. Equally as disturbing are recent reports that nuclear materials may have been stolen from Russia in the last two years.

The intelligence community has said that it is unlikely that bin Laden's al Quaeda group obtained sufficient resources to construct a nuclear bomb. The prospect of international terrorists and rogue nations obtaining such weapons is daunting.

For the last decade, America's enemies have expressed a willingness to pay Soviet scientists for expertise to build weapons of mass destruction. The United States and its allies have tried to stop this so-called "brain drain," by providing financial incentives to former Soviet scientists to discourage them from cooperating with rogue elements.

In addition, the Defense Department's Nunn-Lugar Cooperative Threat Reduction program has worked with other governments to reduce former Soviet stockpiles. The results have been quite promising. Since 1997, Ukraine, Kazakhstan and Belarus have been free of nuclear weapons. And Russia continues to work with the United States to comply with the Strategic Arms Reduction Treaty (START). As a result, we have managed to cut nuclear stockpiles practically in half, with Russia maintaining only 8,000 active warheads to date. But much more remains to be done.

I am pleased that President Bush and Russian President Putin are conducting their arms control talks today. Both nations appear committed to work closely together to reduce their nuclear arsenals to START II requirements. This is an important step forward. As we progress on the diplomatic front, we must also improve our internal efforts to re-shape our government to reinforce counter-proliferation policies.

It is imperative that the United States remain proactive in suppressing the worldwide spread of nuclear, chemical, and biological weapons. This requires that we upgrade our intelligence capabilities, continue monitoring other nations' compliance with arms control treaties, provide adequate compensation to former Soviet weapons scientists, and continue accounting for the thousands of weapons produced by the Soviet Union.

As of now, our government attempts to accomplish these objectives through several Federal agencies, spread out among three Cabinet Departments. These organizations do great work. But I do not believe that they have reached their maximum potential.

Senator Hagel's proposal attempts to better coordinate America's WMD policies. I am hopeful that this hearing will shed light on this proposal, and provide additional recommendations for improving our counter-proliferation efforts.

I look forward to hearing our panelists' testimony today, and working with Senator Hagel on this important issue. Thank you Mr. Chairman.

Senator AKAKA. To all of you, yesterday, President Bush said, "Our highest priority is to keep terrorists from acquiring weapons of mass destruction and we will strengthen our efforts to cut off every possible source of biological, chemical, and nuclear weapons material and expertise." From this statement, what changes do you see with respect to U.S. nonproliferation programs in Russia? Ms. Jones.

Ms. JONES. I think that statement calls even more for the kind of committee we are talking about to coordinate the efforts. I think it also underlies the importance of the strategic plan so that we can look at whether or not we have the right mix of nonproliferation programs? Are we providing the funds to those pieces or those programs that could tackle the highest risk? So I think the statement really underscores the need for the strategic plan and this coordinating committee.

Senator AKAKA. Ms. Holgate.

Ms. HOLGATE. Mr. Senator, my fear is that the current efforts to deal with the specific challenge that the President referenced in that statement focus almost exclusively on the demand side of the problem and totally inadequately on the supply side. The current counterterrorism activities are trying to identify, locate, and root out terrorists where they currently are located, but it has no component that addresses how you protect the material that those terrorists might be trying to get access to.

As Dr. Spector mentioned, the $40 billion emergency appropriation to address counterterror activities in the wake of September 11 contained absolutely no money to increase or accelerate these

programs of cooperation with Russia designed specifically to get at the supply of the materials and the weapons that so concern us all.

Senator AKAKA. Mr. Spector.

Mr. SPECTOR. Well, I think that is right. I think there is a disconnect between the President's statement and the actual activities of the administration. We saw it in the way they handled the budget this year, where these programs tended to be trimmed rather than boosted up. We are seeing it now in this sort of ongoing review that never seems to end, so that some of these programs are just mired in uncertainty. Thus, I think there is, as I said, there is a gap, indeed a gulf, between what the President's aspirations are and what his administration is actually doing at this time. I think that is very unfortunate.

Senator AKAKA. Ms. Jones, in your testimony, you note that the Congress has authorized in excess of $5.5 billion for U.S. nonproliferation programs to Russia and the other Newly Independent States. How much of this money has been spent in Russia and the Newly Independent States? Also, would you share some success stories regarding the nonproliferation programs?

Ms. JONES. Senator, I am not sure that I would have the numbers for you. I can certainly try to provide them for the record in terms of how much has been spent in Russia. For two of the programs that we have looked at, the Nuclear Cities Initiative and the Initiatives for Proliferation Prevention, as Dr. Spector mentioned, a great portion of the funding was initially spent at the weapons complex here in the United States. That has been changing and it is evolving so that more money will be going to Russia. But for the whole $5 billion, I am not sure that I have that breakdown for you.

Senator AKAKA. Ms. Holgate, are there routine joint U.S.-Russian strategic planning meetings, and if so, how successful are these meetings?

Ms. HOLGATE. At the current time, I am aware of no such meetings. In the history of the U.S.-Russian cooperation in this area, I would say that the bi-national commission established by Vice President Gore and Prime Minister Chernomyrdin offered one of the few venues in which cabinet-level colleagues in the United States and Russia would interact every 6 months, and the preparation for that interaction, the attention that was brought from the Vice President and his office to delivering on commitments made at the previous 6-month meeting, really did create a mechanism for senior-level interactions, whether it is Defense, Energy, State Department, or other departments involved. That interaction provided—probably not what it was quite planned to do—but in this nonproliferation cooperation field, it did provide a good mechanism to be sure that senior people knew what was going on and to give impetus to bureaucracies that might get mired down in working-level concerns.

Senator AKAKA. Mr. Spector, you recommend that Congress should require that the President report on the status of its efforts to accelerate the highly-enriched uranium purchase agreement. Do you feel that the current focus on proliferation risks of nuclear material from Russia will accelerate the administration's review of the agreement?

Mr. SPECTOR. I wish I could say yes. But, I must say that that has not been my impression. My impression is that this review is a slow but steady effort, and it seems to be dragging on. When I interviewed the National Security Council official I mentioned earlier, I asked him in many different ways what was being done in this sphere in light of September 11. And in many different ways, he deflected me, in effect to say, we are still reviewing these programs. This high-enriched uranium program is one of them. But nothing was said with a sense of urgency and no statement was made suggesting that the administration was moving the process aggressively because it was so concerned about these matters. It was much the opposite, a sort of treadmill. They are just going to go about their business as usual.

Senator AKAKA. Ms. Jones, the Department of Defense is responsible for assisting former Soviet States with destroying their nuclear and chemical weapons stockpiles. Were biological agents stockpiled? If so, are there plans to destroy these stockpiles, as well? Which agency should take the lead for U.S. assistance?

Ms. JONES. I am sorry, Senator, I do not have the information to be able to respond to that question.

Senator AKAKA. Ms. Holgate.

Ms. HOLGATE. I can shed a little bit of light on that question, sir. There was very minimal stockpiling of actual delivery-scale biological agents in Russia in the Soviet time frame. They mainly depended on having massive production capability to allow for surge production in the case of an order given from Moscow. Tons of anthrax could be created, just as an example, within months of a direct order if a need was identified. So there were very little actual stocks in place.

Many of those stocks were destroyed in the wake of President Gorbachev's announcement that, in fact, the Soviet Union had violated the Biological Weapons Convention and they were coming clean in the late 1980's and the Soviets then destroyed many of those stocks. Some of the way that they destroyed them was to bury them on the island called Resurrection Island in the Aral Sea in the territory of what is now Uzbekistan, and there is a project underway through the Department of Defense under the Cooperative Threat Reduction Program to go back and make sure that those stocks were actually permanently destroyed. There was concern that they were not fully destroyed.

And so that is one of the few examples where stocks have been addressed. Mostly, the DOD activities have been focusing on eliminating the massive production capabilities.

Senator AKAKA. Can you answer the question about which agency should take the lead for U.S. assistance?

Ms. HOLGATE. I would say the Department of Defense is already engaged in this area, has good relationships, and has the ability to get the funding when they are ready for it.

Senator AKAKA. Thank you.

Ms. Holgate, cooperative threat reduction efforts have tended to experience mission creep in which funds are used for other activities, such as infrastructure and support costs. How have these tendencies affected the efficiency of these programs and could a coordinating body make these programs more efficient?

Ms. HOLGATE. Sir, I certainly think a coordinating body can make the programs more efficient, but I would suggest that the inclusion of U.S. Government funds to support some of the infrastructure and supporting activities has actually increased the efficiency of these programs. Rather than representing mission creep, they represent a recognition of the total mission.

The reason that many of these activities have been undertaken in Russia has to do with resource limitations within Russia, and what these program managers were finding was that they might have funding to do a very narrow slice, in some ways the most exciting slice of the project, but it was not moving forward because they had inability to provide funding for the support activities that would actually make the achievement of the nonproliferation goals possible. And so they began to incorporate into budget requests the supporting requirements to achieve the goals, and that has made the achievement of those goals much more efficient in the time since that has been done.

Senator AKAKA. Ms. Jones, the brain drain prevention programs within the Departments of State, Energy, and Defense have enabled former USSR weapons scientists to remain in their states without having to sell their weapons-related knowledge. To what extent can these programs be combined with weapons and material storage and disposal activities? Could former Soviet chemical weapons scientists be employed in the construction of Russian chemical weapons destruction facilities?

Ms. JONES. I think that is, again, where a committee that would be coordinating the various activities of these programs could look for those kinds of synergies. Are there skills and abilities that weapons scientists have, whether they specialized in biological weapons or nuclear weapons, that could be used for some other program?

Just as a simple example, DOE also runs a program to improve the safety of Soviet-designed reactors. When we looked at that program, there was a need for fire doors, metal doors rather than wooden doors in these particular facilities. Let us look at the brain drain programs. Are there people already in Russia that could help design and build those doors, again, looking for leveraging with the different programs? So I think there is room for that, Senator.

Senator AKAKA. I have a final question to all of you. As I said earlier, we will reschedule the administration's testimony after the Bush-Putin summit. As experts in this field, are there questions you would ask of our administration witnesses when they appear before this Subcommittee in a couple of weeks? That is my question to you. If you want to reserve that, please give us the questions and that might help us have better insight into some questions to them.

Again, I want to thank all of you for being here, for your responses, for your testimonies, and I want to thank you, Ms. Jones, Ms. Holgate, and Dr. Spector, for being with us today.

I believe that the Russian government wishes to be a responsible steward of its weapons of mass destruction. I also believe that President Bush recognizes the importance of threat reduction programs. However, I share our witnesses' concerns that the administration, even with new evidence of terrorists' interests in acquiring

and using weapons of mass destruction, has not acted to accelerate efforts to improve security over critical materials and expertise in the former Soviet States.

Indeed, coordination, management, and attention is needed from senior levels in the administration. Unless this attention is concentrated exclusively on nonproliferation and threat reduction objectives, the relationships between U.S. and Russian counterparts will continue to weaken and opportunities for cooperation in new areas will continue to be lost.

Ms. Holgate recommends the appointment of a Deputy National Security Advisor devoted to addressing these programs. This is an interesting concept and I look forward to the administration's comments on your proposal, Ms. Holgate.

The record will remain open for questions from Members of the Subcommittee for 1 week and we ask that the witnesses respond to any questions in a timely manner. I remind you again, if you have any questions that we can ask to the administration, we would certainly want to receive them.

Again, I thank all of you very much and the hearing is adjourned.

[Whereupon, at 3:57 p.m., the Subcommittee was adjourned.]

COMBATING PROLIFERATION OF WEAPONS OF MASS DESTRUCTION (WMD) WITH NONPROLIFERATION PROGRAMS: NONPROLIFERATION ASSISTANCE COORDINATION ACT OF 2001

THURSDAY, NOVEMBER 29, 2001

U.S. SENATE,
INTERNATIONAL SECURITY, PROLIFERATION,
AND FEDERAL SERVICES SUBCOMMITTEE,
OF THE COMMITTEE ON GOVERNMENTAL AFFAIRS,
Washington, DC.

The Subcommittee met, pursuant to notice, at 9:32 a.m., in room SD–342, Dirksen Senate Office Building, Hon. Daniel K. Akaka, Chairman of the Subcommittee, presiding.

Present: Senators Akaka, Cleland, Cochran, and Carnahan.

OPENING STATEMENT OF SENATOR AKAKA

Senator AKAKA. The Subcommittee will come to order.

I want to thank our witnesses from the administration for being here with us today. We are joined by Vann Van Diepen, Deputy Assistant Secretary of State for Nonproliferation; Marshall Billingslea, Deputy Assistant Secretary of Defense for Negotiations; Kenneth Baker, Principal Assistant Deputy Administrator for Defense Nuclear Nonproliferation from the Department of Energy; and Matthew Borman, Deputy Assistant Secretary for Export Administration.

I would like to reiterate that our Subcommittee rules require all testimony to be submitted 48 hours before the hearing. The Departments represented today were invited to testify at this hearing more than 2 weeks ago. In spite of this and repeated reminders as of yesterday afternoon, we had received only one statement. This was as of yesterday.

I would like to apologize to the Members of the Subcommittee for the administration's inability to comply with the Subcommittee rules.

This morning's hearing is a continuation of one we held on Wednesday, November 14. The reason I called these hearings is because I have been deeply concerned about potential proliferation of chemical, biological, and nuclear weapons from the former Soviet Union. Since September 11, I think this is an issue that we have to focus on with even greater intensity.

President Bush came into office declaring that he would ask, "the Congress to increase substantially our assistance to dismantle as

many of Russia's weapons as possible as quickly as possible." He began his administration announcing a review of Russian nonproliferation programs. This was a welcome first step.

One of the reasons for this hearing is to determine how we can focus our aid efforts more effectively. Unfortunately, the administration cut the budgets for these programs before completing its review. This approach does not seem to me to make sense, particularly in light of the events of September 11 and the subsequent anthrax attacks.

I hope today the administration will be able to brief us on the results of its review and indicate to us what its intentions are concerning funding for the future of these vital programs. If it still proposes to advocate cutting these programs, the administration needs to justify why these cuts increase our security.

We have lost valuable time in figuring how to recork the bottles containing dangerous chemical, biological, and nuclear weapons. I hope the administration shares my sense of urgency, and if it does not, I would like to know why not.

After the first day of the Bush-Putin summit, President Bush remarked that, "Our highest priority is to keep terrorists from acquiring weapons of mass destruction . . . we will strengthen our efforts to cut off every possible source of biological, chemical, and nuclear weapons material and expertise."

Today's witnesses will discuss how the administration proposes to carry out that pledge. I hope we may learn how the various programs in the different agencies involved in nonproliferation and threat reduction work together, how these agencies include private sector and nongovernmental efforts in nonproliferation activities. We must make certain that government and non-government spending on nonproliferation programs complement each other so that resources are used effectively and efficiently.

Let me again thank our witnesses again for being with us today. I look forward to your testimony on these important and timely questions.

At this time, I would like to call on my colleague for his statement.

OPENING STATEMENT OF SENATOR CLELAND

Senator CLELAND. Thank you very much, Mr. Chairman.

It has been clear to me for some time that nonproliferation is an absolutely critical element to our national security. I believe that we must expand and enhance our current nonproliferation programs to eliminate as quickly as possible the threat posed by inadequately controlled weapons of mass destruction in the former Soviet Union.

A bipartisan task force led by Howard Baker and Lloyd Cutler recently concluded that the funding for these programs should be increased to four times the current level. As I stated at our previous hearing on this topic, the Nonproliferation Assistance Coordination Act of 2001 is a useful step to take in conjunction with the increased funding recommended by the Baker-Cutler task force.

In their recent book, "Plague Wars"—and I have a copy of it here—it is a fascinating book. Investigative journalist Tom Mangold and Jeff Goldberg provide a frightening glimpse of the biologi-

cal weapons research that was conducted by the Soviet Union. They portray a bureaucracy run amuck with layers of secrecy that prevented effective oversight by any responsible agency.

Furthermore, they cite Defense Intelligence Agency and CIA reports that as late as 3 years ago, we could not preclude the potential of ongoing biological warfare research in Russia. Some reports even suggest the Russian program has produced genetically engineered anthrax and other pathogens resistant to existing antibiotics and vaccines.

The proliferation problem is two-dimensional. We must ensure that any existing stocks of biological agents are properly secured and destroyed as soon as possible. We must prevent Russian scientists with expertise in such weapons from selling their skills to rogue states or terrorists.

In the face of this clear and present danger, we have disturbing evidence that our own capacity to respond to bioterrorist attacks is inadequate. Besides the difficulties in coordination revealed by the recent anthrax attacks, Department of Defense exercises over the past several years have highlighted problems in our preparedness. Even with this overwhelming evidence that more must be done quickly, my efforts to speed funding to improve the facilities at the CDC have met with opposition.

The CDC is the arm of our government responsible for controlling outbreaks of disease. The almost accidental involvement of the CDC in the first anthrax mailing in Florida is all that stood between this country and a far higher casualty count from these anthrax attacks.

The current facilities at the CDC that house these critical links in our ability to detect and respond to a biological attack are painfully and woefully inadequate. In the middle of the anthrax crisis, a broken cable line interrupting the CDC's testing of samples for 12 hours was found. With a finite window of opportunity to test, diagnose, and treat victims of a possible biological attack, every minute of testing counts. To lose half-a-day is an eternity for scientists and technicians. Yet, it has happened, and it will happen again if Congress does not act to upgrade these facilities quickly.

That is why I introduced the Public Health Emergencies Accountability Act earlier this month. This act puts in place a procedure that allows clear assignment of responsibility in cases where the public health is threatened. It further mandates the exchange of information between institutions primarily responsible for public health, such as the CDC, and those primarily responsible for countering criminal and terrorist activities.

We must resource the CDC to carry out its critical function. The CDC currently has a 10-year construction plan to make these necessary upgrades, but since September 11, it has been painfully obvious that we do not have 10 years to get the CDC ready for what we now know is a very possible bioterrorist attack.

We need a 5-year plan at the very least. That means Congress needs to approve the $250 million in funding this year. The Senate has approved the full $250 million, and I helped to get $100 million here, added on in the Senate, over the $150 million the President proposed, but I am getting very concerned that the Members of the House do not want to act on this legislation.

The Members of the House who are participating in the Labor/HHS/Appropriations Conference Committee are not willing to fund the CDC above the $175 million for construction which passed the House this fall. I do not know what else has to happen in this country to demonstrate to the Members of the House that this construction is not only important, but mandatory, to upgrade the CDC as soon as possible. And I call on them today to match the Senate's mark of $250 million in construction aid to the CDC.

My friend, the former U.S. Senator Sam Nunn of Georgia, continues his tireless advocacy for the nonproliferation initiatives begun under his sponsorship 10 years ago. He has recently provided testimony before the Senate Armed Services Committee upon which I sit with a series of recommendations for enhancing our counter-proliferation programs as well as improving our ability to respond to a bioterrorist attack.

These recommendations include increase funding for nonproliferation programs, including a program to actively engage the scientists of the Russian and former Soviet Union programs in our own defensive research. Such a program could enhance our ability to produce and stockpile needed vaccines while preventing the loss of dangerous skills to other parties.

I am convinced that our national security depends upon the effective coordination and resourcing of our nonproliferation programs. I support both the Nonproliferation Assistance Coordination Act of 2001 of which I am a co-sponsor and the creation of a Deputy National Security Advisor committed exclusively to reducing the threats we face from weapons of mass destruction.

We can no longer afford to under-resource nonproliferation. Many distinguished of both parties have cited the need for increasing nonproliferation funding. Our intelligence community continues to highlight the threat of improperly controlled weapons falling into the wrong hands. The time to act is now. I encourage the administration and my colleagues in Congress to support the full resourcing of required nonproliferation programs and our public health infrastructure. There is no higher national security priority.

Thank you very much, Mr. Chairman.

Senator AKAKA. Thank you very much for your statement, Senator Cleland.

Now I would like to ask for the statements of our witnesses. Mr. Van Diepen, you may give your statement at this time.

All the witnesses will have their full written statements entered into the record.

You may begin, Mr. Van Diepen.

TESTIMONY OF VANN H. VAN DIEPEN,[1] DEPUTY ASSISTANT SECRETARY, BUREAU OF NONPROLIFERATION, U.S. DEPARTMENT OF STATE

Mr. VAN DIEPEN. Thank you, Mr. Chairman, Senator.

I am very pleased to be here to discuss nonproliferation assistance programs and coordination. The proliferation of nuclear, chemical, and biological weapons and the missiles capable of delivering them is a central security threat facing the United States,

[1] The prepared statement of Mr. Van Diepen appears in the Appendix on page 268.

our allies, and our friends. Where we once faced thousands of nuclear weapons under centralized command of a rival great power, September 11 and the biological attacks since have shown how much more diverse and less predictable the threat has become.

While we must be prepared to address the many avenues from which rogue countries and terrorists and their supporters may choose when seeking to advance their attack capabilities, we must also, as both of you have noted in your statements, address the Soviet legacy and its proliferation implications.

The State Department has direct responsibility for several nonproliferation programs directed at or relevant to the countries of the former Soviet Union. In addition, the Department provides foreign policy guidance and diplomatic support for the programs of other agencies.

When the Soviet Union collapsed, the new countries lacked the laws, expertise, and technical resources to implement effective export controls. State's Export Control Assistance Program was created to help establish or strengthen export controls in the new independent states of the former Soviet Union and in Eastern Europe. As funding increased and the program matured, the scope has expanded to include key countries through which weapons of mass destruction, materials, and technologies are likely to transit while continuing to support the development of more robust systems in potential supplier states. This program has grown from less than $5 million per year in the mid-1990's to the President's request for $39 million for this fiscal year.

State Department chairs an interagency working group on export control assistance which directs and coordinates the work of the various U.S. agencies that implement these programs in over 25 countries worldwide.

Another concern was the threat posed by the thousands of Soviet weapon scientists who no longer would be supported after the Soviet Union's demise, and this is something that Senator Cleland made clear in his statement.

The International Science and Technology Centers began their work to address this problem in Moscow in 1994 and in Kiev in 1995. As the program has matured, the focus has shifted from simply stemming brain drain to also redirecting scientists towards sustainable careers in peaceful, transparent, civilian endeavors in their home countries, be these commercial endeavors or scientific endeavors.

The program now includes nations of particular interest to the U.S. war in Afghanistan: Uzbekistan, Kazakhstan, the Kyrgyz Republic, Armenia, and Georgia. Other key regional states, Tajikistan, Azerbaijan, and Moldova, are in the process of joining one of the science centers.

For the past 4 years, the State Department has been an active participant in the U.S. effort to redirect former Soviet biological weapons scientists. The program provides incentives for scientists to refrain from cooperating with terrorist groups or states harboring them and focuses their expertise on critical public health needs such as HIV/AIDS, multi-drug resistant tuberculosis, and a number of plant and animal diseases. The solid collaborative research basis that we have developed through this effort will be a

springboard for expanded work that will respond to the Bush-Putin initiative to counter bioterrorism.

The Nonproliferation and Disarmament Fund, created to permit a rapid response to unanticipated requirements or opportunities, is a flexible responsive nonproliferation tool. Of particular relevance to the request of this Subcommittee is the NDF's work on Tracker, a stand-alone software package that permits a country to use modern computer tools to track export licensing and enforcement matters from a license application through the process, among central government agencies, and with the export control personnel at ports and border posts. This system is now deployed in eight countries with further applications in process.

State Department also plays a key role in efforts concerning plutonium disposition, eliminating Russian plutonium production reactors, support of the International Atomic Energy Agency, and safeguarding nuclear materials worldwide and coordinating efforts to prevent nuclear smuggling.

Another priority is making sure that our friends and allies shoulder their fair share of the burden. It is important to build a community committed to paying more than lip service, and we are not shy about letting our allies know when we think they should be providing more resources.

On your question concerning how these programs are funded and how they are coordinated, all U.S. policy implementation and oversight of nonproliferation assistance to the states of the former Soviet Union is coordinated at senior levels by the Proliferation Strategy Policy Coordinating Committee, or PCC, chaired by a National Security Council senior director with Assistant Secretary-level representatives from the Departments of State, Defense, Energy, and other concerned agencies.

This committee works to ensure that individual assistance programs are coordinated within and across agencies and that they serve nonproliferation threat reduction priorities effectively. The PCC has also been charged to develop the strategic plan to guide near- and farther-term nonproliferation and threat reduction cooperation with Russia and Eurasia.

In addition, there are standing working groups to ensure close day-to-day coordination among programs so that the programs complement, not compete, with each other in addressing U.S. nonproliferation objectives. The work of these groups feed directly into the PCC. This structure works well and substantially addresses what is proposed in the Nonproliferation Assistance Coordination Act of 2001.

As noted in several of the statements from the witnesses in your November 14 hearing, despite the number and complexity of nonproliferation assistance programs, effective implementation and senior-level coordination already exists.

As you know, President Bush directed that a rigorous review be conducted of all U.S. nonproliferation and threat reduction assistance to Russia and the countries of the former Soviet Union. That review is now in the final stages.

Without prejudicing the White House's final decision, we expect that the State Department's nonproliferation assistance programs

will continue to play a critical role in combating the proliferation of weapons of mass destruction.

In the post-September 11 world, we believe that stemming the flow of WMD materials, technologies, and expertise worldwide has to be among our highest national priorities and our programs must address that challenge.

The private sector and nongovernmental organizations play several important roles in this endeavor. In our efforts to redirect former weapons scientists to peaceful civilian scientific and commercial research, U.S. industry is helping scientists and their institutes make a permanent transition to peaceful pursuits.

The Science and Technology Centers' industry partner program, for example, now attracts over $20 million annually in corporate funding.

In export controls, U.S. companies have a great deal of expertise in implementing export control regulations. They know the ins and outs of licensing systems, and they have a great deal of knowledge to share with countries and foreign companies that are new to this world. U.S. companies play an important role in our effort to inform and educate their foreign counterparts.

During the past year, a new opportunity for public-private nonproliferation partnership emerged with the establishment of Ted Turner's Nuclear Threat Initiative. Its management and board of directors, which includes several members of Congress, have consulted actively with the administration on their program and have made a commitment to coordinate their activities with those of the government.

I think it is clear that the Bush Administration fully shares the objectives that led Senator Hagel and the other sponsors of S. 673 to offer this legislation. I believe a close examination of how we are coordinating policy and implementation of these programs today will provide clear evidence that we are already doing what Congress would have us do in this regard. S. 673 is not needed, as the Bush Administration has already acted and has already taken the kind of steps this legislation calls for.

We look forward to working with you and other committees and to keeping you fully informed on how we conduct these programs of U.S. nonproliferation assistance to the states of the former Soviet Union, on how we work with other concerned governments to increase their contribution and ensure that our respective assistance is complementary and not duplicative, and on how we seek to work with private-sector donors of assistance in these areas.

Thank you, Mr. Chairman.

Senator AKAKA. Thank you very much, Mr. Van Diepen, for your statement.

Mr. Billingslea, you may give your statement now.

TESTIMONY OF MARSHALL S. BILLINGSLEA,[1] ACTING DEPUTY ASSISTANT SECRETARY OF DEFENSE FOR NEGOTIATION POLICY, U.S. DEPARTMENT OF DEFENSE

Mr. BILLINGSLEA. Mr. Chairman, I am pleased to appear before your Subcommittee this morning to discuss nonproliferation assist-

[1] The prepared statement of Mr. Billingslea appears in the Appendix on page 279.

ance programs to the republics of the former Soviet Union and the need for careful interagency coordination of these projects.

A key objective of this hearing, as I understand it, is to obtain administration views on S. 673. So I will address this legislation first and then will turn to a brief discussion of the Department of Defense's Cooperative Threat Reduction Program and our views on proliferation issues in general. And with your permission, I will simply summarize and highlight my testimony and submit the remainder for the record.

The Department of Defense has reviewed S. 673, legislation that would establish an interagency committee within the Executive Branch to review and coordinate U.S. proliferation prevention efforts. We agree that interagency coordination of nonproliferation programs is crucial, but the Department of Defense believes that the Bush Administration is already doing precisely that.

We believe that a legally mandated interagency committee could complicate the existing interagency coordinating process that is currently managed by the National Security Council. We must be careful not to preclude delegation of authority below the Assistant Secretary level since this would be inconsistent with the way the Executive Branch is currently doing business. A great deal of coordination and policy work is done at successive levels beginning with action officers proceeding through office directors and on to Deputy Assistant Secretaries of Defense and up.

The strategy that the Executive Branch is pursuing is straightforward. First and foremost, we seek to destroy weapons of mass destruction and their means of delivery, if possible, at their existing location. If it is not possible to destroy such weapons, as is sometimes the case with pathogen stocks that might be needed for disease research, then we will seek to consolidate and secure them. Further, we seek to prevent weapons of mass destruction materials and knowledge from leaving the territory of the former Soviet Union.

The Department of Defense has worked closely with the NSC and other Departments such as the Departments of State, Energy, and Commerce to ensure effective execution of these programs. We also work closely with other agencies to ensure that there is no duplication of effort.

Finally, we must take great care to ensure that U.S. assistance to the former Soviet republics cannot be diverted, cannot contribute to offensive weapons programs or proliferation, or subsidize or otherwise offset other military activities.

A good example of this coordination that is ongoing is found in the Department of Defense's efforts to prevent the proliferation of biological weapons. The Department of Defense is part of an interagency group that reviews all biological weapons proliferation prevention projects that are proposed through the Department of State's International Science and Technology Center. Based on those reviews, approved projects are matched to various departments' areas of expertise and authority.

For our part, the Department of Defense is most concerned with the threat that is posed by dangerous pathogens, particularly the infectious diseases such as smallpox. Over the years, we have found that Russian scientists frequently have unique valuable in-

sights into the pathogenesis of various biological agents. The Department of Defense engages in targeted biodefense research projects with Russia in these areas, as agreed to in the interagency process. These projects are designed to cooperatively exploit knowledge to enhance U.S. detection of, protection from, and treatment of these potentially deadly substances. I will return to the matter of biological weapons in a moment, but I use it here to illustrate that we do have a good process in place and that that process is working well.

Let me turn now to an overview of the Cooperative Threat Reduction program and the areas of activity in the former Soviet Union. We believe that the CTR program is an important part of our national security strategy. We are privileged to have enjoyed sustained congressional support and robust funding since the inception of this program.

The President's fiscal year 2002 budget request included $403 million for the DOD CTR program, $403 million, which was virtually the same amount budgeted by the previous administration. We appreciate the House Appropriations Committee's full funding of our request and are hopeful that the Senate Appropriations Committee will be equally supportive.

The funds that we have asked for will be used in a variety of program areas that I can summarize. In the nuclear weapons and delivery systems area, we maintain a Strategic Offensive Arms Elimination program that is reducing Russia's strategic offensive arms by destroying strategic WMD delivery systems. I can give you a breakout of the numbers of nuclear submarines, launchers for submarine launch ballistic missiles and SLBMs. It is in my testimony.

We also have a Weapons Transportation Security program with Russia that assists in the movement and consolidation of nuclear weapons from Russia's Ministry of Defense operational sites to Russia's Ministry of Atomic Energy nuclear weapons dismantlement facilities, and we are providing assistance to the Russian MOD to bolster their ability to respond to and to mitigate the effects of a nuclear weapons accident or an attempted theft.

For instance, in fiscal year 2001, we funded 53 train shipments designed to carry nuclear weapons to dismantlement sites. We funded the maintenance of 79 railcars and contracted for special emergency response vehicles and equipment to be given to the MOD.

We continue to be concerned, Mr. Chairman, with the potential for theft or diversion from Russia of nuclear weapons. Therefore, we have developed the Nuclear Weapons Storage Security program to make physical security upgrades to key sites, to install inventory control systems and practices to account for these weapons in the custody of the Russian Ministry of Defense.

During fiscal year 2001, we completed testing and we finalized selection on an approved suite of sensors and equipment to be installed at Russian weapon storage sites. We shipped six sets of Quick Fix fences and sensors to various sites in northern Russia. We funded and verified installation of such kinds of equipment at numerous other sites, contracted for additional guard equipment, training, and facilities, and delivered certified computers to help in inventory management. We think that the installation of physical

security measures, preferably those that can be provided without extensive training of guard forces, is a good interim solution pending the eventual dismantlement of nuclear weapons stocks, and we may look to do more of this kind of work.

Because time is short, I will turn briefly to Ukraine and a few other countries. I am pleased to report that our Strategic Nuclear Arms Elimination program in Ukraine has eliminated all of the START-accountable nuclear delivery system launchers, and we are dismantling other WMD delivery systems and infrastructure.

Similarly, we have completely eliminated all weapons of mass destruction from Kazakhstan.

On the biological weapons front, we believe that it is important to continue cooperation with the biological weapons designers and engineers in the former Soviet Union. This practice is enabling us to identify many research institutes that house dangerous pathogens and production-capable facilities.

The Biological Weapons Proliferation Prevention program of the CTR program is consolidating and securing dangerous pathogen collections. We are dismantling former Soviet BW research and production facilities, and as I described earlier, we are targeting research to enhance U.S. biodefense capabilities against dangerous pathogens, some of the work we actually are doing with the CDC and other research institutes.

In our view, the Biological Weapons Proliferation Prevention aspect of the CTR program is of exceptional and increasing importance. We also attach great importance to the comparable programs maintained by other agencies such as the Department of State's ISTC program and the Department of Energy's programs.

We have two objectives for the BWPP, the consolidation and elimination of pathogenic stocks, to prevent them from falling into the wrong hands, and collaborative research and development with foreign scientists who can assist the United States in better protecting the American people and the global community from these diseases. In this vein, the Department of Defense believes that the Joint Statement on Bioterrorism reached between President Bush and Russian President Putin creates an important opportunity for closer collaboration.

On the chemical weapons front, we also are concerned with the threat of chemical weapons proliferation, and we are troubled by inadequate security and safety measures currently being maintained on stocks of chemical agent and we have a program that is addressing this concern.

In Uzbekistan, we are dismantling the former Soviet chemical weapons research, development, and testing facilities, and there are numerous other activities that I could get in, time permitting, but I have already greatly exceeded my time, Mr. Chairman.

So let me just summarize by saying that we believe the CTR program has played a crucial role in the Department of Defense's efforts and the U.S. Government's larger efforts to prevent proliferation. Belarus, Kazakhstan, and Ukraine have all acceded to the Nuclear Nonproliferation Treaty, and have rid themselves of their nuclear capability. The DOD portion of the CTR program was essential and instrumental in this respect.

The Congress, the Executive Branch, and the American people can and should be proud of the Cooperative Threat Program's accomplishments to date, and I appreciate the opportunity to testify before this committee.

Senator AKAKA. Thank you very much, Mr. Billingslea, for your statement.

Mr. Baker, you may give your statement at this time.

TESTIMONY OF KENNETH E. BAKER,[1] PRINCIPAL ASSISTANT DEPUTY ADMINISTRATOR FOR DEFENSE NUCLEAR NONPROLIFERATION, NATIONAL NUCLEAR SECURITY ADMINISTRATION

Mr. BAKER. Mr. Chairman and Members of the Subcommittee, thank you for the opportunity to be here today to talk about the Department of Energy's nuclear nonproliferation programs.

With your permission, I will make a few opening comments and submit a longer one for the record.

Senator AKAKA. We would appreciate that.

Mr. BAKER. I want to thank the Subcommittee and, indeed, all the Members of the Senate for their strong interest and support of the U.S. nonproliferation programs. Congress' demonstrated commitment to these programs has sent a strong signal that it knows the mission is critical and enduring and has helped the National Nuclear Security Administration to plan effectively and to work even harder after September 11.

In the aftermath of September 11, the attacks against the United States, the work of the National Nuclear Security Administration within the Department of Energy has taken on higher visibility and greater importance. Almost a year ago, in January 2001, the bipartisan report by Baker-Cutler mentioned by Senator Cleland concluded the most urgent unmet national security threat to the United States today. This is the danger of weapons of mass destruction and weapons-usable materials falling in the hands of terrorists or hostile states and used against American citizens at home.

All of us have seen the reports that Osama bin Laden has attempted to acquire weapons of mass destruction, and that he has called the attainment of such weapons a religious duty. In a nutshell, that face of the threat is confronting us today. Let me assure you, all of the people in the National Nuclear Security Administration are committed to supporting with all available resources, this country's work, and accelerate our efforts to eliminate this threat from the face of the earth.

If I may make a few general comments on the draft legislation and more later that you are considering. The NNSA wants to ensure to you that the interagency coordination is as good as it can be in programs, and they are effective against the nonproliferation agenda. We have already been successful in many of these areas, and I will discuss a few of these in my following testimony.

Even before September 11, reducing the potential for diversion of Russian nuclear warheads and materials has been a critical priority for the United States. It is essential that such warheads and

[1] The prepared statement of Mr. Baker appears in the Appendix on page 290.

materials be kept out of the hands of the so-called rogue states as well as terrorist organizations.

The National Nuclear Security Administration is working with Russia to attack this problem on many fronts. For example, to improve security at sites that have weapons-usable materials, improve Russia's export control systems, and train Russian experts to take greater responsibility to ensuring security and protecting weapons of mass destruction materials.

The United States has already completed rapid security upgrades for thousands of Russian Navy warheads, and security of over 220 metric tons of Russian fissile material has been secured, enough to make roughly 20,000 nuclear devices.

Last year, Russia and the United States agreed to dispose of 68 metric tons of surplus weapons-grade plutonium, 34 metric tons in each country. The administration is currently examining alternatives to reduce the cost of this program and to make it more sustainable to Russia. A final decision is expected in about 2 months.

And under the HEU purchase agreement, the United States has removed more than 130 metric tons of HEU from Russia's military programs. The United States is working with Russia to improve its ability to detect and interdict nuclear materials at border checkpoints and at airports. Some borders are thousands of miles long and pose difficult challenges, but we are tackling that problem.

The NNSA is working intensively to reduce the risk of Russia's highly trained nuclear scientists and engineers already mentioned, also, the ones that are unemployed or under-employed and would be tempted to sell their expertise to the highest bidder. The United States is taking steps to help Russia transform its closed nuclear cities by developing civilian employment opportunities for displaced workers. These objectives are pursued principally through what we call the National Nuclear Security Administration's Russia Transition Assistance Efforts, which encompass the initiatives for proliferation prevention in a program called Nuclear Cities Initiatives.

To give you a couple examples of what the initiatives for proliferation prevention system has done, we work very closely with State Department to make sure that we secure jobs for Russians in basic technology work. Currently, programs in particular on the IPP have been effectively demonstrated. We have private and public partnerships in pursuing the nonproliferation objectives. IPP has developed partnerships with former weapons scientists and technicians in over 160 institutions in the former Soviet Union.

While IPP had only $24.5 million to invest in projects during the past year, it also has required commercial partners at least to match IPP's investment projects. These matching funds requirement assisted IPP and Russian partners in identification of technologies that offer the greatest commercial promise by requiring U.S. industry to make financial commitments to development of technology at the project's initiation.

The NNSA believes that the formula that we have developed for converting former weapons scientists to commercial enterprises have been successful.

A few examples. Several energy-related technologies have been commercialized, including what we call a borehole radar intended

to enhance coal and oil recovery. This technology could result in revenues exceeding $2 billion in the next 10 years.

We are seeing the successful commercialization of a wheelchair seat cushion that will prevent pressure ulcers, responsible for causing tens of thousands of deaths in the United States every year, saving Medicare $3 billion in annual costs.

The Nuclear Cities Initiative's first major commercial effort facilitates the production of kidney dialysis equipment by a joint venture established between Fresenius Medical Care Center of Lexington, Massachusetts, and the Avangard nuclear weapons assembly plant in Sarov, Russia. This has been a very successful program that will put a thousand people to work.

A year ago, virtually no westerners has ever been allowed to set foot into the Avangard facility. Now they are part of the joint venture that will use resources, buildings, and personnel that previously produced nuclear weapons to manufacture life-saving medical devices. This is truly swords in the plowshares.

Looking ahead, as we look ahead, the National Nuclear Security Administration considers new priorities. We are accelerating, an important word. The Secretary just said yesterday in Russia, we will accelerate these programs. There are on going efforts. The National Security Administration is taking advantage of a recently signed DOE Ministry of Atomic Energy access agreement and focusing on sites in Russia that hold large quantities of fissile materials. Working with the Russian Navy, we are securing approximately 4,000 nuclear weapons and have completed the Second Line of Defense program, and this now is being expanded into 12 sites. Today, the NNSA will work even harder to get the 12 up to even higher numbers.

Research and development is critical to the National Security Administration's mission. NNSA works with numerous other government agencies to develop technologies that will help detect nuclear, chemical, and biological proliferation and terrorism, and, hence, the United States' ability to address nuclear smuggling and assist local responders to respond to terrorist threat.

I would like to close by talking about the formal draft legislation. Although the administration has not taken formal position on draft legislation you are considering, NNSA respectively believes that it is not necessary. Too many layers of management can hurt, not help, effect the implementation of these programs.

The NSC's Proliferation Strategy Policy Committee chaired by Dr. Robert Joseph, Assistant to the President, provides a vehicle for interagency coordination, as it cooperates and provides over sight over nonproliferation assistance programs to Russia and the other states of the former Soviet Union. Chaired by the NSC, the Committee consists of Assistant Secretaries of Defense, from State, from DOE, from intelligence, and from the Office of the Vice President and other agencies as appropriate for the issue.

This group meets frequently to coordinate critical nonproliferation areas. Just yesterday, we had two meetings discussing nonproliferation issues.

As you know, the NSC is completing a comprehensive review of all U.S. nonproliferation programs. I applaud this review, which I see as a viable road map to guide the program to follow on for the

next few years, but the best way to improve communications and coordination is to make sure the people in place are committed to doing the best job possible to communicate and coordinate.

The NNSA is committed to this, and I know my colleagues around this table and the other agencies share in this commitment.

Mr. Chairman, thank you for letting me appear today to address this panel. I look forward to any questions that you may have.

Senator AKAKA. Thank you very much, Mr. Baker, for your statement.

My friend and colleague, Ranking Member, Senator Cochran is here, and I would like to ask him for his statement.

OPENING STATEMENT OF SENATOR COCHRAN

Senator COCHRAN. Thank you very much, Mr. Chairman. I want to compliment you for convening this hearing on our efforts to deal with proliferation and the threat reduction programs that are designed to help make it less likely that there will be proliferation of mass destruction weapons systems from the former Soviet Union.

The President has directed that these programs be reviewed, and I am pleased that the administration has moved forward with the review and has taken steps to ensure that we are getting good value for the funds we are spending. It is deceptive and misleading for some to suggest that funding has been reduced. It is more important to look at these efforts on a program-by-program basis. Reviewed in this way, it is clear that the administration is increasing funds for programs that are contributing to our national security and to the security of others as well.

For example, the program to eliminate strategic offensive arms in Ukraine has been increased by 77 percent in order to accelerate the elimination of SS–24 ICBMs, and unlike previous years, no funds were requested to eliminate silos because they have already been eliminated.

So I am hopeful, Mr. Chairman, that the hearing will offer insight and suggestions that will be helpful to us in determining how we can put the emphasis where it ought to be put, so that we are getting good value for the dollars we are spending and that what we are spending is productive in the overall effort to reduce the threat and improve security for everyone.

Senator AKAKA. Thank you for your statement, Senator.

I would like now to call on Mr. Borman for your statement, and following that, we will have questions for you.

TESTIMONY OF MATTHEW S. BORMAN,[1] DEPUTY ASSISTANT SECRETARY, BUREAU OF EXPORT ADMINISTRATION, U.S. DEPARTMENT OF COMMERCE

Mr. BORMAN. Good morning, Mr. Chairman, and thank you as well on behalf of the Department of Commerce for the opportunity to testify at this hearing on this important subject.

Over the years, I have been involved in a supporting role in several hearings that Senator Cochran had chaired on export control-

[1] The prepared statement of Mr. Borman appears in the Appendix on page 296.

related matters. So it is a pleasure to be here now at the table, as it were, to testify.

As with my colleagues, I have a longer statement which I would appreciate being put in the record, and I will summarize it orally.

For several years, the Department of Commerce has played a significant role in the U.S. Government's international nonproliferation programs in the former Soviet Union. My testimony will give a brief overview of Commerce's role and then address the questions you had in your invitation letter.

Since the end of the Soviet Union, Commerce has participated in the U.S. Government's nonproliferation programs in the former Soviet Union. Commerce has worked closely with the Departments of State, Defense, Energy, and the Customs Service of the Department of Treasury to carry out the export control cooperation programs designed to enhance and, in some cases, establish export control systems in these various countries.

Commerce strongly believes that bilateral and multilateral export control cooperation is an important part of the U.S. Government's effort to stem the proliferation of weapons of mass destruction and conventional arms. Experience has shown that export controls are most effective when producing, consuming, and transit countries all cooperate and maintain similar export controls.

The overarching objective of the U.S. export control cooperation program, whether in the former Soviet Union or other countries, is to: (1), assist countries in controlling the export, reexport, and transit of all items on the various multilateral export control regime lists; that is, the Wassenaar Arrangement, Nuclear Suppliers Group, Australia Group, and Missile Technology Control Regime; (2), also have these countries implement some kind of catch-all controls to catch lower-level items that could be used for weapons of mass destruction, but are not on the regime list; and then, (3), also to control the activities of persons subject to these countries' jurisdiction if these activities could facilitate weapons of mass destruction program, brokering, financing, and technical support.

Commerce's export control cooperation, which is done primarily through funding from the State Department, consists primarily of bilateral technical workshops on specific export control issues, some multilateral conferences to encourage regional cooperation on export controls, and seminars that are targeted specifically at defense enterprises in the former Soviet Union countries, particularly Russia and Ukraine.

Over the past several years, Commerce has conducted, in conjunction with the agencies represented here and others, over 200 workshops and seminars with both government officials and industry officials in the former Soviet Union States.

There have been several notable accomplishments as a result of this program. They include comprehensive export control laws enacted in over half of the former Soviet Union countries with most of the remaining countries likely to enact such laws within the next year, significant progress on a regional transit agreement between the countries in Central Asia and the caucuses to reduce the likelihood that items will be diverted when transiting through these countries, Kazakhstan promulgating a national control list that really mirrors the multilateral control list that the United States

and the European Union have. Kazakhstan is the first former Soviet Union country to do so.

We have also received some leads on possible violations of U.S. export control laws from the context we have developed, our law enforcement officials have developed in the course of doing these cooperation programs.

Over 900 defense enterprises and other exporters in Russia and Ukraine have received detailed training and software to enable them to establish their own internal company control programs, so that they can control properly the sophisticated dual-use items and technology that they have.

Finally, we have also distributed software to train foreign export control licensing officers in 9 of the 12 former Soviet Union countries.

In addition, the enforcement arm of the Bureau of Export Administration, Department of Commerce, has an export control attache in Moscow now, and this attache essentially has two functions. One is to really work with Russian export control enforcement officials to get them to enhance their enforcement of Russia's export control law and also to help ensure that U.S. items that are exported into Russia are not diverted to improper uses.

Let me now briefly address the questions that you had posed in your invitation letter, Mr. Chairman; first, how does the Department of Commerce participate in the nonproliferation activities with Federal partners using multilateral export control regimes. The Department of Commerce, as you know, Bureau of Export Administration, is responsible for implementing the dual-use controls of the various multilateral export control regimes, and, of course, we do that in concert with the Departments of State, Energy, and Defense. We both make proposals to State Department to advance the regimes in terms of changing controls and also provide input to the Department of State when other countries make proposals to change regime controls or policy. In connection with that, whenever the regimes, for example, the missile technology control regime, have outreach efforts to non-members like transit states, the Commerce Department also participated in that with the other departments mentioned here.

Your second question, how well do Federal nonproliferation programs interact with U.S. commercial interests, from our point of view, in export control cooperation, there is quite good interaction. As Mr. Van Diepen has already mentioned, whenever we have bilateral exchanges, we always have the foreign delegations meet with representatives of U.S. exporting companies, and we think this is crucial for them to understand why U.S. companies spend time and money to comply with our export controls and also how important it is for any government to talk to its industry about controlling and consulting on export controls.

In fact, just to give you a concrete example, a few weeks ago, we had a delegation from Ukraine here. The delegation consisted of some government officials, as well as some members of the Ukrainian parliament, and in addition to meeting with Commerce, Energy, State, Defense, and the Customs Service, they also had a meeting with a U.S. exporting company and they came up here and actually had meetings with some members as well.

We also work with the various agencies represented here and any contractors they use on these various nonproliferation assistance programs that you have already heard mentioned to make sure that any delivery of goods or technologies from the United States to Russia or other countries complies with U.S. export control laws. So that is another way we interact with U.S. commercial interests in doing our programs.

That really concludes my summary. Once again, I thank you for the opportunity to testify on this important subject, and I am happy to answer whatever questions you or other Members have.

Senator AKAKA. Thank you very much, Mr. Borman, for your statement.

I would like to call on my colleague, Senator Carnahan, for your statement.

OPENING STATEMENT OF SENATOR CARNAHAN

Senator CARNAHAN. Thank you. Thank you, Mr. Chairman. I want to thank you for holding this very important hearing today.

The testimony that we will hear today is especially important as the evidence mounts up that Osama bin Laden and the Al-Qaeda network were actively taking steps to acquire weapons of mass destruction.

Although these revelations are disturbing, the threat of proliferation has been a concern for some time. Over 11 months ago, Howard Baker and Lloyd Cutler presented a report on nonproliferation programs to the President, and those findings were startling. They found that 10 years after the collapse of the Soviet Union, nuclear weapons remained scattered throughout Russia in more than 100 poorly guarded depots. These weapons are not appropriately accounted for or secured. These conditions make it possible for rogue nations or terrorists to steal or to buy nuclear materials and to smuggle them out of Russia.

In fact, 3 weeks ago, the *Washington Post* reported that nuclear scientists had been holding talks with bin Laden's followers. In this same article, it was reported that nuclear material may have been stolen from Russia over the last 2 years.

The Baker-Cutler report suggests that the only way to stop this situation is to expand the United States' nonproliferation programs. This will require sizeable investments, including a $30 million 10-year budget for these programs overseen by the Departments of Energy, Defense, and State. I believe that this would be an important first step.

Today, I hope that we can use this hearing to evaluate the findings of this report in light of the Nation's new war on terrorism. It is imperative that the United States remain proactive in suppressing the worldwide spread of nuclear, chemical, and biological weapons. To accomplish this goal, I feel we need to upgrade our intelligence capability, more closely monitor other nations for compliance with arms control treaties, provide better compensation to former Soviet weapons scientists, and provide accounting for the thousands of weapons produced by the Soviet Union.

Currently, our government attempts to accomplish these objectives through several Federal agencies spread out among four Cabi-

net Departments. These organizations do find work, but there is room for improvement.

Coordinating the nonproliferation activities of these agencies, as suggested by Senator Hagel's legislation, is an idea worthy of examination. Funding these nonproliferation programs needs to be one of our highest national security priorities, and I look forward to hearing from the panelists today about that.

Thank you, Mr. Chairman.

Senator AKAKA. Thank you very much for your statement, Senator Carnahan.

Now we would like to ask you questions. My first question is for all of the witnesses here today. We have talked about the National Security Council and about what they have been doing. Has the extended National Security Council review of our nonproliferation programs affected the activities of any of our current programs? In other words, has it delayed implementation of any programs or the fulfillment of their objectives?

Let me start with Mr. Van Diepen.

Mr. VAN DIEPEN. Thank you, Mr. Chairman.

As I indicated in my statement that review is in its final stages, but, certainly, as a general matter, we have not been holding back from doing necessary work while the review has been ongoing. The review is basically going to be an effort to try and prioritize and give us guidance on, as Senator Cochran said, trying to get the best bang for the buck on these programs, but we certainly have not been holding back from doing necessary work while the review has been proceeding.

Senator AKAKA. Mr. Billingslea.

Mr. BILLINGSLEA. Mr. Chairman, the review is ongoing, but it has not affected the important work that needs to be done through the CTR program.

Senator AKAKA. Mr. Baker.

Mr. BAKER. Mr. Chairman, as I said, I applaud the review. I think it is badly needed.

Our programs are continuing, the ones of securing nuclear materials. We are working night and day. As a matter of fact, just today I got 12 different teams throughout Russia securing the stuff, just today.

What has changed a little bit is our plutonium disposition because we are looking at a plutonium disposition program and coming up with alternatives on plutonium disposition in accordance with the treaty, and we will have options. The Secretary of Energy has got the pin on this, and we will get back to the White House in 2 months. A decision will be made before the next budget cycle on what option we should pursue with plutonium dispositions.

The Russians are on board on this. We met the Russians the week before last, and we have come up with options to make this program successful and to make it cheaper if that is possible.

Senator AKAKA. Mr. Borman.

Mr. BORMAN. The export control cooperation programs that the Department of Commerce is involved in have not been affected in any way by the ongoing review. We have continued with our efforts.

Senator AKAKA. Let me ask Mr. Billingslea in relation to what we just talked about. Has DOD's chemical demilitarization program been affected?

Mr. BILLINGSLEA. The chemical weapons destruction facility program is part of the ongoing review. Decisions on that particular program have not been reached yet, and I would not want to prejudge the outcome of that review.

But as I did mention in my testimony, one of the other important areas relating to chemical weapons is the large numbers of stockpiles of chemical agent throughout Russia, which we believe are not subjected to the best possible physical security measures. So we have been aggressively pursuing the installation of physical security around those stocks to prevent their diversion.

I am also told that the design of the facility is ongoing, the chemical weapons destruction facility, although any final determination on that facility is still going to be made at the Cabinet level.

Senator AKAKA. Thank you.

Mr. Van Diepen, in your testimony, you observe that several statements from our November 14 hearing note that effective implementation and senior-level coordination already exists. While our witnesses say that nonproliferation programs have been effective, they unanimously agreed that senior-level coordination is lacking.

In fact, Laura Holgate of the Nuclear Threat Initiative recommended the creation of a Deputy National Security Advisor to ensure high-level attention and agency cooperation.

Who is in charge of overseeing all of our nonproliferation programs right now?

Mr. VAN DIEPEN. At one level, Mr. Chairman, the President is, of course, but at the more operational level, as we have indicated in all of our statements, the Policy Coordinating Committee on Proliferation Strategy is the sort of operational place at the assistant secretary level where this kind of coordination is done.

Senator AKAKA. Mr. Baker, basic physical security upgrades such as securing doors, installing alarms, and hardening guard posts are not scheduled to be completed on all nuclear facilities until, I think, 2007. The question immediately is: Why is it taking so long?

In light of the events of September 11, how can we wait until 2007, knowing that terrorists are actively trying to obtain nuclear material?

Along that same line, are sites with the completed security systems subject to periodic vulnerability testing?

Mr. BAKER. Mr. Chairman, I have been on both sides of the house. I used to write the black book for the President during the cold war and knew every target we had from Russia. When the Cold War was over, I saw personally firsthand that these nuclear materials were all over Russia, they did not know how many they had. Their accounting system was not there, and we are working night and day to get this secured. It is something that you can't get done overnight.

During the Cold War, of course, they had guns, gates, and guards, and all of that went away after the Cold War. I will tell you, I walked into Kurchatov 1 day with a guard half asleep and walked in myself and the deputy secretary and opened up a locker

like a bicycle locker and I found 75 KGs of highly enriched uranium laying in a locker. So this is what we faced back in 1993.

We have secured all of the Russian Navy facilities that we know about that had warheads. We did triage immediately. We have done quick upgrades. Yes, there has got to be comprehensive upgrades, but to make sure these things are secure, we have done that.

The other facilities, at the Ministry of Atomic Energy, we are working on it as fast as we can. Like I say, I have got 12 teams in there now. One thing that slowed us down was an access agreement with the Russians; that now we are seeing things that we have never seen before; that they are letting us into facilities that no American citizen has ever been in. So now we have got an access agreement. Now we are into the biggest facilities in Russia where there is tons and tons of the stuff, securing this, and we are going to work as fast as we can to get this done.

Senator AKAKA. I will ask for any questions from my Ranking Member.

Senator COCHRAN. Mr. Chairman, thank you.

In my opening statement, I mentioned that the administration had increased its funding request for work in Ukraine in connection with eliminating strategic arms. I wonder if there are other examples that you can tell us about.

I know, for example, that there has been an increase in the program that is designed to provide employment opportunities for former Soviet weapons scientists. Now, that is a program I think the State Department is involved in.

Mr. Van Diepen, can you tell us about that program and whether or not that is correct, that there has been a new emphasis on trying to increase the opportunities for Russian weapons scientists or former Soviet weapons scientists?

Mr. VAN DIEPEN. Certainly, Senator. That is one of the key programs that we have at the State Department. Through the International Science and Technology Center in Moscow and the Science and Technology Center in Ukraine, our programs have engaged with 40,000 former Soviet WMD and missile scientists to try and give them peaceful civilian employment in-country and thereby reduce the incentives that they may have to sell their wares to countries like North Korea or Iran. This has been a very effective program.

We have also been partnering with industry in trying to leverage some of their resources to increase the impact that we have on the problem, but, of course, there are many weapons scientists in the former Soviet Union, and we continue to try and do our best to prioritize and work where things could be more effective, for example, increasing our outreach in the biological area, which is of obvious relevance in the post-September 11 environment.

Mr. BAKER. Senator Cochran, we have one, also.

Senator COCHRAN. This is the Department of Energy?

Mr. BAKER. Department of Energy, yes, sir.

We have what we call an Initiative for Proliferation Prevention which is putting Russia's scientists to work with commercial companies. We have over 160 commercial companies right now in-

volved. The commercial companies have put more than $50 million into these programs right now.

As I was mentioning before you arrived, sir, things like wheelchair, it was voted this year as the medical science breakthrough of the year, which has a cushion that moves that prevents people in nursing homes from getting pressure sores. Many people have died. It will save Medicare, they say, $3 billion a year. It came out of this IPP program, Russian scientists and our scientists working together. That is one example.

Then we worked very closely with the State Department on their ISTC program. Again, it is an example of coordination between the agencies.

Senator COCHRAN. Are there any other examples, Mr. Billingslea?

Mr. BILLINGSLEA. Yes, sir. I think it is important to stress that the CTR program's funding is done on an ebb and flow of business. We budget according to what can realistically be achieved in the coming fiscal year.

Senator COCHRAN. What does the CTR mean? What is that acronym?

Mr. BILLINGSLEA. I am sorry, sir. It is the Nunn-Lugar program, the Cooperative Threat Reduction program.

The fiscal year 2002 budget actually had about $100 million in new or expanded projects that included things like $15 million was for dismantlement of a chemical weapons production facility in Russia. There was an additional $10 million put in to expand our defense and military contacts programs through the CTR program. We put $5 million additionally into biological weapons proliferation prevention and so on and so forth.

Now, there were also funds that we did not need as we began winding up various projects or it became apparent that the Russians were not going to provide access to do certain things. So we have engaged in several new starts and other old starts are beginning to wind up, and it is just an ongoing review process.

Senator COCHRAN. Let me ask you something about the coordination of all of these activities. Mr. Van Diepen talked about the fact that there is a committee at the assistant secretary level that has the responsibility for coordinating what all the departments and agencies are doing in this connection and trying to make sure that there is no overlap. I guess that is to ensure that we are not doing something twice, and that there is nothing falling through the cracks.

What would your assessment be of the effectiveness of this committee? I understand the National Security Council has a chairman who serves as a coordinating chairman or an organizational chairman. How is that working?

Mr. VAN DIEPEN. Yes, Senator. It is chaired by a senior director at the National Security Council and has all of the relevant agencies involved. Obviously, any group can do its work better, but what strikes me is how similar the functions of the current PCC are to the functions that are envisaged in the proposed legislation. Basically, this group is already doing the kinds of things that the legislation calls for.

I think it is doing its work reasonably well. Again, it can always do its work better, and one of the things we hope to come out of the administration's review of these programs are ways that we can do this job better and make sure that we are getting the best value for the dollar and that we are complementing each other as effectively as possible.

Senator COCHRAN. In connection with the cooperation of Russia in particular, with the new spirit of cooperation and the commitment to work together on a number of different issue areas and problems confronting both of our countries, it seems to me that the climate has improved. The relationship has changed. Is this proving to be the case in fact in the day-to-day operation of these programs we are talking about? What would your assessment be?

Mr. Baker.

Mr. BAKER. My assessment would be, yes, sir, they are improving. In my opinion, they are better than they ever have been since I came to the Department of Energy in 1993. I think doors are opening that have not been opened. They are letting us into facilities to help them. I think the relationship that the two presidents have now is a great relationship.

I know just right now my boss, Secretary Abraham, is over there meeting with the head of MinAtom. Minister Rumyantsev, I just talked to him yesterday. He said that it is going great. He has never seen better relationships. They want to accelerate these programs. They want to work together. They want to work hand in glove, and the Secretary was really happy.

As a matter of fact, he is on his way to Vienna today to tell the chairman of the International Atomic Energy Agency, Mohamed ElBaradei, how well it went in Russia. So I think after September 11, things have really come together, and I think it is going to even get better, and we are going to make this thing work.

Like Baker-Cutler says, we have got to work faster, and we are going to work faster and we are going to get this job done.

Senator COCHRAN. Mr. Chairman, I noticed that the second bells have rung on a vote over on the Senate floor. We might talk ourselves out of a vote here if we are not careful.

Senator AKAKA. That is correct. We have a vote on now.

I would like to ask Senator Carnahan if there are a couple of questions you want to ask.

Senator CARNAHAN. Thank you, Mr. Chairman. I will confine myself to just one question since the vote is underway.

Mr. Baker, as I discussed in my opening statement, the Baker-Cutler report describes some very dire conditions in Russia, with the tons of nuclear weapon material, much of it unaccounted for and scattered throughout Russia in 100 different poorly guarded depots.

Some of the critics of the Energy Department programs have indicated that DOE puts too much emphasis on quick fixes, just putting bars on windows or securing doors or checking inventories. Certainly, these are important initiatives, but I think it is also important that we consider some long-term solutions as well, such as installing fences or advanced security systems, barcoding equipment, and training workers.

Would you describe the Energy Department's long-term plans to enhance security at the Russian nuclear depots?

Mr. BAKER. Yes, ma'am. We are doing exactly what you just said. We are now. We did put up fences and gates and everything you could think of, but we are barcoding. We have got a complete inventory of what they have. We are barcoding all of their stuff. We are working a sustainability program because, some day when all of this is fixed, we have got to get out. We cannot stay forever. So we are showing them how to sustain this equipment and how to make sure it is secure in the future. So we are working the long-term things right now, ma'am.

I was with Senator Baker and Mr. Cutler when we went to Russia, and as a matter of fact, Senator Baker and I found out we are related to each other from Tennessee and Kentucky, long cousins, but he is a man that saw that we are for doing long-term things and we are doing the barcoding. We are doing the things that you just mentioned. That is going on right now. So we are taking long-term issues to make sure these places are as secure as you can make it.

Senator CARNAHAN. Thank you, Mr. Chairman.

Senator AKAKA. Thank you very much for your questions.

The Subcommittee will take a recess now. There is a vote on, and we will return to the questions. We stand in recess.

[Recess.]

Senator AKAKA. The hearing will be in order.

Again, I want to thank the witnesses for your statements and your responses to the questions. My question now is to Mr. Borman.

Commerce is responsible for deemed export control issues, as you mention in your statement. Does Russia have similar concerns? Have we discussed this with them in light of our concerns, of our concerns about foreign students and scientists who work in American universities and laboratories?

Mr. BORMAN. Yes, we have. I guess I can answer that or address that in a couple of aspects, Mr. Chairman. When foreign nationals come into the United States, whether they are from Russia or another country and whether they are here for work or other purposes, there is a certain set of regulations that apply to them. And to simplify it, it is if they will have access to technology that would require a license to be exported to their home country, they need a license to get it in the United States. That is why we call it the deemed export. It most typically comes up with foreign nationals being employed at U.S. companies.

Certainly, when we talk to Russia or any other country about their own export control program, we also emphasize that this is an element that we think they need to incorporate into their own systems, so that if foreign students, for example, from one country into Russia to study or to work, that the same types of restrictions apply to them and their access to Russian-origin technology. This is a harder concept for other countries to get their arms around because it is kind of a complicated concept, but I think that they are becoming more and more sensitive to that and are really designing their export control systems to account for that as well as the more traditional export, the machine tool leaving the country.

Senator AKAKA. You mentioned in your statement that there is an attache——

Mr. BORMAN. Yes.

Senator AKAKA [continuing]. Now in Russia, and that attache is to carry out the programs and also to—and if I may use the word—enforce some of our policies there. How long has the attache been there in Russia?

Mr. BORMAN. He started there at the beginning of this year.

Senator AKAKA. Oh.

Mr. BORMAN. This is the first time we have had funding for such a position.

Senator AKAKA. Mr. Billingslea, some have suggested that U.S. taxpayer funds are going to Russian scientists who continue to work on poison gas, biological agents, and nuclear weapons designs for the Russian Government. Is this true, and if so, what is being done to prevent it?

Mr. BILLINGSLEA. Mr. Chairman, we continue to have concerns regarding Russia's compliance with the chemical and the biological weapons conventions to which they are a party. We could discuss that a little more fully in closed session. However, as I indicated in my opening statement, the Department of Defense is very concerned to know and to make sure that funds are not diverted, that funds do not contribute to offensive weapons programs, whether on the chemical or biological side or even to offensive nuclear modernization or missile modernization.

In order to guard against this, we have a very rigorous audit and examination process that the Department of Defense follows.

Further, no project, no research project that the Department of Defense undertakes, is approved or undertaken until it is subjected to a rigorous interagency review.

Speaking only for the Department of Defense's projects, I do not believe on the basis of my review of the CTR program that we are contributing in any way to Russian WMD programs, but it is something that we must be very wary of. As we look to improve our collaboration on biological defense activities with the Russian Government, we must be very wary and must factor this into consideration.

Senator AKAKA. Mr. Baker, the International Atomic Energy Agency has recently listed radiological dispersion weapons, or dirty bombs as they call it, as their top priority. What is the United States doing to address this proliferation threat?

Mr. BAKER. Right now, sir, it is a concern. What it would do if a dirty bomb was built, it may kill a few people very close to it, but the big problem would be the radiation that would be spread over an area like Chernobyl or that Chernobyl had a problem, that long-term illnesses could occur.

What are we doing about it? Well, right now, we are looking at how we can expand our materials protection control and accounting program to do things that we have not done before, like secure spent fuel.

There are areas that we have looked before the September 11 situation. We were securing weapons materials, things that were enriched above 20 percent. Now you have to worry some about below 20 percent. So we are concerned about this.

We are looking into what we can do. There is so much person power one has and so many things you can do and negotiations you have to make, but it is a concern and we are looking very hard into that for the last 2 months.

Senator AKAKA. Mr. Billingslea, witnesses in a previous hearing stated that there is no dedicated program to assist Russia in warhead dismantlement, and that plans for this are not part of the budget at this time. Why is this the case, and are there plans for including this type of assistance at a later date?

Mr. BILLINGSLEA. Well, Mr. Chairman, I believe it is important to clarify that the Department of Defense is not involved in the actual dismantlement of any Russian nuclear weapons.

We are constructing a fissile material storage facility that will provide centralized, safe, and ecologically sound storage for up to 50 metric tons of weapons-grade plutonium and 200 metric tons of highly enriched uranium removed from nuclear weapons. This is the Mayak facility. The Russians have, I believe, a dismantlement site in proximity to that facility.

The physical construction of the storage facility and all of the support structures is 80 percent complete, although equipping the facility is only 60 percent complete at this stage.

We have been under a cost cap for that facility, Mr. Chairman, but the total cost is going to be about $40 million less than that cap, I am pleased to report. About $370 million it will cost to establish this facility.

We anticipate that the storage site will be completed next year and that we will be able to begin loading it with fissile material from the warhead dismantlement process, although I think that we need to be clear that Russia has indicated that it does not want or need U.S. Government assistance in preparing the plutonium and the HEU from dismantled warheads that is to be stored at this site.

Senator AKAKA. I recall in your statement, I think, that it is the intent of our country to dismantle at these sites as much as we can.

Mr. BILLINGSLEA. We, together with the Department of Energy and the other U.S. Government agencies, are very concerned with the large numbers, large stockpiles of fissile material throughout Russia, including stocks of warheads and would obviously believe that dismantlement of warheads by the Russian Government is a positive development.

It is important to maintain physical security on not only the warheads, but the fissile materials stocks themselves which is why the agreement that DOE has recently signed that Mr. Baker referenced is so important. It begins to open the doors for the U.S. Government to move in and provide the kinds of physical protection that need to be provided.

With the Department of Defense programs, we continue to have difficulty in obtaining access to key sites, and the Russian Government is going to need to give us access to these sites to perform surveys and assessments and then to install equipment, and most importantly to verify after the installation that it was done correctly and that we are, in effect, getting what we are paying for, which is a key test.

Senator AKAKA. Mr. Baker, at the end of September 2001, a new agreement to provide U.S. officials with expanded access to Russian nuclear sites and facilities was announced. What sites are not covered by this agreement? How much nuclear material is housed at the facilities covered by the agreement, and how long will this agreement stay in force?

Mr. BAKER. The agreement, sir, is with the Ministry of Atomic Energy. It does not cover the work we are doing with the Russian Navy. We have another agreement with the Russian Navy already, and we have had no problems securing weapons with the Russian Navy at all. We have had complete access.

This access agreement will cover all MinAtom facilities, about 90 facilities.

It is about 600 metric tons that this access agreement will cover. So, with that agreement, we can almost get into—well, we can. With the Russian Navy, we have got complete access right now so far, and with the Ministry of Atomic Energy, we will have the other access now, which we have, to get into the big sites like Tomsk. Chelyabinsk-70, it used to be called. This is where a lot of material is that we never could get in before. Now we are in.

Senator AKAKA. Mr. Borman, what are the other problems with Russian export controls? What is the Department of Commerce doing to help Russia correct these problems and strengthen their export controls?

Mr. BORMAN. Well, Russia's export control system is evolving. Obviously, under the Communist system, they had probably a very tight export control system. With the breakup of the Soviet Union, obviously a lot of resources are lost, and our principal focus right now with Russia's export control system is on their defense enterprises.

As I mentioned earlier, we have a very, I think, aggressive program to go to individual defense enterprises with Russian Government officials. The Russian Government officials explain Russia's export control system to these enterprises, and then we bring U.S. company officials along to explain their own internal company control programs and try to help the Russian enterprises understand that it is in their business interest to comply with Russia's export control system. We even have a software tool that helps these companies set up their own internal control program so they know what of their goods and technologies are subject to export controls and which are not, and that is an ongoing effort. We have done it in dozens of defense enterprises, but these defense enterprise which, of course, used to be very tightly controlled by the government are now players in the free market and they don't have that much exposure to even their own government's export control system, let alone how the market operates. So that is one area of our focus.

Another area of our focus, now that Russia has a comprehensive export control law, is to work with them more on enforcement techniques that are particular to export controls. I think one view of export controls is you have to have tight border security, and certainly that is true, but obviously a lot of enforcement is done upstream. Enforcement officials have to know what are the enterprises that are producing items of concern, go out and talk to them

and monitor them and make sure that they are complying with the law. And that is another area of our focus that we are going to be stepping up.

Senator AKAKA. Mr. Billingslea, how should DOD's Cooperative Threat Reduction programs be expanded to accommodate the reduction in strategic nuclear weapons agreement reached between President Bush and Russian President Putin, 2 weeks ago? Do you expect increased funding, or will other assistance activities need to be scaled back?

Mr. BILLINGSLEA. The potential, which has now been realized in the agreement, for the deep reductions has already been factored into our budget request. There may be substantial new opportunities in the CTR program, but that may be more in the chemical and biological side of the house where, again, as I mentioned, the bioterrorism agreement that was reached, if this leads to a greater opening in access and collaborative research, then that would be an area of active consideration, but on the nuclear side and the delivery platform side, this is already factored within the budget.

Further, I do point out that since we have already essentially begun to wind up the destruction of platforms in places like Kazakhstan and Ukraine, there will be a natural and inevitable tapering down of some parts of that program and a ramping up in other parts. It is just depending on the opportunities we are given.

Senator AKAKA. Mr. Baker, nuclear accounting requires that facilities undertake a physical inventory of their nuclear material. To what extent have individual former Soviet sites completed their physical inventory. Has a national inventory system been established to account for nuclear material movements from site to site?

Mr. BAKER. When we first started doing this program back in 1993, it was not a good accounting systems where these materials were located. We found this.

We have been on the ground over there, and we have got a good accounting system. We have, sir, a system that we are teaching the Russians how to count, and some of it, like barcode, this equipment. We are monitoring when it goes from site to site with help of other agencies. So we do have a fairly decent—we think what you do not know, you do not know, but we think we have a very accurate count of what they have in Russia in terms of nuclear material. We have that ourselves, and they, of course, also have it now.

Senator AKAKA. Mr. Billingslea, what has DOD done to destroy any biological weapons stockpiles or dismantle the surge production capabilities developed within former Soviet biological weapon facilities?

Mr. BILLINGSLEA. In fiscal year 2001, Mr. Chairman, we continued—there were six ongoing projects—to make security enhancements at various sites, six of those. We initiated efforts at six additional sites in fiscal year 2001.

We also continued six ongoing collaborative projects and initiated seven new collaborative projects, and we have been working on dismantlement and continued that in this past year of the former biological weapons production facility at Stepnogorsk, Kazakhstan.

We also began developing dismantlement efforts at four Russian institutes, and we have recently completed an assessment of the

former biological weapons test facility at Vozrozhdeniye Island in Uzbekistan and are looking at ways to engage in future dismantlement and pathogen elimination efforts on that island. So these are the ongoing programs that we have.

Senator AKAKA. Mr. Van Diepen, we have been talking about how relationships have improved between us and Russia. The Department of State coordinates the Defense, Energy, Health and Human Services, and Agriculture to engage Russian and other biologists in peaceful civilian collaboration with western experts and businesses. How has this coordination changed since September 11?

Mr. VAN DIEPEN. Mr. Chairman, I think what we are trying to do is intensify the effort. It is not so much changing the coordination, but increasing the throughput that is being coordinated to try and be more effective, reach out to more institutes, get our hands around more capability that could potentially find its way into the hands of terrorists.

The bioredirect program, we think the coordination has been very effective on, and we are trying to use that coordination to leverage increased output and effectiveness from that program.

Senator AKAKA. Are there plans for joint U.S.-Russian planning meetings for nonproliferation? What are the formal mechanisms to coordinate with your Russian counterparts in that?

Mr. VAN DIEPEN. There are a variety of interactions that we have with the Russian Government on all different levels in the nonproliferation arena. At the Under Secretary or their Vice Foreign Minister level, it was agreed some time ago to have regular discussions on nonproliferation issues. Likewise, at the Assistant Secretary level, my boss, John Wolf, will be beginning a regular series of consultations with his Russian counterpart. Basically, this goes on down through the pyramid, and, of course, integral to all of these cooperative programs with Russia are ongoing interactions with the Russian Government.

Senator AKAKA. Mr. Baker, since the start of the Nunn-Lugar nonproliferation programs, Congress has authorized $5.5 billion for assistance to former Soviet States. How much of this money has been spent in Russia and the newly independent states?

Mr. BAKER. Sir, with all due respect, I think that can be better answered by the Department of Defense, being as they control the Nunn-Lugar money.

Senator AKAKA. Mr. Billingslea, would you have any comment on that?

Mr. BILLINGSLEA. Yes, sir. We are doing the calculations for you right now. May I submit that for the record, so that we get it down to the precise dollar amount? [1]

Senator AKAKA. All right.

Mr. Baker and Mr. Van Diepen, the GAO has testified that the Departments of State and Energy programs to employ weapons scientists have not been able to demonstrate that they achieved these objectives. What are you doing to correct this problem?

[1] The information submitted for the record by Mr. Billingslea entitled "Nuclear Non-Proliferation Treaty and the International Atomic Energy Agency," appears in the Appendix on page 355.

Mr. VAN DIEPEN. Well, I will start, Mr. Chairman. I am not sure exactly what the assessment of GAO was, but a lot of nonproliferation is trying to keep dogs from barking, so to speak, and it is often difficult to demonstrate that a dog did not bark and it did not bark because of your program. But we are quite confident that the extensive engagement that we have had through these programs, engaging again with 40,000 former weapons scientists in the former Soviet Union, has had a substantial impact on trying to reduce the so-called brain-drain problem.

By definition, if a scientist did not go to North Korea because he is employed in our programs, it is difficult for us to know that he was going to go otherwise, except for our program. So it is not clear to me how these sort of classic accounting techniques could be used to measure the effectiveness of these programs. All we can say is based on the phenomena that we see in the intelligence, we are quite satisfied that these programs have had a substantial impact on addressing this problem.

Mr. BAKER. That question, sir, always comes up, how many people have you saved from going to a rogue state. As just stated, it is hard to, but I will tell you from a personal experience from talking to Russian scientists and asked them across the table, have they ever been recruited. I had one down in the Department of Energy just about a month ago, and he now works in Emergency Management. I asked him the question, "You used to build Russian weapons. Why did you take an Emergency Management job?" He said, "To feed my family." I said, "Have you ever had a chance to get more money?" He said, "Absolutely," and he said, "My buddies have done the same thing." So, when the GAO makes that comment, I can tell you from personal experience in talking to them, many of them have been recruited by rogue states.

Now, have they gone? We do not have a number. It is very hard to track if we have lost any, but I can tell you right now, it is happening. It is happening that people are being recruited.

Senator AKAKA. Mr. Billingslea, environmental and local public advocacy groups have gained influence in the former Soviet Union. What problems is this creating for American aid efforts, and how can we resolve those problems?

Mr. BILLINGSLEA. Senator, I am not aware of any specific problems, at least in my short time within the Department of Defense, that have been brought to my attention as resulting from an environmental group's advocacy for one people or another.

I am sure that Russia will encounter the same kinds of environmental considerations when they finally commence their chemical warfare destruction activities, as they are required to do under the Chemical Weapons Convention, but to date I am not sure that the CTR program that I would say we have been adversely affected by environmental groups. Let me give you a more fulsome assessment of that for the record.

It would appear there may have been some time, additional time that was needed for us in establishing a facility to deal with solid propellant. So there may have been some environmental considerations there. Let me get you a description of that.

Senator AKAKA. All right. Thank you.

I have some questions here for Senator Levin, and let me ask these questions for him. In your testimony, Mr. Billingslea, you state, "We remain concerned that Russia continues to produce weapons-grade plutonium." You also state, "The best approach to achieving shutdown of these reactors, which we all agree is an important objective, is still under review by the administration."

At the time the DOD budget request was submitted to DOD, it was going to build a fossil-fuel coal plant at one site and upgrade an existing coal-fired plant at the other site. This would allow the reactors to shut down.

The reactors produce plutonium, but also power for the local communities. Building these fossil-fuel plants is the cheapest and fastest way to shut down these reactors. Is DOD walking away from this plan? What is DOD considering instead? Will the alternatives cost less and be quicker to complete?

My understanding of the situation is that the NSC prefers to pursue the fossil-fuel option, and here is a question. What is the process for resolving this difference of opinion, and when will it be resolved?

Mr. BILLINGSLEA. Senator, the——

Senator AKAKA. Let me finish. There is just one more.

Mr. BILLINGSLEA. Yes, sir.

Senator AKAKA. When can we expect a decision on how to shut down these reactors?

Mr. BILLINGSLEA. Yes, sir. Mr. Chairman, my hope is that the administration will arrive at a final decision on the best approach for getting the plutonium production reactors, the three of them, shut down in the near term. I cannot put a precise date on it, but it is under active consideration by the administration in discussion at the Cabinet level.

I would suggest, as I did in my testimony, that we very much do want to see the reactors shut down. That is an objective. However, as my testimony also states, the material in the fuel assemblies that are being irradiated by these reactors is of a less direct proliferation risk than the processed weapons-usable material that lies at countless sites that the Baker-Cutler Task Force talked about, unsafeguarded or very poor safeguards throughout Russia. So, certainly, getting physical security safeguards on that material is of a high priority.

The Department of Defense has been looking at various ways to achieve shutdown of these reactors. Fossil-fuel plants was but one option. Other options have been considered, some put aside, some being further explored, perhaps reactors that could burn plutonium.

The House of Representatives and, in fact, the Congress has been very cool in the past towards the Department of Defense engaging in this effort, and, in fact, funds had been prohibited from being used in the past for establishment of fossil-fuel plants. I think the question is whether or not the Department of Defense is the right agency to be involved in building powerplants in Russia, but we look to have an administration decision shortly on that.

Senator AKAKA. I have another question from Senator Levin. Mr. Billingslea, in your testimony, you address the question of improving security of chemical weapons. What about destroying those

weapons? The DOD requested funds to build a chemical weapons demilitarization facility. The Senate bill authorizing the Cooperative Threat Reduction program supports this effort. The House bill does not. Is DOD walking away from the U.S. commitment to destroy these weapons? It seems to me that the ultimate way to ensure they are secure is to destroy them.

So I guess the question to you, Mr. Billingslea, is DOE walking away from the U.S. commitment to destroy these weapons?

Mr. BILLINGSLEA. Mr. Chairman, as Senator Levin's question points out, the Congress is divided on the issue, which suggests that there are good arguments to be made on both sides. The administration is examining the merits of the case, and my hope is that we will have a decision on that shortly.

Senator AKAKA. Another question from Senator Levin to Mr. Van Diepen, the Department of State appears to be the appropriate agency to coordinate policy for these programs in the absence of any formal coordinator. Has the State Department sought additional funds for these programs from the $40 billion in additional emergency funds?

We understand that, notwithstanding the recent evidence that bin Laden is seeking nuclear materials, no additional funds will be made available to secure these materials in Russia. My understanding is that the administration has taken the position that increased efforts to secure material is not a priority. The question is: Is this true?

The final question is: Is securing these weapons-grade materials not a priority and will additional funds be forthcoming?

Mr. VAN DIEPEN. Thank you, Mr. Chairman. In terms of securing weapons-usable materials, I think it is clear from the testimonies that you have heard that that is and remains a key priority. I am not sure it is my place to talk about the programs that are not State Department programs. We don't do securing weapons-usable materials.

On the question of resources from the supplemental, one example is we were able to get, I believe it is, $42 million to improve export controls and border security in Central Asia that came out of the supplemental. So we definitely have been weighing in and trying to use that to help improve our nonproliferation efforts.

Senator AKAKA. Mr. Billingslea, would you want to make any comment on those questions?

Mr. BILLINGSLEA. Thank you, Mr. Chairman. On the nuclear side, we are pressing the Russian Ministry of Defense very aggressively to finalize procedures for access. We have for our part done all of our work that we need to do, testing various components, and looking at the different integration measures that are needed to put a comprehensive security upgrade in place at facilities once we gain access.

As I mention, we have also been engaging in the more interim kinds of physical security measures, things like truck barriers and very simple kinds of physical security that can be provided on a quick basis that don't need a lot of training involved.

This is a costly program. We are going to have to have access to ensure that the upgrades that we are paying for are actually installed and installed correctly.

On the biological side, we still have not been able to get the Russian Government to designate an executive agent that the Department of Defense can work with directly, and as a result, we are working through the ISTC program that the Department of State manages to address those kinds of issues.

Senator AKAKA. Well, I want to say thank you to all of you for your statements and your responses. This will certainly help the Subcommittee.

The events of September 11 have made the prospect of WMD terrorism a reality. It has certainly changed our lives here in our country.

I am pleased that the administration today has stated that it shares my sense of urgency for nonproliferation activities. I hope its words will be matched by action with appropriate funds.

On another issue, every witness today said that the statutory coordination mechanism for U.S. nonproliferation is unnecessary. Mr. Van Diepen suggests that it could even be counterproductive or intrusive. This view contradicts those of every one of our witnesses from our hearing on November 14.

Each of the proliferation experts welcomed the prospect of additional senior-level coordination and even suggested how the provisions proposed by S. 673 should be expanded. In fact, they all stated that improved coordination was vital to an effective national nonproliferation strategy. I am just giving you some idea of what happened in the last hearing.

There is agreement that we need a national strategy. I hope the administration's review will be completed soon so that this Subcommittee can be briefed on its conclusions.

Senator Biden has asked to submit a statement for the record.

[The prepared statement of Senator Biden follows:]

PREPARED STATEMENT OF SENATOR JOSEPH R. BIDEN, JR., A U.S. SENATOR FROM THE STATE OF DELAWARE

Mr. Chairman: I am pleased to submit written testimony to the Governmental Affairs Subcommittee on International Security, Proliferation, and Federal Services in support of S. 673, the Nonproliferation Assistance Coordination Act of 2001, of which I am an original co-sponsor. There are many important questions to consider on U.S. nonproliferation programs in the former Soviet Union, including the need to do far more than we do today.

S. 673 would perform a narrower, but vital, function: To establish a high-level interagency committee within the Executive Branch to achieve better coordination of U.S. nonproliferation efforts in the former Soviet Union. In addition, this new committee could help coordinate official U.S. Government activities with those undertaken by private sector organizations, such as the Nuclear Threat Initiative, and by foreign governments.

Senators Hagel, Lugar, and I decided to introduce this bill in April, shortly after the Foreign Relations Committee held a hearing on the results of the Baker-Cutler Task Force, a high-level advisory panel which reviewed the Department of Energy's nonproliferation programs in Russia. Former Senator Howard Baker and the former White House Counsel, Lloyd Cutler, the co-chairs of the Task Force, reiterated to the Committee the report's principal conclusion:

> The most urgent unmet national security threat to the United States today is the danger that weapons of mass destruction or weapons-usable material in Russia could be stolen and sold to terrorists or hostile nation-states and used against American troops abroad or citizens at home.

The events of September 11 and the risks that U.S. forces face in Operation Enduring Freedom only reinforce this conclusion. Every day, we learn more details about Osama bin Laden's chilling quest for weapons of mass destruction, including

efforts to enlist the Russian mafia in purchasing and/or stealing sensitive nuclear materials in the former Soviet Union.

Over the past ten years, beginning with the Nunn-Lugar initiative, the United States has spent more than $5 billion to help the states in the former Soviet Union reduce the threat posed by poorly secured, excess stockpiles of weapons of mass destruction, related raw materials and the human expertise behind it all. While these efforts have contributed vital individuals to the security of the United States and every other nation in the world, the bottom line is that we have not done enough.

One glaring concern is the lack of sufficient coordination inside the U.S. Government in planning and implementing various nonproliferation activities. Dozens of program offices in various Federal agencies and departments, ranging from the State Department to the Department of Agriculture, implement nonproliferation assistance with little or no overarching strategic guidance. According to the final report released by the Baker-Cutler Task Force:

> In particular, the urgent risk of proliferation of weapons of mass destruction demands the attention of the highest level of the U.S. Government. . . . *Coordination within and among U.S. Government agencies is insufficient and must be improved.* [Emphasis added.]

Let me give you a sense of the costs of the lack of sufficient coordination within the U.S. Government on this issue. I'm not just talking about program duplication and overlapping efforts, although those are legitimate concerns which can be addressed by better coordination. More critically, the absence of an overarching strategic vision on U.S. nonproliferation efforts can result in missed opportunities to neutralize emerging threats. It can prompt a timid bureaucracy to ignore opportunities for enhanced cooperation with foreign governments. We cannot be satisfied with our efforts to date so long as some nuclear materials and chemical weapons storage sites and former biological weapons production plans in the former Soviet Union still have no more protection than padlocks or barbed wire fences.

To ensure that the Executive Branch creates, implements, and manages nonproliferation activities in the former Soviet Union in a coordinated fashion, S. 673 will establish an interagency committee consisting of high-level representatives from the Departments of State, Defense, Energy, and Commerce and chaired by a National Security Council official. This committee shall prepare appropriate analyses and provide the needed guidance to ensure appropriate monitoring of U.S. nonproliferation activities in the former Soviet Union. I understand the administration has implemented an interagency process on these lines, but judging by the slow pace of its review of existing programs, a committee that is empowered to make decisions would be a most beneficial addition to the policy-making process. This bill would provide such a committee and not leave the policy process so dependent on individual personalities or temporary circumstances.

I encourage the Governmental Affairs Committee to move quickly, therefore, on S. 673 and report this bill out for floor consideration. Two weeks ago, the Foreign Relations Committee incorporated a slightly revised text of S. 673 in marking up and passing the Security Assistance Act.

Regardless of the specific legislative vehicle, it is my fervent hope that the Nonproliferation Assistance Coordination Act will become law in the near future. We cannot talk seriously about homeland defense or a war to deny terrorists access to weapons of mass destruction if we do not put in order our own efforts to work with the states of the former Soviet Union to secure, safeguard, and reduce its stockpiles of nuclear, biological, and chemical weapons and materials.

Senator AKAKA. And any Senator wishing to give a statement or offer questions for the witnesses may do so. The record will remain open for 1 week to do that.

Again, I want to say thanks so much for your responses and your statements.

The hearing is adjourned.

[Whereupon, at 11:46 a.m., the Subcommittee was adjourned.]

MULTILATERAL NONPROLIFERATION REGIMES, WEAPONS OF MASS DESTRUCTION TECHNOLOGIES, AND THE WAR ON TERRORISM

TUESDAY, FEBRUARY 12, 2002

U.S. SENATE,
INTERNATIONAL SECURITY, PROLIFERATION,
AND FEDERAL SERVICES SUBCOMMITTEE,
OF THE COMMITTEE ON GOVERNMENTAL AFFAIRS,
Washington, DC.

The Subcommittee met, pursuant to notice, at 9:35 a.m., in room SD–342, Dirksen Senate Office Building, Hon. Daniel K. Akaka, Chairman of the Subcommittee, presiding.

Present: Senators Akaka, Thompson, Stevens, and Cochran.

OPENING STATEMENT OF SENATOR AKAKA

Senator AKAKA. The Subcommittee will please come to order. I want to thank our witnesses, Ms. Elisa Harris of the Center for International and Security Studies at Maryland and Dr. Amy Smithson of the Stimson Center for being with us this morning. I want to also welcome Dr. Jim Walsh of the Belfer Center for Science and International Affairs and Dennis Gormley of the International Institute for Strategic Studies.

Today's hearing about multilateral non-proliferation regimes is the fourth of a series of hearings this Subcommittee has held on the issue of weapons of mass destruction proliferation. Last November the Subcommittee held a hearing on current and future weapons of mass destruction and proliferation threats and a second on combating proliferation of weapons of mass destruction with non-proliferation programs.

This Subcommittee has jurisdiction over intergovernmental relationships between the United States and international organizations of which the United States is a member. In holding today's hearing we will explore ways in which these organizations may be used more effectively to prevent the proliferation of nuclear, chemical, and biological weapons and the means to deliver them.

Since September 11 we have all become aware of the dangers directly posed by these weapons. Attacks against the United States are no longer in the realm of science fiction or Hollywood. As technology evolves, these weapons threaten to become even more deadly and more difficult to detect and to prevent from being used. If we do not take September 11 as a wake-up call history may well repeat itself with even more terrible consequences. We must use

every tool at our disposal to deter the development and use of these weapons.

We know now that the al Qaeda network was busy trying to develop biological, chemical and so-called dirty nuclear weapons. These were not weapons that al Qaeda could develop on its own—they needed access to foreign technology and foreign scientists. Fortunately, so far it appears that they did not get enough information to perfect these weapon systems before we disrupted their efforts. This demonstrates why it is so important that we choke off the proliferation of WMD technology at its source—government labs and commercial enterprises. Terrorists can gain access to weapons of mass destruction or the technology to make them but they can only do so if foreign governments or foreign scientists or foreign companies willingly provide that information or technology to them.

Multilateral agreements are one way to prevent terrorists from gaining weapons technology but multilateral regimes are worthless if they are not effective. China, for example, adheres to most of these agreements but as a recent unclassified report to the Congress by the CIA notes, China continues to provide missile-related technology to a variety of countries of proliferation concern. The CIA cannot rule out contacts by China with foreign nuclear weapons programs and Chinese firms continue to supply chemical weapons production equipment and technology to Iran.

If we cannot get countries to abide by the international agreements they have adhered to, then our only alternative may be to take unilateral action to prevent the spread of weapons of mass destruction. This is not the preferred step but it may be our only choice if multilateral agreements do not work.

I welcome our witnesses to today's hearing. I look forward to their suggestions as to what works and what does not work in our effort to control the spread of weapons of mass destruction.

I want to welcome Senator Thompson this morning to this hearing and ask him for his statement.

OPENING STATEMENT OF SENATOR THOMPSON

Senator THOMPSON. Thank you, Mr. Chairman, and thank you for holding this hearing today. I think it is an extremely important one. We, of course, these days are very concerned about the terrorism problem, but it is really hand in hand with the proliferation problem. At least 25 countries now possess—or are in the process of acquiring and developing—capabilities to inflict mass casualties and destruction—nuclear, biological or chemical weapons or the means to deliver them. The nexus between terrorism and proliferation is very disturbing.

The possibility that a terrorist organization will acquire a weapon of mass destruction from one of the many countries developing weapons of mass destruction capabilities is increasing daily. According to a recent intelligence report, several of the 30 designated foreign terrorist organizations and other non-state actors worldwide have sought chemical, biological or nuclear weapons. Many of these terrorists are receiving assistance from countries of concern. Highlighting this danger is the fact that our troops recently uncovered rudimentary designs of a nuclear weapon in an al Qaeda facility in Afghanistan.

The rapid spread of information and technology has greatly complicated our efforts to prevent the spread of weapons of mass destruction. The information on chemical, biological and even nuclear weapons is widely available on the Internet.

Multilateral nonproliferation regimes are one of several tools that our country, and the global community at large, uses to stop the spread of weapons of mass destruction. Today we will be discussing the strengths and weaknesses of those regimes. These regimes are not perfect. Each has significant shortcomings. Collectively, though, they have apparently made a difference in slowing the proliferation of weapons of mass destruction.

However, we should keep in mind that a multilateral nonproliferation regime is only as effective as the strength of each member's commitment to abide by the principles and rules of the regime. Unfortunately, some regimes have members with weak national export control systems that invariably permit elicit technology transfers.

Despite being a member of all of the regimes that we will discuss today, Russia, for example, has yet to develop an effective national export control system. Russia's export controls are still apparently incapable of preventing the illicit transfer of WMD technologies.

Other regimes have members that are covertly seeking weapons of mass destruction. Iran, for example, is a member of the Biological and Chemical Weapons Conventions, but has not honored the commitments to either regime. Intelligence reports tell us that Iran has manufactured and stockpiled chemical weapons and aggressively sought biotechnical materials and expertise for its offensive biological weapons program.

Compounding these problems is the fact that some regimes have members that deliberately sell weapons of mass destruction technologies to countries of concern. These suppliers, though publicly supporting the aims of multilateral non-proliferation regimes, are covertly selling dangerous technologies to rogue states. The most flagrant example of this behavior is China's WMD assistance to Pakistan. Though a member of the Nuclear Non-Proliferation Treaty and a proclaimed adherent to the Missile Technology Control Regime, China has armed Pakistan with nuclear bombs and ballistic missiles to deliver them.

We must never assume that because a country is a member of a multilateral non-proliferation regime that it will abide by its commitments. To do so, would lead us to a false sense of security. We must be cautious and diligent. And we must be careful not to rely on those regimes as the sole means of stopping the spread of WMD information and technology.

Moreover, it is critical that we effectively use our other foreign policy tools, as well. Sanctions, national export controls, foreign aid, and military force are just a few examples of tools that could be used to address the growing threat of WMD proliferation.

I am pleased that we have such a distinguished panel of experts with us today to discuss these issues, Mr. Chairman. Thank you again.

Senator AKAKA. Thank you, Senator Thompson.

I have some brief questions for you. Before I ask you the questions I would like to ask you for your statements. So will Miss Harris please begin?

TESTIMONY OF ELISA D. HARRIS,[1] RESEARCH FELLOW, CENTER FOR INTERNATIONAL AND SECURITY STUDIES

Ms. HARRIS. Thank you, Mr. Chairman. In my testimony this morning I would like to address three issues, consistent with your letter of invitation: First, the nature of the chemical and biological weapons threat to the United States; second, the impact of the Biological Weapons Convention and the Chemical Weapons Convention on this threat; and third, measures for enhancing the effectiveness of these multilateral treaties in preventing the acquisition of chemical and biological weapons by both national and subnational—in other words, terrorist—groups. I will summarize my prepared statement but would request that the full text be included in the hearing record.

Senator AKAKA. Without objection, it will be included.

Ms. HARRIS. Thank you. Prior to September 11 and the subsequent anthrax attacks, the threat of national and terrorist acquisition of chemical and biological weapons were often seen as separate issues requiring separate solutions. Now, however, we must recognize that these two proliferation problems are closely linked in that assistance from national programs is likely to be critical to terrorist efforts to acquire and use chemical or biological weapons successfully.

According to the U.S. Government, about a dozen countries are believed to have chemical weapons programs and at least 13 are said to be pursuing biological weapons. These national programs pose a direct threat to U.S. military forces and to our friends and allies in the two regions where the weapons are proliferating—Northeast Asia and the Middle East. They also pose an indirect threat because of their potential to serve as a source of chemical and biological weapons expertise or materials to other national or terrorist programs.

One cannot, of course, rule out the possibility that terrorists will acquire chemical or biological weapons on their own without assistance from a national program. But to date, the three most significant terrorist incidents involving chemical or biological weapons—the recent anthrax attacks here, the Aum Shinriko CBW attacks and the Rajneeshee salmonella attack—all suggest that assistance from national programs is likely to be crucial to terrorist efforts to acquire and use chemical or biological weapons successfully.

Of course, the Biological and Toxin Weapons Convention and the Chemical Weapons Convention have had some impact on these national programs. But the 1972 BWC lacks enforcement provisions and has been violated by a number of countries, including the former Soviet Union, and more recently, Iraq. Unfortunately, the Bush Administration has opposed efforts to negotiate legally binding measures to strengthen enforcement with the Convention.

The 1993 Chemical Weapons Convention, by comparison, contains the most extensive enforcement provisions ever negotiated in

[1] The prepared statement of Ms. Harris appears in the Appendix on page 298.

the arms control area. But it, too, faces a number of challenges in these first years of its implementation.

Clearly steps can and should be taken to enhance the effectiveness of and reinforce the prohibitions in each of these treaties. In the time that I have left, I would like to just mention a few of those steps.

First, with respect to the Biological Weapons Convention, we should resume multilateral discussions on measures to strengthen the BWC. Specifically, the United States should abandon its opposition to multilateral discussions and agree at the November 2002 continuation of the BWC review conference on a process that will allow both U.S. proposals and other proposals for strengthening the Convention to be explored.

Second, pending international agreement on legally binding measures to strengthen the Convention, the United States should support efforts to expand the U.N. Secretary General's authority to investigate allegations of the development, production or possession of biological weapons. Today the Secretary General can only investigate the use of these weapons. We should give him the power to investigate activities prior to use.

Third, we should strengthen controls over dangerous pathogens. The United States should take the lead in securing tighter international controls on culture collections and other repositories of biological materials. We should also work with other countries to strengthen oversight of laboratories to prevent either deliberate or inadvertent misapplications of biotechnology research for destructive purposes.

And fourth, we should enhance oversight of the U.S. biological defense program. Revelations that the United States has produced weapons-grade anthrax and replicated a Soviet era biological bomblet as part of its biological defense program have raised questions both here and abroad about the nature and scope of U.S. activities in this area. Today, there are no comprehensive review mechanisms in place for these secret biological defense activities. The U.S. Congress should hold oversight hearings on the biological defense program to ensure that its scientific, legal, and foreign policy impact is consistent with U.S. non-proliferation interests.

With respect to the Chemical Weapons Convention, we should, first, make adherence to the CWC an explicit foreign policy goal. Libya's recent decision to join the Chemical Weapons Convention demonstrates that even in complicated regions like the Middle East there are opportunities for expanding membership in this treaty. It is not unimaginable that North Korea might agree to abandon its chemical weapons program and join the convention as part of a broader security arrangement on the Korean Peninsula. The United States should ensure that CWC adherence is a prominent issue in its foreign policy toward the key hold-out countries, including North Korea.

Second, we should be prepared to use challenge inspections to address serious compliance concerns, especially in countries where bilateral consultations have been either unsuccessful or are not appropriate.

Third, we should devote the resources necessary to meet the treaty's destruction deadlines. Both the United States and Russia

have indicated to the treaty organization that they will be unable to meet the April 2007 deadline for destroying their chemical weapon stocks. We should work with Russia and ensure in our own case that adequate resources are devoted to meeting this important obligation.

Fourth, we should rectify the budget problems in the treaty organization for the Chemical Weapons Convention. Because of a zero growth budget imposed on the OPCW over the past 5 years, we are beginning another year millions of dollars short for implementation. This has serious implications for the verification activities of the OPCW. The United States should work with the OPCW and other parties to ensure that there are sufficient funds to carry out all planned verification activities.

And finally, we can strengthen both conventions, both the BWC and the CWC, by making it an international crime for individuals to develop, possess or use chemical and biological weapons. Both the BWC and the CWC impose legally binding obligations on governments but not on individuals. The United States should support the negotiation of a treaty that would make it a crime under international law for individuals to acquire or use chemical or biological weapons or to knowingly assist others in doing so. Thank you, Mr. Chairman.

Senator AKAKA. Thank you very much.

At this time I would like to call on Senator Cochran for his statement.

OPENING STATEMENT OF SENATOR COCHRAN

Senator COCHRAN. Mr. Chairman, thank you very much. I am pleased to join you in this hearing this morning and I thank you for convening the hearing and assembling the witnesses that we will hear from today.

This is a very interesting and troubling issue. I have been frustrated over a period of time that our efforts to control the proliferation of weapons of mass destruction and other items that threaten the security of the world have not been more successful. We have these international agreements, these so-called non-proliferation regimes, and it seems to me that in most of the serious cases of proliferation these agreements are ineffective to stop or even slow down the proliferation of weapons of mass destruction or the missile systems that could be used to deliver them over long ranges.

So I am concerned if we continue to put our trust and faith in that process, in those regimes, whether we are really contributing to a false sense of security. I am curious to know what the witnesses might say about alternatives to the regimes and I just heard Ms. Harris, of course, point out a couple of things that she thinks could be considered to improve the effectiveness of the regimes.

It is this kind of suggestion I think we are looking for this morning, not only observations and discussions of the regimes themselves and what our practices have been in the past. And if there have been successes, we need to think about those. We do tend to focus probably on the ineffectiveness rather than the good that the regimes may have done and that would be useful for us, in order to have a balanced view.

So it is important and I do not know of any other issue more serious to us as a country at this time, certainly coming on the heels of the attacks that we have seen last year and the concerns we have for future terrorism attacks against the United States and our citizens.

So it is very timely and we appreciate very much the cooperation of all of you to help make this hearing a success.

[The prepared statement of Senator Cochran follows:]

PREPARED OPENING STATEMENT OF SENATOR COCHRAN

The proliferation of weapons of mass destruction is one of the greatest threats our nation faces today, and will continue to face in coming years. Countering that threat in order to ensure the security of our citizens and deployed forces requires a variety of means, ranging from diplomacy to intelligence to active and passive defenses, and even to military action when necessary.

Nonproliferation regimes are important tools in this fight against the spread of chemical, biological and nuclear weapons and their delivery means. Unfortunately, despite the existence of regimes covering all types of weapons of mass destruction, the spread of these weapons to nations and even terrorist groups continues, as the CIA has documented in its recent *Unclassified Report to Congress on the Acquisition of Technology Relating to Weapons of Mass Destruction.* Consider Iran, for example. According to the CIA's report, despite being a signatory to the Chemical Weapons Convention, Iran has manufactured and stockpiled several thousand tons of chemical weapons, comparable in size to Iraq's stockpile before the Gulf War. And the Director of Central Intelligence told the Senate just last week that Iran, despite being a signatory to the Nuclear Non-Proliferation Treaty, is at work now on a nuclear weapons and may succeed in developing one in just a few years.

The extent to which these nonproliferation regimes can stop or slow the proliferation of WMD remains to be seen. I look forward to hearing our witnesses' views on how the effectiveness of these regimes can be improved, and I commend the Chairman for calling this hearing to examine this important issue.

Senator AKAKA. Thank you very much, Senator Cochran.

I would like to then call on a statement from Dr. Smithson.

TESTIMONY OF AMY E. SMITHSON, Ph.D.,[1] DIRECTOR, CHEMICAL AND BIOLOGICAL WEAPONS NONPROLIFERATION PROJECT, HENRY L. STIMSON CENTER

Ms. SMITHSON. Thank you. Adjusting policies and programs to address the threat of terrorism is not easy. I would like to thank this Subcommittee for looking beyond the obvious, for holding a hearing that examines the utility of international treaties in helping to assure this Nation's well-being.

Arms control critics often deride treaties as weak mechanisms that can be broken with impunity, yet these same critics would hardly advocate scrapping U.S. laws against murder even if those laws are broken with disturbing frequency. Rather, they would call for better enforcement of the laws. Even a good law is only as effective as its enforcement. Member governments are the custodians of these treaties. As the world's most powerful nation, the United States has a special responsibility to lead efforts to enforce them.

Despite what you might have heard, terrorists are likely to have difficulty overcoming the technical hurdles associated with acquiring a capability to inflict mass casualties with chemical and biological weapons. Therefore one key to keeping such weapons out of their hands is to tackle the proliferation problem at the national level. Treaties such as the Biological and Toxin Weapons Conven-

[1] The prepared statement of Ms. Smithson appears in the Appendix on page 304.

tion and the Chemical Weapons Convention are intended to compel governments to abandon their weapons programs.

Moreover, full and effective implementation of these treaties applies to the subnational actor security threat in three important ways. First, the fewer governments that maintain chemical or biological weapons programs, the fewer places terrorists can turn to for help with weapons materials and expertise.

Second, the CWC, but not at present the BWC, requires states to outlaw offensive weapons activities domestically. The CWC approaches its fifth anniversary with 145 members, all now obligated to have enacted penal laws that hold individuals accountable.

Third, treaties can block weapons proliferation via the incorporation of export controls. Three years after the CWC was activated, treaty members were barred from trading so-called Schedule II chemicals with countries that had not joined. Should the CWC's members decide this fall to apply export controls to the more widely traded Schedule III chemicals, states that remain outside of this treaty would incur tremendous economic hardship. Moreover, the CWC would have significantly amplified the practice of multilateral export controls by having almost five times the number of countries in the Australia Group enforce export controls on hundreds of chemicals.

As you know, midway through 2001 the Bush Administration rejected the draft BWC monitoring protocol, a decision with which I agree. My agreement is based on the advice of 35 technical experts, top-notch experts from the U.S. pharmaceutical and biotechnology industries, research institutes, universities, defense contractors, and veterans of the two U.S. trial inspections to see how the BWC could be monitored. There are a number of reasons why this protocol should have been rejected, which I will be delighted to elaborate on in Q and A.

In November of this past year the Bush Administration proposed several alternatives to monitor the BWC, some of which are downright puzzling. For example, putting investigations of suspicious disease outbreaks and alleged biowarfare incidents in the hands of the U.N. Secretary General suffers the same handicap as the current structure; namely, the possible politicization and delay of challenge inspections.

Another baffling proposal involves voluntary nonchallenge visits. Not to mince words, but why would a BWC violator invite inspectors into its midst unless it had taken extreme care to clean up all evidence of cheating prior to issuing the invitation?

The Bush Administration also advanced proposals with significant merit, as Mrs. Harris has described, to strengthen the security of access to pathogenic microorganisms, to have governments oversee high-risk experiments with pathogens, to establish professional scientific codes of conduct, to improve disease surveillance, and to require BWC members to pass legislation criminalizing offensive bioweapons activities. The common downfall of these proposals is that the Bush Administration would leave it to each of the BWC's 141 members to set their own domestic standard; to wit, country A could enact a criminalization law with slap-on-the-wrist penalties while country B puts in place a stiff penal code.

As for the CWC, which has enjoyed a relatively strong launch in its first 5 years, this treaty clearly could be working better. One need only ask a U.S. official or discretely circulate among the treaty's cognoscenti to hear whispers of compliance problems, yet no challenge inspections have been requested to address these concerns. The reasons for these circumstances lie largely in how the United States has implemented this treaty.

When the Senate gave its advice and consent to the CWC's ratification and Congress passed the treaty's implementing legislation, the bills were spiked with exemptions that deprived the inspectors of their two strongest tools; namely, challenge inspections and laboratory analysis of samples. Officials from other nations, including Russia and China, have privately told me that their countries would not hesitate to cite the U.S. exemptions to hold inspectors at bay.

In this day and age it would be foolhardy to neglect any viable mechanism that can reduce the threat of weapons of mass destruction. I will conclude with a few recommendations to improve the performance of these treaties.

I would ask that Congress and the Bush Administration waste no time in taking the appropriate steps to see that the CWC is fully implemented and that all reasonable efforts are made to strengthen the BWC with a panoply of monitoring tools. U.S. policymakers must push this year to add Schedule III chemicals to the export control list and also overturn the aforementioned exemptions, restoring full power to the CWC's inspectors. Please give these inspectors a fighting chance to catch treaty violators. Otherwise the United States will have no one to blame but itself for this treaty's weakened condition.

Second, Congress should insist that the Bush Administration fulfil Public Law 106–113 and conduct BWC monitoring trials at various sites. Should such trials show that meaningful monitoring results can be achieved at a tolerable cost, then regular or random nonchallenge inspections would be far preferable to the proposed voluntary visits. Moreover, to have a chance of being effective, challenge inspections must be as automatic and as distanced as possible from politics.

Finally, to make the other BWC monitoring proposals more effective, the United States should add tough standards that make the desired changes reasonably uniform, not hit or miss. Thank you.

Senator AKAKA. Thank you very much, Dr. Smithson.

Dr. Walsh, your statement, please.

TESTIMONY OF JIM WALSH, Ph.D.,[1] RESEARCH FELLOW, BELFER CENTER FOR SCIENCE AND INTERNATIONAL AFFAIRS, JOHN F. KENNEDY SCHOOL OF GOVERNMENT, HARVARD UNIVERSITY

Dr. WALSH. Mr. Chairman and Members of the Subcommittee, thank you so much for giving me the opportunity to speak to you today about an issue that I think is of singular importance to U.S. national security, and that is nuclear terrorism. What I would like to do in my brief remarks is focus on three of the questions that

[1] The prepared statement of Mr. Walsh appears in the Appendix on page 313.

I raise in my written testimony. Those questions are: First, are multilateral nuclear treaties effective? Second, where do multilateral treaties fit in a broader strategy against nuclear terrorism? And finally third, what is the role for Congress?

Let us begin with the first question: Are multilateral nuclear regimes effective? Of course, multilateral nuclear institutions come in a variety of forms. Some are treaties, like the Nuclear Non-Proliferation Treaty, or NPT, and the Convention on the Physical Protection of Nuclear Materials. Others are informal multilateral groups like the Nuclear Suppliers Group, while still others, like UNSCOM and KEDO, are at hoc agencies that were developed in response to a particular crisis.

Now, of course, creating a multilateral institution is one thing but having an effective multilateral institution is quite something else. Some multilateral institutions have been tremendous successes while others have been abject failures. How are we to judge the regime, the nuclear regime and the way it has performed? I would like to take just a minute and look in particular at the role of the Nuclear Non-Proliferation Treaty and related regime components and their effect on the spread of nuclear weapons around the world.

After 50 years the most striking feature of the nuclear age is that there are so few nuclear weapon states, far fewer than predicted by virtually every expert and every policy-maker. As one observer noted, "Almost all published predictions of the spread of nuclear weapons have turned out to be too pessimistic." Perhaps the most famous or infamous prediction of nuclear proliferation was offered by President John F. Kennedy. Kennedy warned that in 10 years—this was back in the early 1960's—that in 10 years an additional 21 countries might develop nuclear weapons. And published work at the time from universities, from think-tanks and defense intelligence estimates endorsed that prediction. As one commentator put it, "The belief was common that the nuclear spread has proceeded and would continue to proceed as fast as the technology would take it." The French military theorist Pierre Gallois observed that proliferation was as irreversible as the generalization of fire arms.

Yet the results have been far different than those predictions. An overwhelming majority of nuclear-capable countries have opted to forego nuclear weapons and, over time, the rate of proliferation has actually declined. Let me repeat that, that the rate of proliferation has actually declined. After peaking in the 1960's the number of new nations joining the nuclear club each decade has gone steadily downhill and several nations that built or inherited nuclear weapons—South Africa, Ukraine, Belarus and Kazakhstan—chose to renounce their nuclear weapons.

When in history, asked one scholar, have so many nations had the capability to produce a powerful weapon and chosen not to exercise it? Indeed, I would argue that the absence of widespread proliferation may be the greatest unheralded public policy success of the 20th Century.

A key factor in the success was the establishment of the Nuclear Non-Proliferation Treaty. Archival documents, interviews with former country leaders and a general pattern of state behavior sug-

gests that the NPT had a decisive impact on the spread of nuclear weapons.

Now it should be emphasized that the nuclear non-proliferation regime is not a magic bullet. Several factors in addition to the NPT have contributed to nuclear restraint and, like any policy instrument, the non-proliferation regime suffers from imperfections and trade-offs. The record suggests, however, that many of those earlier predictions of widespread proliferation would have come true in the absence of the nuclear non-proliferation regime.

Let me turn to the second question. How can these multilateral instruments fit into a broader strategy to reduce the risk of nuclear terrorism? It seems to me that any strategy to reduce the threat of nuclear terrorism should recognize at least two principles. The first principle is that the United States is only as secure as the weakest link in international security. Applied to the issue of nuclear terrorism, what that means is that the security of nuclear materials and nuclear technology is determined not by the level of security at the most protected facilities but rather, by the level of security at the least protected facilities.

The second principle, and I think it is self-evident, is that it is better to prevent terrorists from acquiring weapons of mass destruction than trying to stop them after they have already gotten them.

Together these principles suggest that in the field of WMD terrorism, homeland security begins abroad. The United States has to improve its level of domestic security—I think that is obvious—particularly in the areas of aviation and infectious disease, but that will not be enough. We cannot wait for terrorists to acquire nuclear materials and then try to stop them once they are bound for America on their deadly mission.

Instead, homeland defense abroad suggests five policy objectives. One, prevent and otherwise reduce the number of nuclear weapon states. Two, reduce the number of states with stockpiles of plutonium and highly enriched uranium. Three, secure all remaining nuclear weapons materials and facilities. Four, increase the number of area and interstate nuclear checkpoints. And five, develop the capacity to quickly identify and trace nuclear materials.

All of these objectives lend themselves to multilateral regimes. These regimes provide a way to build the first line of defense against nuclear terrorism. Moreover, they do so in a way that is financially and politically prudent. The United States cannot singlehandedly improve the security of all the world's nuclear installations. Such a task is neither financially nor politically feasible. Working with other nations through multilateral nuclear regimes provides a practical alternative for reducing the threat of nuclear terrorism.

Finally, let me turn to the third question: What is the role of Congress? And here I am going to talk about nuclear terrorism in particular and I can talk more generally about non-proliferation in the Q and A if there is interest there.

There are a number of actions that Congress might take to reduce the risk of nuclear terrorism. These legislative responses fall generally into one of three categories: Oversight, appropriations, and policy innovation. Let me briefly touch on each of these.

First, oversight. Congressional oversight can be a powerful tool for change. Hearings, annual reporting requirements and appropriations tied to certification can focus the attention of the executive, the bureaucracy and the public. Given the events of the last several months, there are a number of things Congress might do in this area and I will just name one here.

Congress should insist on all available information about nuclear terrorism. Congress cannot fulfill its legislative responsibilities without such information and yet much of it is scattered or being withheld from the public domain. A variety of news organizations, including the *Times of London* and *CNN,* have their own cache of documents collected from al Qaeda safehouses and training facilities. Meanwhile, the Department of Defense and various executive agencies have their own set, a separate set of documents, as well as the results of prisoner interviews and the results of forensics tests. Most of this information can be made available without endangering sources and methods.

This is a small but critical step in the fight against nuclear terrorism. The history of WMD terrorism suggests that it is self-defeating for the executive to maintain a monopoly over information. Most of the important nuclear initiatives of recent years have had their origins outside the executive—in Congress, for example, with cooperative threat reduction, in university research centers, and with nongovernmental organizations.

If Congress is going to pursue new approaches to WMD terrorism and if scholars are going to provide independent assessments of the dangers and opportunities, then Congress has to take the lead in seeing that the relevant information is available.

Second, appropriations. Progress against nuclear terrorism will not be possible without financial resources. Unfortunately, efforts to prevent nuclear terrorism have not been a funding priority. This year billions of dollars will be devoted to new weapon systems and other activities whose purpose is to respond to a terrorist attack and yet only a tiny fraction of this amount will be expended on efforts that would prevent WMD terrorism from taking place in the first place.

In the past, Congress has used its power over the purse to ensure that funds were devoted to the problem of nuclear terrorism even in the face of executive and bureaucratic indifference. Today the need for Congressional leadership is stronger than ever before. With rising deficits and a long list of interests lining up for their share of the anti-terrorism funds, this will not be easy. But success in the fight against nuclear terrorism depends on continued leadership from Congress. Congress must find a way not only to fund efforts to prevent nuclear terrorism but fund them at a scale commensurate with the size of the problem—at a scale commensurate with the size of the problem.

Finally and quickly, third, policy innovation. One of the most exciting areas where Congress can contribute to nuclear security is in the field of policy innovation. For reasons of time let me simply list some of these areas.

One, internationalizing the concept of cooperative threat reduction beyond the Soviet Union. Cooperative threat reduction started out of the Congress, started out of the Senate, and it seems to me

that this has been a successful innovative program, not without problems but nevertheless successful and innovative, that can be expanded beyond the former Soviet Union.

Two, developing world-wide civil constituencies for nuclear security. During the Cold War, the United States pursued a variety of initiatives to promote democracy around the world and to defeat communism. It set up a special institute to support democratic institutions abroad, established Radio Free Europe, and funded a variety of programs whose purpose was to develop a constituency for democratic governance. Congress later used this tactic in support of a different objective when it established the private U.S. Institute for Peace. For its own part, the executive has established a series of special funds; for example, the special fund on AIDS in Africa.

These same tactics can be applied to the new problem of nuclear security. Congress could, for example, establish a foundation or an institute for the prevention of WMD terrorism. Acting as a private entity, this institute could train and support the development of professional nuclear societies, journalists and locally-based environmental groups and others from other countries, from foreign nations, and then these people could go and monitor the state of nuclear security and press for improvements in their own country, much as we did the same thing in our fight against communism decades ago.

Third, Congress might look at the establishment of legislator-to-legislator dialogue with legislators from other countries on this issue of nuclear terrorism and WMD terrorism.

This list of initiatives is obviously not exhaustive. Instead, it is meant to illustrate how Congress might approach the question of policy innovation. Simply put, it makes sense for Congress to think about policy instruments it has used in other issue domains and how they might be creatively applied in the new context of nuclear terrorism.

Mr. Chairman and Members of the Subcommittee, it has been a great honor to speak with you today. In my testimony I have suggested that multilateral regimes have proven to be effective and that they can be even more effective if considered as part of a broader strategy against nuclear and WMD terrorism. This strategy, premised on the notion that homeland security begins abroad, seeks to prevent terrorism at the source, to stop terrorists before they reach our shores.

September 11 was a wake-up call, as the Chairman rightly said. It is history grabbing us by the collar and telling us to act now before it is too late. No institution has shown more vision, steadfastness or creativity on the problem of WMD terrorism than the U.S. Senate but recent events clearly demonstrate that additional action is required. My hope and expectation is that the Senate will respond to this challenge as it has responded to the challenges of the past and that America will be a stronger and more secure Nation as a result. Thank you.

Senator AKAKA. Thank you, Mr. Walsh.

Before I ask for Mr. Gormley's statement I would like to ask Senator Stevens for his statement.

Senator STEVENS. I am sorry to be late, Mr. Chairman. I had another meeting. I have no opening statement.

Senator AKAKA. Thank you. Mr. Gormley, your statement, please.

TESTIMONY OF DENNIS M. GORMLEY,[1] SENIOR FELLOW, INTERNATIONAL INSTITUTE FOR STRATEGIC STUDIES

Mr. GORMLEY. Thank you, Mr. Chairman, Members of the Subcommittee. It is a pleasure to appear before you today to offer my suggestions on ways to enhance the Missile Technology Control Regime to cope with the prospects of weapons of mass destruction in the hands of both state and nonstate actors.

I fear we have fallen short in adapting the MTCR to cope with rapid changes in the technologies underlying WMD delivery. The most egregious shortcoming is in the way the MTCR is ill prepared to deal with the next great missile proliferation threat, that of land attack cruise missiles. Concern about the spread of land attack cruise missiles is driven by two realities. First, the quantum leap in dual use technologies supporting cruise missile development, and these include satellite navigation and guidance, high resolution satellite imagery from a host of commercial vendors, unregulated flight management systems for converting manned aircraft into unmanned aerial vehicles, and digital mapping technologies for mission planning.

And second, the fact that the 33-nation missile technology control regime is much less effective at controlling the spread of cruise missiles and unmanned aerial vehicles than ballistic missiles. To be sure, ballistic missiles receive top priority because they are already widely proliferated while land attack cruise missiles have only begun to emerge as a threat, but that is precisely the reason why improved controls on cruise missiles are so critical now. Were the gaping deficiencies in the way the current MTCR provisions handle cruise missile transfers eliminated, the MTCR could conceivably do as well with cruise missiles as it has with controlling the spread of highly sophisticated ballistic missiles.

So far, ballistic missile technology that has spread is largely 50-year-old SCUD technology, a derivative of World War II German V–2 systems. Many of the weaknesses of this technology can be exploited by missile defenses.

It is equally important to say what has not spread because of the MTCR—sophisticated Pershing–2 technology with terrain contour guidance and maneuvering reentry vehicles, as embodied in Argentina's and Iraq's forestalled Condor missile program, which would have greatly stressed today's missile defenses. My prepared statement goes into some detail on ways to repair the regime but let me offer just two stark examples of what might very well occur absent essential reforms.

First, whereas today's MTCR has hindered advanced ballistic missile sales, ambiguities surrounding the ground rules for determining the true range and payload of cruise missiles threatens to open the floodgates of advanced cruise missile sales. This would be the equivalent of uncontrolled sales of Pershing–2 missiles to states outside the MTCR membership.

[1] The prepared statement of Mr. Gormley appears in the Appendix on page 322.

Second, perhaps the gravest near-term terrorist threat of exploiting cruise missile technology lies in transforming manned kit airplanes into unmanned and armed weapons carriers. There is a dizzying array of kit airplanes in today's marketplace. A simple Internet search recently produced close to 100,000 copies of about 425 systems in a growing worldwide market.

But the biggest challenge in transforming these kit airplanes into unmanned attack means involves the design and integration of a flight management system. At present, MTCR controls fail to deal with an emerging phenomenon of small aerospace firms getting into the business of selling flight management systems for transforming manned into unmanned air vehicles. The mind spins with scenarios of such unmanned systems, which are ideal means for disseminating biological agents threatening both domestic and overseas targets.

Essential MTCR reform will be impossible without the determined leadership of senior Executive Branch decisionmakers, as well as a more rigorous and consistent management of the interagency process by the National Security Council. Leaders of key MTCR states, spurred by U.S. leadership, must come together to convince the broad partnership of the benefits of enhanced MTCR controls on cruise missile proliferation.

It is important to recall President Reagan's original objective in announcing the MTCR in 1987, "Hindering, not eliminating the spread of missiles capable of delivering mass destruction weapons." However imperfect the MTCR has been as a non-proliferation mechanism, it has hindered the spread of the most advanced and pernicious forms of ballistic missiles, making ballistic missile defenses more conceivable. It needs to do as well with cruise missiles. Letting cruise missiles proliferate will ultimately not only present its own set of unique demands from a cruise missile defense standpoint but will make effective ballistic missile defenses more costly and demanding, too. That is simply because in many respects they use the same interceptors. Patriot–3 is one good example.

We need to spend far less time expanding MTCR membership and writing an international code of conduct, which shamelessly neglects to include cruise missiles in its language, and much more time reforming and adapting the regime to cope with technological change and new missile threats.

Thank you, Mr. Chairman. I look forward to your questions.

Senator AKAKA. Thank you very much, Mr. Gormley. We do have questions.

I would like to ask Ms. Harris, the first question. There has been an on-going debate on the question of mass attack with biological weapons. Before September 11 and the anthrax attacks, U.S. military and nongovernment experts agreed that for some time to come terrorist groups are unlikely to have sufficient expertise and resources to succeed in a mass attack with biological weapons. Do you believe this statement?

Ms. HARRIS. Mr. Chairman, I think that assessment is still valid, with one caveat, and that is assuming terrorists do not get assistance from a national biological or chemical weapons program. The technical and operational hurdles to terrorists acquiring these capabilities on their own are really very substantial.

The worrying thing, as both the President and Secretary Rumsfeld have emphasized in recent weeks, is the possibility of assistance from a national program to one of these terrorist groups. This nexus between proliferation and terrorism really is the issue that we should be focusing on—to prevent national programs from being a source of assistance to terrorists' chemical and biological acquisition efforts.

Senator AKAKA. Dr. Smithson, the administration has pointed to the failed UNSCOM inspections in Iraq as evidence of how even the most invasive inspections cannot stem biological weapon development and production. Do you agree?

Ms. SMITHSON. No, sir, I do not agree with that position, the reason being that I have spent quite a bit of time in the company of those very UNSCOM inspectors. They have told me that virtually from the minute they walked into facilities, like Al Hakum and Salman Pak, they knew they were in the midst of an offensive biological weapons program. The same would hold true for the inspectors who first went over to the former Soviet facilities under what is known as the Trilateral Agreement. This also is the case with what U.S. pharmaceutical and biotechnology industry experts told me, and their views are presented in the Stimson Center report "House of Cards."

So I think UNSCOM actually caught the Iraqi bioweapons program quickly, but did not come up with hard proof until very late in the game. So I would think there should be constructive measures that might be put in place to monitor the BWC.

Senator AKAKA. Thank you.

Dr. Walsh, Iraq nearly completed building nuclear weapons despite IAEA inspections. There have been questions about IAEA's capabilities. Can current IAEA inspections detect clandestine nuclear programs?

Dr. WALSH. It is an excellent question, Mr. Chairman, and I think when you look at the history of the non-proliferation regime what you see is, as in a lot of domains in life, something bad happens and then it is followed by something good. Something bad happens and it focuses attention, creates the political will, and then we have an improvement.

When the NPT first came into force in 1970, it had no enforcement provisions, none. Subsequent to that we have had a series of arms control and other agreements that have become progressively more intrusive and therefore have given us greater transparency, a better look inside countries to see, in fact, if they are violating agreements.

Now, in the case of Iraq, I think it is absolutely right that IAEA failed us, in part because they did not make use of the powers that they already possessed. They could have done more without having written an additional protocol but they failed to use those powers.

Following Iraq, however, I think we have seen a reform of IAEA. There are still improvements to be made but you will remember that following Iraq we had the 93 Plus two protocol that would have established environmental monitoring and now there are a number of states who have joined that additional protocol.

So, in response to Iraq, we developed new procedures and technologies to improve our ability to detect violations of the treaty.

You also will have noticed that after Iraq, IAEA was much more aggressive and part of the reason why we knew about the North Korean problems, and were able to intervene to freeze that program, was because of the work of IAEA.

I think also it would be unfair to say that IAEA was the only one responsible for negligence in the Iraqi case. Declassified documents indicate that a number of countries had suspicions about Iraq's nuclear behavior in the 1970's but for political reasons—animosity towards Iran after the hostage crisis, that sort of thing—many countries looked the other way. They knew what was going on but they looked the other way because they were more focused on Iran than Iraq. That was a decision that came back to haunt them.

So in summary, it was more than IAEA that failed us in Iraq but since then there have been a number of administrative and technical steps that have bolstered and strengthened the regime.

Senator AKAKA. Thank you.

Mr. Gormley, your testimony mentions the challenge of determining cruise missile range and payload and how the range of cruise missiles may be changed with little apparent modification to its air frame. The question is could these challenges be addressed through an inspection regime?

Mr. GORMLEY. That is a very good question and one I had not much thought about but it seems to me that an inspection regime with sufficient scrutiny would certainly provide one with enough information about the sheer volume of the missile and the relationship between the true payload and the amount of space earmarked for fuel. Then the calculation of range is a relatively straightforward one, assuming various launch altitudes, which account for the difficulty with cruise missiles compared with ballistic missiles. A ballistic missile is a ground-to-ground system and it is a simple determination of maximum range trajectory. In the case of a cruise missile, it can be launched from the ground and fly at a low altitude but because it is an aerodynamic vehicle, it can also fly at higher altitudes where the fuel efficiency is much greater.

So the calculation based on an inspection with some scrutiny would certainly allow you to provide enough information to determine the true range capability of a cruise missile.

Senator AKAKA. Thank you.

I call on Senator Thompson.

Senator THOMPSON. I will defer to Senator Cochran.

Senator COCHRAN. I yield to you, Mr. Chairman.

Senator THOMPSON. Thank you very much.

Let me ask both Miss Harris and Miss Smithson for an interchange about the issues concerning the chemical and biological weapons conventions. I get the impression, Miss Harris, that you think the United States should have signed on to the recommendations of the November 2001 review conference.

I get the impression, Miss Smithson, you really do not think that they should have and perhaps the United States is not going far enough in terms of the issues of verification.

Here, as in other areas, it seems like we have a lot of nations who have signed on and a lot of nations who are in violation to the Chemical Weapons Convention. It seems we have a better system

of verification apparently than we have with the Biological Weapons Convention. I would be interested in elaborating a little bit more about the distinction, why that distinction is extant, what you think about it, what we might do differently and, as I indicated, your view of the United States position with regard to the 2001 review conference. If either one of you would like to comment.

Ms. HARRIS. Thank you, Senator. I think the key difference we have to start with between the Biological Weapons Convention and the Chemical Weapons Convention is that the BWC has no enforcement provisions and the Chemical Weapons Convention has extensive enforcement provisions—requirements for declarations, routine visits to facilities that are covered by the treaty and challenge inspections.

Today, we have no ability to pursue concerns that another country is developing or producing or stockpiling biological weapons.

Senator THOMPSON. If I could stop you there, how did that come about? That does not make any sense to the average person who is unfamiliar with the background. It might help for both or either of you to explain to people why an area that seems nowadays to be much more dangerous, and that is biological, why would anyone enter into an agreement that had absolutely no verification requirements at all.

Ms. HARRIS. I think it is very unlikely that any country would enter into an agreement now that had no enforcement mechanisms, but we have to remember the BWC was negotiated in the late 1960's and early 1970's. When it was concluded in 1972, it was the first treaty to outlaw an entire category of weapons. It was completed during the Cold War, at a time when arms control and the accompanying verification provisions were really in their infancy. To the extent that there were verification provisions being pursued, they were on the nuclear side, and relied primarily on national technical means.

At the time, it was viewed as simply not feasible to consider anything more intrusive in terms of verification arrangements. It was also deemed to be technically quite difficult.

So I think one needs to look at the BWC in the context of the time in which it was negotiated, these political environments and what was deemed to be possible, both technically and politically, in terms of verification.

Senator THOMPSON. The question is, as it always is, whether or not it is better to enter into something that might give you a false sense of security rather than having nothing at all.

Ms. HARRIS. I think the decision made by President Nixon in 1969 was the right one, which was that biological weapons offered few military advantages to a major military power such as the United States, but if they were to spread to other countries, they could challenge and degrade our military capabilities. So despite the political and technical difficulties of verifying a BW ban, the Nixon Administration decided to go forward with this treaty.

Senator THOMPSON. Would you move on to these other points, please, that we raised?

Ms. HARRIS. Certainly. As I said a moment ago, today we have no ability to enforce compliance with the BWC. The whole point of the Biological Weapons Convention protocol was to try to put in

place enforcement mechanisms that, while not providing high confidence ability to detect cheating, would nevertheless make it harder, more costly and more risky for countries to violate their obligations under this treaty.

So the goal was not to catch every cheater but instead, to try to deter this illicit activity and to get information that could help inform our own decisions about biological defense activities, export controls, etc. Because the objective was more modest—deterrence rather than verification—the set of measures that were pursued in the negotiations were more modest than those in the Chemical Weapons Convention. This meant declarations of the facilities most likely to be misused for BW purposes rather than all relevant faculties, on-site visits rather than routine inspections and the possibility of challenge inspections.

Senator THOMPSON. Ms. Smithson.

Ms. SMITHSON. You are correct in detecting a difference of our opinions. I would argue that the draft BWC protocol should have been rejected simply because it could not perform as advertised.

Let me give you an example. One of the provisions that the technical experts that sat around my table had problems with was the idea that a nonchallenge visit would deploy four inspectors for 2 days. One of the industry experts who participated in this exercise, Dr. Steve Projan, who is the director of antibacterial research at Wyeth-Ayerst Research, summed up his views of this particular provision by saying, "Four inspectors for 2 days couldn't even get through all the bathrooms at my facility."

Now what these experts told me is that they do believe it is possible to craft monitoring provisions that can tell the good guys from the bad guys, and I believe them because this is one of the most heavily regulated industries in the world. They know their way around inspections. They also believed that it was possible to manage the risks of those inspections to protect confidential or proprietary business information. That is why they urged the Executive Branch, and they urge you to ask the Executive Branch, to fulfill the public law that requires additional research and field trials in this area. The resulting data should inform the U.S. position in future negotiations.

Ms. HARRIS. Senator, could I just add one point? While Amy and I disagree on the value of the draft Biological Weapons Convention protocol, I think the one thing we would both agree on is that the Bush Administration has made a mistake in rejecting any subsequent multilateral process for trying to develop a stronger, legally binding regime to strengthen the convention.

So whatever differences we have on the protocol, I think we both feel that it is critically important for the United States to support the resumption of international efforts to try to develop legally binding enforcement mechanisms for this treaty, which we both believe are possible.

Senator THOMPSON. My time is up, but what is that issue, Miss Smithson? What is the procedural issue there and what reason does the administration give for not proceeding with trying to get a better deal?

Ms. SMITHSON. Perhaps you can ask that question directly of Under Secretary of State Bolton, who essentially rained on the

party. He called the negotiations quits. There is a 1-year hiatus here. I hope that the United States uses that year to get its act together, to do the technical field work necessary to come to the negotiating table with a well informed negotiating position.

At this point, I think the jury is out. We really do not know whether or not this treaty can be monitored but these are such odious weapons that we ought to give it our best shot.

Senator THOMPSON. Whether or not anyone will agree to have them monitored.

Ms. SMITHSON. Well, sir, I would remind you that 145 countries have signed up for the tremendously strict monitoring provisions of the Chemical Weapons Convention, so sometimes it can surprise you what countries will agree to.

Senator THOMPSON. Thank you, Mr. Chairman.

Senator AKAKA. Senator Cochran.

Senator COCHRAN. Mr. Chairman, one of the ways we have tried to enforce agreements and to convince countries they should not engage in proliferation activities is the use of economic sanctions. To what extent do you think these have been effective? Are there any instances where you know that the imposition of sanctions have worked to help diminish the threat caused by proliferation? Mr. Gormley, let us start with you.

Mr. GORMLEY. In my view, I think there is room for and a strong utility for the implementation of sanctions. Unfortunately, the history of the use of sanctions in regard to missile proliferation has been notably weak.

Do I think there is room for improvement? I think one might look at ways of standardizing the best provisions of the existing law to create more targeted and calibrated sanctions that are precisely focused on the issue of trying to take the profit out of proliferation. This requires identifying those particular entities and imposing costs on those entities that outweigh the benefits of sanctionable activity that has occurred.

So I think there is some room for improvement, but I think the record from 1990, with the implementation of the first Export Administration Act and more recently in 1996, with the Arms Export Control Act, the evidence is not strong that it has been terribly effective at impeding missile proliferation.

Senator COCHRAN. Dr. Walsh.

Dr. WALSH. Sanctions have not been a frequent part of the nuclear non-proliferation regime but they have been used on occasion. You will remember after the Indian nuclear test in 1974 there were a series of sanctions imposed by individual countries and again after the 1998 tests in South Asia, Japan and to some extent by the United States placed economic sanctions against the parties. Those were later withdrawn.

I think sanctions can be useful. You want to be able to send the message to potential proliferators that if they cross the line there will be consequences to their behavior. And when people do cross the line you do want to punish them so that future proliferators see what those consequences will be.

I am an advocate of smart sanctions. I think that when it comes to nuclear proliferation the key question is who is sitting around the table? Who are the decisionmakers and what are their inter-

ests? When it comes to nuclear weapons the decisionmakers tend to be the country leader, the military, the scientific bureaucracy, typically the nuclear agency, and sometimes there are players on the side. And they are struggling with this question: Is this nuclear weapons program in my interests or not, not only from a national security standpoint but from the standpoint of bureaucratic interests? Do I, as the head of my nuclear agency in Country X, am I going to do better or do worse if we pursue nuclear weapons? Sometimes these people have concluded they will do better budget-wise, jurisdiction-wise, etc., and have voted in favor of pursuing nuclear weapons.

I think one of the things we can do with sanctions is not only send the message that if you cross this line you will be punished but also make them smart, targeted sanctions so they affect the interests at the table as decisionmakers sit around and try to decide their nuclear future.

Senator COCHRAN. Dr. Smithson.

Ms. SMITHSON. The main sanction that has come into play with efforts to retard the proliferation of chemical and biological weapons would be economic sanctions. In the mid-1980's a number of countries, led by Australia, formed an export control cooperative known as the Australia Group, which controls now a lengthy list of chemical precursors, chemical and biological equipment, as well as pathogens and other diseases that could be used to inflict harm on animals, humans or crops.

The Chemical Weapons Convention has amplified the Australia Group's effectiveness many times over when it comes to the control of chemical weapons precursors.

There is a role for sanctions, although I have to concede that since I do not see classified information, I do not know exactly how effective these sanctions have been. However, I hear a number of government officials arguing that these are efforts well worthwhile.

Senator COCHRAN. Ms. Harris.

Ms. HARRIS. Senator, I would make three points with respect to sanctions. First, I believe, having been involved in sanctions decisions over the course of 8 years in the Clinton Administration, that sanctions are most effective before they are imposed, when they can be used as a tool to try to influence state behavior, to try to influence governments to tighten up their export controls so as to prevent the transfer of sensitive WMD-related technologies.

Second, sanctions are most effective when they are applied broadly by the international community, rather than by the United States alone.

And third, they are most effective when they give the Executive Branch the flexibility to defer the imposition of sanctions in order to work with the government of jurisdiction to try to put a stop to the transfers of concern and to put in place stronger domestic mechanisms to prevent such transfers in the future.

Senator COCHRAN. Its been several years now since the Chemical Weapons Convention has been in force. One of the provisions is to permit challenge inspections of suspected activities or facilities. Why hasn't that been used? Why hasn't that right to ask for challenge inspections been used? And do you think it would be appropriate, since according to unclassified intelligence reports that we

have talked about, there are suspected activities, there are suspected facilities, why not use that provision of the treaty to try to find out what is going on and put a stop to it under the terms of that treaty? Dr. Smithson.

Ms. SMITHSON. Actually, I would argue that the reason challenge inspections have not been used or one of the main reasons is that we have shot ourselves in the foot. There was an exemption passed with the implementing legislation on this treaty that gives the President the right to refuse a challenge inspection on the grounds that it might threaten U.S. national security. Well, according to the article in the treaty that governs challenge inspections, that option is not there. So what this exception does is it allows other governments to use a loophole that we ourselves have created.

I mentioned that Chinese and Russian officials have told me they are delighted at this turn of events, that they would be able to say hey, you challenge us; well, we refuse the challenge because it would threaten our national security.

So we have kind of made this an impotent tool and that, I think, is definitely not in U.S. interests, which is why I argued that this exemption and the exemption on analysis of samples must be overturned if we are to restore full powers to these inspectors.

Senator COCHRAN. Dr. Walsh, do you have an observation about that question?

Dr. WALSH. No, sir, I do not. Only to say that I would like to see us break that barrier and for them to be a more regular feature of arms control and international multilateral treaties. I would like to see more challenge inspections. That was the issue around Iraq. IAEA had the power to do more and they did not use it. They became much more aggressive in North Korea and I would like to see that same level of aggressiveness in other areas, as well.

Senator COCHRAN. Ms. Harris.

Ms. HARRIS. Senator, I think the situation with respect to the Chemical Weapons Convention and challenge inspections is rather more complicated than has been suggested here. There are, in fact, a number of reasons why challenge inspections were not utilized in the first few years after the treaty entered into force, which was in 1997.

First, here in the United States, we were very much focused on our own implementation of the treaty—passing implementing legislation, preparing our declarations, ensuring that on a national basis we were meeting our treaty obligations.

Second, the international implementing organization, the OPCW, also was focused in the initial years on verifying the initial declarations by countries, verifying the beginning of destruction activities and, quite frankly, was not prepared technically to proceed with challenge inspections.

And third, as Under Secretary Bolton said at the CDClast week, we were using the treaty's consultation provisionsvery effectively to pursue concerns about whether a number of countries had made accurate declarations or whether they may have been engaged in on-going offensive activity. Those bilateral consultations resolved our compliance concerns with a number of countries.

Today, we are in a different situation. Our own domestic implementation is going fairly well, notwithstanding delays in the de-

struction program. The treaty organization is up and running and ready to carry out challenge inspections. And we have come close to exhausting the prospects for using other treaty provisions, such as the consultation provisions to resolve our concerns.

So I think it is appropriate now to be considering challenge inspections in those cases where consultations have not addressed our concerns or in cases where such bilateral discussions are simply inappropriate or not likely to be productive. If we have good intelligence information about particular countries, we should proceed with these types of inspections.

Senator COCHRAN. Thank you very much.

Mr. Chairman, thank you.

Senator AKAKA. Thank you very much, Senator Cochran.

Senator Stevens, your questions?

Senator STEVENS. Thank you.

Dr. Walsh, you have twice said that we did not use the powers that we had in Iraq. My memory is that Sadam Hussein dismissed the American leader of our inspection team and then he expelled the whole team. What powers did we have under those circumstances that we did not use?

Dr. WALSH. I am sorry, Senator Stevens. I should have been clearer in my statements. I am talking not about the post-Gulf War inspections. I am talking about IAEA's failure to use challenge inspections prior to the Gulf War when there were suspicions about nuclear activities in Iraq.

You will remember, for example, in 1981 the Osiraq reactor was bombed by Israel. There are any number of documents that have mentioned—American declassified documents—that expressed concerns about Iraqi nuclear behavior throughout the 1970's. So what I would have liked to have seen is that power exercised earlier so that we were not in a situation where we fought a war and then, after the fact, discovered nuclear ambitions and nuclear programs that were further along than we had suspected.

Senator STEVENS. My problem is I do not know how to go back and renew that now. You imply that we might be able to do something now. What would you suggest we could do now?

Dr. WALSH. Well, let me speak more generally about the issue of challenge inspections and make two points.

First, I probably take a different view than some of my colleagues in that I would like to see more regular challenge inspections. Right now challenge inspections are seen as such a big deal that if I issue a challenge inspection it is really an indictment of another country. So there is a real barrier, a psychological and political barrier, to crossing that line. Those who might ask for a challenge inspection ask themselves: Do we have the goods? Do we really want to do this or do we want to pursue other instrumentalities?

I would like to see the threshold for being able to execute a special inspection, the political threshold lowered so that they are more common because I think the more common they are, the greater the transparency and the greater the likelihood that we will deter potential proliferators. So I would like to see them become a more frequent part of the regime.

In terms of IAEA in particular, we have had a strengthening of IAEA since Iraq and part of that has been this protocol I referred to earlier, 93 Plus 2, or the Additional Protocol. Essentially it says we are going to collect information about nuclear activities not only by going to the reactor or doing material accountancy; we are also going to test the air and the water. We are going to do environmental monitoring. So even if you do not let us into a facility, we are still going to have the ability to detect clandestine activity. I think that is enormously useful. So what we need to do is continue to expand.

Senator Thompson, you raised the issue of why would we join something that did not have an enforcement mechanism and, of course, the NPT did not have an enforcement mechanism. I think it is important to remember that these institutions are not fixed. They evolve over time. The NPT and the non-proliferation regime is certainly bigger and better than it was in 1970. We have more instrumentalities, we have more resources, so we should expect that with experience, sometimes bad experiences, but with experience we are able to craft better instruments to try to enforce and try to verify the agreements.

Senator STEVENS. Mr. Walsh, I am sorry to say I do not think we have any options left with Iraq.

Dr. WALSH. Oh, you mean currently?

Senator STEVENS. Yes.

Dr. WALSH. Well, let me be clear about Iraq. I know we are focused on nuclear terrorism and Bin Laden. Bin Laden has somewhere between $25 and $300 million. Sadam Hussein has billions of dollars. He is, in my mind, an international war criminal. He is one of the few leaders ever to have used chemical weapons against innocent civilians and then used weapons of mass destruction in a war with another country. I think he is a seriously bad guy.

I think having said that, I would like to see him removed from office. The question is how do you get to that? How do you get there? And I think reasonable people can disagree. This is a policy conundrum. It is not going to be an easy one to solve but he ranks as high as anyone in my mind as a threat to international security.

Senator STEVENS. Let me just state that Senator Cochran and I are on the Appropriations Committee and we do not have money, as you have indicated, to continue down some of these avenues you would like us to pursue because of the circumstance that exists now.

We do not make any more nuclear weapons. Russia throws theirs out and renews them every 5 years. Most of the nuclear nations make new weapons. We do not make any new weapons. We have a nuclear stockpile program that now costs us several billion dollars a year to try to determine whether the nuclear weapons that were built 20 years ago are still not only safe but potentially effective if we ever were called upon to use them.

Now that determination not to test weapons has strained away in the appropriations process the money we would use to follow all the things you would like us to follow in terms of chemical, biological and nuclear weapons inspections and detection concepts. Do you have any comment on that? Why were we pushed into that corner of not making weapons and instead spending billions of dollars to

pursue the policy of assuring the utility of weapons made 20 years ago?

Dr. WALSH. A quick overview and then a response to your question, Senator. The overview is that nuclear weapons, and I do not have to tell this Subcommittee but I think it is worth it for the broader public to understand this, nuclear weapons are not like conventional weapons. Numbers matter less. Whether I have five nuclear weapons and you have four is less of an issue. The issue is deterrence and national security and the destruction that you can do to another country.

I do not know of another country in the world that we would want to trade places with in terms of our current nuclear stockpile. There is no country that has a more resourced, more sophisticated, more deadly stockpile and any of those countries that have ambitions in those areas would certainly prefer ours to theirs. So I do not worry about our stockpile as much.

I think we also have to look at this in the context of proliferation. We made commitments under the Nuclear Non-Proliferation Treaty and we made commitments to other countries in order to get the indefinite extension of that treaty that said that we would pursue the Comprehensive Test Ban Treaty. And I know that there are different views about this treaty probably on the Subcommittee, as there are in Congress, but my own view is that this is an important non-proliferation tool and it is an important political issue because of the commitments the U.S. Government has made in order to get other non-proliferation achievements and victories.

Now as to the question of cost, yes, stockpile stewardship is a very expensive program and I would certainly not disagree with that. But I am hopeful that given the intelligence and creativity of the Senate, that they will be able to find funds for these vitally important issues for U.S. national security, as they have been able to find funds for other things.

Before September 11 the surplus was going down and yet we have been able to find the money to fund homeland security. It seems to me, again with this notion that homeland security begins abroad, that we can find the money and we need to find the money to strengthen the system internationally so that those things do not come back to haunt us.

Senator STEVENS. The vote is on, Mr. Walsh. I do not know if maybe the rest of the people want to make some comments on that but in my judgment you may be right today but will you be right 5 years from now, 10 years from now? We will still be maintaining the most expensive program of stockpile maintenance in the world. We spend more annually than most nuclear nations spent to get into the nuclear circle and we spend it to preserve weapons that are 20 years old now.

I disagree violently with this concept that we should continue to spend that money. We should start building some again and we should toss out the ones that are old. If we did, we would have some money to do what you suggest.

Thank you very much.

Senator AKAKA. Thank you very much. I would like to ask the Members present whether they want to return for more questions.

We now have a vote call and we expect to have three votes, one after the other, which will take some time.

So let me ask the Members whether you have further questions or whether you would be willing to submit it and adjourn this hearing.

Senator COCHRAN. Mr. Chairman, I have no other questions. I asked that my complete statement be printed in the record at the beginning of the hearing.

Senator AKAKA. Without objection it will be printed.

Senator COCHRAN. We appreciate very much the witnesses' efforts to help us this morning and the excellent answers to our questions. I think it has broadened our appreciation of the challenge that we face in this area and deepened our understanding, as well. Thank you.

Senator AKAKA. Thank you. Senator Thompson.

Senator THOMPSON. Mr. Chairman, I have no further questions, either. I would ask that my full statement be made a part of the record and I, too, would want to thank the witnesses and let them know that the statements they have submitted will be the basis of a lot of consideration by the staff. As we approach these issues it is much more than just the little time we spend here together that you have contributed and we appreciate that.

I am always trying to learn more about these complex issues and trying to figure out just exactly what is the significance of inspection. Miss Smithson, you seem to have some faith in it. Sometimes I feel that we should look at it more from a common sense standpoint. Who would allow you to come in and inspect something that is going to be a problem for them?

Ms. SMITHSON. That is what I said, sir.

Senator THOMPSON. I hope Sadam Hussein never agrees to us coming in to inspect because if he does, we will be in the same rigmarole that we were in before. It will be hide and seek and running around. I am convinced he will never let us in. An inspection regime presumes a mechanism whereby people in good faith are trying to convince one another that there is no problem. If there is a problem and you allow an inspection regime, that just means it is a matter of one trying to out-fox the other. Then, in his case you get into issues of intrusiveness and what was actually found, then running to the United Nations every time there is a dispute and the same sorts of things.

So I am troubled by the whole concept. I am not sure how effective that can ever be in a big nation, with all kinds of capabilities.

I also look for signs of optimism with regard to these other regimes. Clearly we have got to try to reach some accommodations with these other countries. But, when you look at the nuclear nonproliferation regime, we learn things as we go along. One of the things we learn is that it does not keep China from outfitting Pakistan soup to nuts and we do nothing about it. Basically we catch them and they say well, those pictures you have of missile canisters, you cannot prove there are missiles actually in those canisters that we have sent to Pakistan and we accept that. So it is kind of farcical.

With regard to the MTCR, China and Russia or entities within those countries basically do what they feel like they need to do

with regard to assisting Iran, Pakistan, and other nations. Then you have the rogue nations themselves, like North Korea, developing indigenously all these things and becoming suppliers within their region.

So continue to look for reasons for optimism, why these regimes really work. I am sure that there are some things that we have deterred that we otherwise would not, as you pointed out. But, with regard to the big players and countries that determine this is what they need in their own national interest, whether it be India or Pakistan, it seems that these things, international norms and all that mean nothing in the face of all that. So continue trying to convince people like myself that these are doing a lot of good.

Thank you, Mr. Chairman.

Senator AKAKA. Thank you, Senator Thompson.

As you can tell, Members of this Subcommittee have deep interest in this area and we will continue to explore this.

Miss Harris, Dr. Smithson, Dr. Walsh, and Mr. Gormley, I want to thank you again for coming this morning and for your testimony and your responses.

A number of points are clear. Terrorists will need to rely largely on states to develop weapons of mass destruction. Currently multilateral non-proliferation regimes are not effective enough to detect and prevent states from developing WMD programs. However, these regimes are an essential part of a strategy to prevent WMD proliferation.

The key question then is how does the administration intend to strengthen verification regimes? The administration's proposals for national regulations and voluntary cooperation mechanisms within the BWC are not enough and what I would call moving beyond traditional arms control. Moving beyond traditional arms control is no substitute for arms control if there is nothing concrete to replace it.

For our next hearing that we are planning on this subject, we will invite the administration to appear.

We have no further questions at this time because of the vote that we are expecting. However, Members of this Subcommittee may submit questions in writing for any of the witnesses. We would appreciate a timely response to any questions. The record will remain open for these questions and for further statements from my colleagues.

I would like to express my appreciation once again to all the witnesses for your time and for sharing your insights with us this morning.

Any further comments? Otherwise, the Subcommittee is adjourned.

[Whereupon, at 11:02 a.m., the Subcommittee was adjourned.]

STRENGTHENING MULTILATERAL NONPROLIFERATION REGIMES

MONDAY, JULY 29, 2002

U.S. SENATE,
INTERNATIONAL SECURITY, PROLIFERATION,
AND FEDERAL SERVICES SUBCOMMITTEE,
OF THE GOVERNMENTAL AFFAIRS COMMITTEE,
Washington, DC.

The Subcommittee met, pursuant to notice, at 2:30 p.m., in room SD–342, Dirksen Senate Office Building, Hon. Daniel K. Akaka, Chairman of the Subcommittee, presiding.

Present: Senators Akaka and Cochran.

OPENING STATEMENT OF SENATOR AKAKA

Senator AKAKA. The Subcommittee will please come to order. I want to say good afternoon to everyone, both our witnesses and the audience. I want to welcome all of you here today.

As you know, last week the Committee approved a substitute amendment to S. 2452, legislation creating the Homeland Security Department. Today, we are going to focus on how we can improve our security through more effective international agreements.

Earlier this month, John Bolton, the Undersecretary of State for Arms Control, commented in a State Department journal, "With very few exceptions, terrorist groups have not acquired and cannot acquire weapons of mass destruction without the support of nation-states."

Our nonproliferation policies help prevent terrorists from obtaining these weapons. U.S. nonproliferation strategy is a four-pronged approach that includes treaties, export control systems, multilateral regimes, and assistance to other countries.

This Subcommittee has held hearings in the past on U.S. export control systems and assistance to other nations, especially the states of the former Soviet Union. Today, we will discuss international regimes and treaties.

Over the next 4 months, each of the six nonproliferation regimes will have a general members meeting. A primary topic to be discussed will be the new threat environment and how the regimes should address WMD proliferation to terrorist groups.

Today, the Subcommittee will learn what steps the administration is taking to strengthen these regimes.

Last week, Stephen Younger, the Director of the Department of Defense's Defense Threat Reduction Agency, said "Al Qaeda has been trying to get weapons of mass destruction capability. I think that they had a limited infrastructure in Afghanistan to produce it

indigenously. However, that doesn't mean that they don't have a different capability elsewhere."

The President's just-released national homeland security strategy fails to include nonproliferation among the principles of homeland security. However, our nonproliferation policies, including U.S. participation in multilateral regimes, are an essential part of our defense against a WMD terrorist attack on American soil.

I would like to welcome our administration witnesses, Vann Van Diepen, the Deputy Assistant Secretary of State, and Marshall Billingslea, the Deputy Assistant Secretary of Defense. This is not the first time either of you have appeared before this Subcommittee, and I thank you for your continued assistance in our international security and proliferation oversight responsibilities.

And now, I would like to yield to my friend, Senator Cochran.

OPENING STATEMENT OF SENATOR COCHRAN

Senator COCHRAN. Thank you, Mr. Chairman.

Mr. Chairman, I appreciate your convening this hearing today. It follows on an earlier hearing that we had back in February, when we heard from experts in this area on the dangers that flow from proliferation, dangers to our national security and the security of mankind, as a matter of fact. When you stop to think about the awesome consequences of an accidental nuclear incident, for example, or an exchange between two nation-states of ICBMs equipped with weapons of mass destruction, the consequences are just enormous and not just for the individual countries that may be actively engaged or involved.

I recall saying one time that an accident in the nuclear area, such as we had with the Chernobyl incident in Ukraine, a nuclear accident anywhere is a nuclear accident everywhere, because of the possibility of fallout and the impact that it potentially has around the world.

One other aspect of this hearing that I think is particularly significant is assessing not just what our obligations are to try to strengthen the nonproliferation regimes—that is part of our challenge, and that is the topic that we are operating under today—but what are the consequences on our cooperative efforts to develop defenses against missile attacks, and how would they be affected by the Missile Technology Control Regime?

For example, specifically, our relationship in the co-production of the Arrow missile system—it is a missile defense system that Israel has deployed—to what extent will our export or cooperation in developing and co-producing these systems have, in terms of the Missile Technology Control Regime?

There are other nation-states, too. In NATO, for example, we are talking about cooperative efforts to defend our European allies. We already have one program, the MEADS program, which involves Germany and Italy as well as the United States. It would be interesting to assess what impact the Missile Technology Control Regime or any other nonproliferation regime might have on our future efforts to cooperatively defend against missile attack on NATO countries.

So those are some of my thoughts as we open this hearing. Mr. Chairman, thank you again for chairing the hearing. We look forward to hearing our government witnesses today.

Senator AKAKA. Thank you for your statement, Senator Cochran.

And now, I would like to proceed to our witnesses and ask Mr. Van Diepen to proceed with his statement.

TESTIMONY OF VANN VAN DIEPEN,[1] DIRECTOR OF CHEMICAL, BIOLOGICAL AND MISSILE NONPROLIFERATION, U.S. DEPARTMENT OF STATE

Mr. VAN DIEPEN. Thank you, Mr. Chairman, Senator Cochran. It is my privilege to testify before you today on behalf of the State Department on the important subject of multilateral nonproliferation regimes, which play a vital role in the United States and international efforts to impede the spread of weapons of mass destruction, missiles for their delivery, and advanced conventional weapons.

Nonproliferation continues to be one of the most important and complex of America's foreign policy challenges. Preventing the spread of WMD and missiles is among the President's highest national security priorities. He has made clear that halting proliferation is a central tenet of U.S. foreign policy and that a comprehensive nonproliferation strategy is needed.

We are responding to this challenge with the active use of a broad range of tools: Norms, export controls, interdiction, sanctions, counterproliferation, deterrence, and direct diplomacy. Our toolkit also includes the multilateral nonproliferation arrangements or regimes: The Missile Technology Control Regime, the Australia Group, the Nuclear Suppliers Group, the Zangger Committee, and the Wassenaar Arrangement.

Members of these regimes agree as a matter of policy to control an agreed list of items according to agreed guidelines implemented according to national laws.

The other key multilateral approaches are legally binding global treaties that establish basic norms: The Chemical Weapons Convention, the Biological Weapons Convention, the Nuclear Non-Proliferation Treaty, and the International Atomic Energy Agency.

These regimes and treaties have made important contributions in conjunction with the rest of our nonproliferation strategy in slowing WMD and missile proliferation worldwide. Through effective enforcement of comprehensive export controls, broad multilateral cooperation in halting shipments of proliferation concern, and active outreach to key nonmembers to increase their awareness of proliferation threats, the regimes and treaties have made it more difficult, more costly, and more time-consuming for programs of proliferation concern to obtain the expertise and material needed to advance their programs, compelling them to rely on older and often less effective technology.

The treaties also have established a global, political, and legal barrier against the spread of WMD. The Chemical Weapons Convention and Nuclear Non-proliferation Treaty, in particular, have international verification organizations that have a legal right to

[1] The prepared statement of Mr. Van Diepen appears in the Appendix on page 331.

inspect and require other measures from states' parties in order to promote compliance and provide a basis on which the International Community can cooperate to enforce these norms.

My written testimony, which I hope can be entered into the record, describes the background, purpose, and membership of each of these regimes and treaties. Each of them continues to serve a vital role in the fight against proliferation. Each has recorded a number of successes, and each faces unique challenges.

I would like to review now the current effectiveness of the various mechanisms. By the 1990's, the Australia Group had largely succeeded in removing its members as an inadvertent source of supply for nation-state chemical and biological weapons programs.

Since September 11, the group has been focusing on revamping its controls to better address the terrorist threat. In 2002, the AG adopted licensing guidelines that include CBW terrorism as a reason for control and became the first regime to require participants to have so-called catchall controls, controls that cover nonlisted items when destined for a CBW program, and the first regime to control intangible transfers of technology. The AG also agreed to control technology for the development and production of listed biological agents and equipment.

In recent years, AG members have begun to consider measures to address the cooperation between nonmember countries on CBW programs. While the AG has been attacked in the BWC and the CWC by some nonaligned countries seeking to abolish export controls, AG participants agree on the continued necessity and viability of the group, its compatibility with the conventions, and the need to educate nonmembers on the regime. Dealing with a hostile environment in the BWC and the CWC will remain a priority.

Over the course of the Missile Technology Control Regime's 15-year history, the regime has persuaded most major suppliers to control responsibly their missile-related exports. We have reduced the number of countries with MTCR-class or Category I missile programs, eliminating programs in Latin American and Central Europe. MTCR countries have cooperated to halt numerous shipments of proliferation concern. The MTCR has established a broad outreach program to increase awareness of the global missile threat, and the MTCR Guidelines and Annex have become the international standard for responsible missile-related export behavior.

In addition to the MTCR, the United States supports the wide acceptance of the International Code of Conduct against Ballistic Missile Proliferation. Initiated by the MTCR countries in 1999, the code is intended to be a new multilateral complement to the work of the MTCR. It will supplement but not supplant the MTCR.

The code would consist of a small set of broad principles, general commitments, and modest confidence-building measures. It is intended to be a voluntary political commitment to establish a broad multilateral norm against missile proliferation. It will complement the MTCR and other national missile nonproliferation efforts by establishing a widely subscribed consensus that countries should cooperate on a voluntary basis to impede missile proliferation. We hope the code will come into effect as early as the end of this year.

The Nuclear Suppliers Group's greatest successes included requiring full-scope safeguards as a condition of nuclear supply to non-nuclear states, and controlling nuclear dual-use equipment and technology.

We have had notable success in gaining consensus within the Wassenaar Arrangement conventional regime on guidelines for the exports of Man Portable Air Defense Systems, expanding the arrangement's mandate to explicitly prevent terrorists from acquiring controlled items and increasing categories for arms reporting. Wassenaar provides a useful forum for discussing developments that have a bearing on national export control policies, regional developments, and possible mutual restraint.

The Biological Weapons Convention has served for nearly 30 years as an important international prohibition on nearly all activities associated with biological weapons. The BWC does not include a mechanism for checking compliance, as it is inherently unverifiable.

Although the United States concluded that we could not support the approach embodied in the draft BWC protocol and that the protocol's flaws could not be fixed, we have proposed several important alternative measures to combat the BW threat. Such proposed measures include promotion of standards for biosafety and biosecurity, scientific and industrial codes of conduct, and improved disease surveillance.

Our goal is to highlight compliance concerns and gain support from states' parties for the U.S. package and other measures that would address the BW threat of today and the future. We hope that BWC parties can agree on measures that will effectively do so.

The Chemical Weapons Convention has helped reduce the threat from chemical weapons, resulting in international disclosure of chemical weapons programs in India, China, and Iran. Stockpiles of chemical weapons, as well as chemical weapons production facilities, are being destroyed in Russia and a number of other countries. Around the world, facilities that could be used for chemical weapons-related purposes are subject to international inspection.

The CWC demonstrates the value of properly designed multilateral agreements for placing constraints on potential proliferators. Our experience with the CWC demonstrates the need for supplementary mechanisms, such as the Australia Group, to assist like-minded states in coordinating national nonproliferation efforts, and it also demonstrates the critical importance of U.S. leadership not only in negotiating an agreement but also in ensuring that it is effectively implemented.

The Nuclear Non-proliferation Treaty has contributed importantly to stemming the tide of nuclear proliferation. States such as South Africa, Argentina, and Brazil decided against nuclear weapons and joined the NPT. Following the dissolution of the Soviet Union, all former Soviet nuclear weapons were transferred to Russia. All other former Soviet States joined the NPT as non-nuclear-weapon states. The NPT remains especially critical today with the threat of nuclear terrorism.

The periodic NPT review process called for in the treaty is an important means for addressing these issues, including strengthening the treaty's verification system. As the key verification mechanism

under the NPT, the International Atomic Energy Agency has performed well but has also been frank in recognizing its deficiencies and in proposing remedies. Over the past 10 years, the IAEA has taken several steps to improve its safeguard systems.

Adoption by member states of the model additional protocol to existing safeguards agreements would strengthen the effectiveness and improve the efficiency of the safeguard system.

After September 11th, the IAEA moved promptly to expand its programs to combat nuclear terrorism. The IAEA has served as an important source of assistance to developing countries, which might otherwise not obtain the benefits of peaceful nuclear applications as envisaged for NPT parties in good standing.

A strong, effective, and efficient IAEA serves important U.S. interests. The IAEA must have sufficient and predictable funding resources to fulfill all aspects of its mission.

The Zangger Committee, the committee of NPT nuclear exporters, has taken the lead in developing supplier consensus to add enrichment, reprocessing, and heavy water production commitment to the so-called trigger list that the group administers.

This talks about what we have done up until now, but nonproliferation faces a challenging future. As events of the past year have demonstrated, we face an increasing proliferation threat from terrorists and their state sponsors. The treaties face a continuous threat from states that would seek to violate them. We must scrutinize not only the nonproliferation regimes and treaties but all of our nonproliferation tools with an eye toward improving their effectiveness.

These regimes and treaties have contributed greatly to international nonproliferation efforts, but we cannot become complacent. As a starting point, rigorous, energetic, and ever-vigilant enforcement is essential.

Nonproliferation remains a perpetually unfinished project. More work always needs to be done. We must deal with continuing proliferation threats posed by countries such as Iran, Iraq, Libya, North Korea, India, and Pakistan. We must strengthen cooperation and cope with the impact of technological advances. We must continue to combat the terrorist threat. We must consider new potential threats, expand our nonproliferation toolkit, and improve the efficiency of those tools we have.

My written testimony describes our ongoing and future efforts to address these challenges in some detail. To summarize, I would note the need for the regimes and treaties to focus on the following five priority areas.

First, regional nonproliferation, focusing on steps beyond simply controlling our own exports that we and our partners can take individually or collectively to impede proliferation.

Two, look for ways that these mechanisms can help deal with the threat of terrorism.

Three, continue to update control lists to reflect technological advances and ensure that they keep pace with proliferation trends, including terrorism and the use of so-called dirty bombs or radiological dispersal devises.

Four, work to extend export controls in line with regime standards to all potential suppliers, as well as to those countries that serve as transshipment points.

And five, increase efforts to make nonmembers more aware of the threat and consequences of proliferation, urge them to adopt polices and practices consistent with regime standards, and provide export control assistance as necessary.

In closing, multilateral nonproliferation regimes and treaties have an important role to play as two components of a comprehensive approach to advancing U.S. national security and nonproliferation policy. They must remain vibrant, active tools, focused on their collective and individual core mission, impeding threatening weapons programs, especially via impeding the spread of weapons and related equipment and technology, and reinforcing and verifying treaty obligations against the acquisition of weapons of mass destruction.

At the same time, these multilateral instruments must also possess the flexibility to adapt to new challenges on the battlefield of proliferation. The continued exercise of strong U.S. leadership will play an indispensable role in strengthening these multilateral regimes and treaties to better combat proliferation. Thank you.

Senator AKAKA. Thank you very much for your statement.

Mr. Billingslea, please proceed with your statement.

TESTIMONY OF MARSHALL S. BILLINGSLEA,[1] DEPUTY ASSISTANT SECRETARY OF DEFENSE, U.S. DEPARTMENT OF DEFENSE

Mr. BILLINGSLEA. Chairman Akaka, Senator Cochran, as requested, today I will provide the views of the Department of Defense regarding the effectiveness of current multilateral nonproliferation regimes and organizations in preventing WMD and missile proliferation. I will discuss some of the emerging trends that we are witnessing and how these regimes are able or unable to address such developments. I will then conclude with a look at where we should go from here.

I will start by characterizing the growing WMD threat. In terms of the terrorist dimension to the problem, we see an alarming pattern developing. With increasing frequency since the mid-1980's, we have seen a steady growth in the awareness of and interest in WMD by terrorist groups. These groups are aggressively trying to procure the necessary materials to conduct a WMD attack.

For instance, Osama bin Laden has publicly announced his WMD aspirations. He has likened the acquisition and use of WMD to a religious duty.

Our friends and allies have, on several occasions, thwarted WMD acquisition efforts, whether we are talking about cyanide smuggling or trafficking in radiological materials. A few months ago, for instance, a terrorist cell was caught with a cyanide compound and a map of the U.S. Embassy in Rome.

Though we have had some important successes, we know we are not completely blocking WMD procurement efforts by terrorist organizations.

[1] The prepared statement of Mr. Billingslea appears in the Appendix on page 346.

Part of the problem is that much of the equipment used to make and deliver WMD is commercially available from a large number of sources. It is very difficult to track dual-use technology and to stop it from falling into the wrong hands. The manufacturing equipment is generally small; it is generally portable; it is easily concealed. For instance, this hearing room is big enough to house a complete nerve agent production facility. And even less space, the anteroom, would be needed for a biological weapons production program.

Likewise, terrorist groups have both used and are interested in a variety of delivery mechanisms for their WMD; again, many of which can be constructed or adapted from commonly available materials or systems, such as pesticide sprayers.

There are, in short, seemingly infinite ways that a determined terrorist group could conduct a WMD attack. As you can see, it is difficult to combat the spread of this capability through multilateral arms control instruments such as treaties or export control regimes, though we believe that these regimes are generally helpful to the overall effort to block proliferation.

Terrorist WMD aspirations and threats are receiving a high degree of attention from the Bush Administration because the results of a WMD attack by terrorist groups or by countries could be catastrophic. We are particularly intent on ensuring that these groups are not able to obtain highly contagious pathogens.

Giving added emphasis to our efforts is the variety of excellent work being done by the medical and academic community regarding the various unconventional threats we now face. In particular, I would like to direct the attention of the Subcommittee to the recent work done by Johns Hopkins University in an exercise called Dark Winter. I summarize the results of that exercise in my testimony.

In addition to the fact that many terrorist groups are known to harbor WMD ambitions, there is another worrisome linkage. Every country that is a "state-sponsor of terrorism" also is pursuing its own national-level WMD and missile programs. In other words, every country that harbors, funds, or otherwise assists terrorist groups as a matter of government policy also as a matter of government policy is pursuing nuclear, chemical, or biological weapons and missile systems to deliver these weapons.

Countries such as Iran and Syria continue to support terror groups such as Hamas, Hezbollah, and Palestinian Islamic Jihad, and other groups, such as the PFLP–GC.

Some of the groups, like Hamas, are exploring ways to utilize WMD. Hamas is working with poisons and chemicals in an effort to coat suicide bomb fragments.

At the same time, both Iran and Syria themselves have robust chemical warfare programs, and both are exploring biological weapons. Both countries can deliver these weapons by a variety of means via short-range missile systems such as Scuds or by artillery shells. And Iran is making strides in developing the Shahab–3 medium range missile and longer range systems.

We also believe that Iran is pursuing aggressively a nuclear weapons capability, and we are concerned that the Bushehr nuclear power project is, in reality, a pretext for the creation of an

infrastructure that is designed to help Tehran acquire atomic weapons.

The same worrisome linkage exists in other terror-abetting countries.

Cuba, for instance, has a limited developmental research effort relating to biological weapons and also harbors terrorist groups such as the Basque separatist ETA and FARC and ELN operatives.

Iraq, which stands in violation of numerous Security Council resolutions and which expelled international weapons inspectors several years ago, is believed to be rebuilding its WMD infrastructure. On the terrorism side, Iraq today continues to harbor several terrorist organizations and provides bases of operations for groups such as the PKK, MEK, Abu Nidal, and the Palestine Liberation Front.

The linkage between terrorist groups and countries with WMD aspirations concerns us for several reasons. First, these countries give wide latitude to terrorist groups that operate within their borders. Terrorists are able to establish training and research camps where they are free to develop WMD and to perfect their plans for delivery. There also is a very dangerous potential that equipment and expertise meant for a state-level program could fall into the hands of terrorist groups, either unintentionally or by design. Finally, we are worried about the potential for a country to use terrorist networks to conduct a WMD attack.

I will turn now to an assessment of nonproliferation regimes. President Bush has placed a high priority on combating the spread of WMD and their delivery systems. We have moved rapidly to counter imminent terrorist threats and to identify and thwart future ones. In countering these urgent threats, President Bush has stated that traditional Cold War concepts, such as deterrence and containment, may no longer be appropriate in every situation. The international security situation has changed, and we must adapt our nonproliferation and defense strategies to recognize these changes.

Over the last 50 years, we have achieved important success in stemming the proliferation of WMD through a variety of mechanisms, ranging from treaties to multilateral technology control mechanisms such as the Australia Group and the Missile Technology Control Regime. Domestic export controls and transshipment laws and regulations designed to control the movement of sensitive goods and technologies also are very important.

That said, while the traditional nonproliferation policy instruments the United States has used to combat the proliferation of WMD—again, international treaties, multilateral export control regimes, and so forth—continue to have value in the collective international nonproliferation framework, they also have limitations.

One of the limitations is enforceability. At this stage, for instance, several countries such as Iran, Iraq, Libya, and Cuba seem able to violate their obligations under treaties such as the Biological Weapons Convention with relative impunity. The United States continues to employ treaty compliance as an issue at annual or biennial review conferences associated with these treaties and regimes, but we have not received a great deal of support from even our closest allies.

In the case of multilateral export control regimes—the MTCR, the Australia Group, Wassenaar—these are voluntary, nonbinding agreements. And an underlying assumption has been that the members are like-minded and would implement voluntary controls in a like-minded fashion. Unfortunately, in some instances, that has not always been the case.

Domestic export control laws and multilateral export and transshipment controls continue to be a vital part of the various successes that the United States and other allies have had. But with the global economy becoming more and more interconnected, dual-use items and technologies used to develop weapons of mass destruction cannot be effectively controlled without better cooperation among exporting and transit countries. Moreover, export controls and transshipment controls are only as good as the capability of those who adopt the measures in terms of their ability to enforce their laws and regulations.

This is an area where the Department of Defense sees an opportunity for improvement. We need to look at ways to bolster our interaction and cooperation with key transit countries, most of whom are friendly to the United States but who lack the technical capacity themselves to monitor and seize dangerous cargo.

We also need to work on countering the ability of WMD states and terrorist organizations denied an item by one country to obtain the same item from other sources outside the reach of traditional nonproliferation treaties and regimes.

Finally, we are seeing new patterns in WMD-related trade developing that existing export control regimes are currently unable to address, but which I think can be expanded and adapted to address this problem. Increasingly, trade in WMD and missile-related items is occurring between countries outside of the regimes. This is a new trend in secondary proliferation; that is, former importers are now becoming exporters to other states of concern.

And most troubling of all is the nexus that I have described between WMD, state-sponsors of terrorism, and terrorists themselves seeking these capabilities.

So as a result, the picture I paint today is a threat that is increasingly diverse, increasingly unpredictable, dangerous, and difficult to counter using traditional measures. But while these dangers are growing, the United States and our allies in the International Community are formulating ways to improve our ability to deal effectively with these new threats.

We will continue to use existing diplomatic and economic tools to engage with countries involved in proliferation activities to urge them to constrain, halt, or reverse those activities, to encourage them to desist. And we will continue to work with and assist friends and allies in developing and implementing their own mechanisms, domestic export controls regimes.

But to meet the threat head-on and stop it is going to require a new definition of nonproliferation, a stronger global nonproliferation architecture, and strenuous national efforts.

On the international front—and here I will echo much what my State Department colleague has said—we need to expand and enhance and enforce existing international nonproliferation treaties and regimes. This includes pursuing adoption of the IAEA's Addi-

tional Protocol. This is the protocol developed in the wake of Desert Storm and the discoveries of how Iraq was exploiting the existing protocol at that time, the new protocol that plugs those loopholes. We need to encourage countries to adopt that treaty and encourage other countries to fully comply with their obligations to the NPT, the Chemical Weapons Convention, and the Biological Weapons Convention.

Naming names is a very powerful diplomatic tool that we will continue to use at these annual review conferences for these treaties.

The United States also has proposed an amendment to the 1988 Suppression of Unlawful Acts at Sea Treaty, or the SUA Convention. We have proposed to expand the coverage of that treaty to include a wider range of additional offenses, including terrorist acts.

The proposed amendment the United States is pushing will make it a criminal offense to carry or transport, or cause to be carried or transported, items that are in violation of the CWC or the BWC or the NPT. If adopted, this proposal would effectively transform the SUA Convention from an after-the-fact extradite or prosecute treaty to a proactive treaty where military forces could board ships in international waters if they were carrying dual-use WMD-related materials.

We also need to continue to strengthen the multilateral export control regimes themselves to better equip them to combat the evolving global nonproliferation threat. Sensitive dual-use items and technology cannot be controlled effectively unless there is broad cooperation among exporting and transit countries. We have made an important start in this effort with the decision taken by the Australia Group to broaden the number of dual-use items that it controls.

But all of these steps taken together, unfortunately, are not going to be enough, given that yesterday's recipients of WMD-related systems and technologies are today's purveyors of WMD-related systems and technologies to other countries. As President Bush said in June at the West Point commencement ceremony, "We cannot defend America and our friends by hoping for the best. We cannot put faith in the word of tyrants, who solemnly sign nonproliferation treaties and then systematically break them. If we wait for threats to fully materialize, we will have waited too long. The war on terror will not be won on the defensive. We must take the battle to the enemy. In the world we have entered, the only path to safety is the path of action."

So in conclusion, from our standpoint, the future is ours to lose. In preventing the spread of weapons of mass destruction and their delivery systems, there is no excuse for inaction. The United States and the International Community must act and act decisively. As long as there are would-be-proliferators or groups seeking WMD, we must remain vigilant and resolute. And we need to take the initiative away from these groups, so that they are not able to choose the time and place of such an attack. I thank the Subcommittee.

Senator AKAKA. Thank you very much, Mr. Billingslea, for your statement.

Mr. Billingslea, as you mentioned Dark Winter, we have witnesses in previous hearings from Johns Hopkins who participated in Dark Winter.

Mr. Van Diepen, according to an article in today's *Washington Post,* there is discussion among some in the administration about a preemptive strike against the Iranian nuclear reactor before it becomes operational. Others argue that the reactor would be under the International Atomic Energy Agency's safeguards and does not pose a security risk.

What are we doing now to ensure that the IAEA has the financial and personnel resources to safeguard this facility?

Mr. VAN DIEPEN. Well, Senator, first of all, overall, we have been doing a lot to assist the IAEA in improving its safeguard system through direct U.S. contributions, so-called voluntary additional contributions, that we make. We provide a lot of assistance in terms of technology and expertise to help them boost their overall level of safeguards capability.

As Mr. Billingslea indicated, we have serious concerns about the Bushehr facility. And while certainly, if and when that facility becomes operational, the IAEA will safeguard it and do the best job possible, our real concern runs to the cover that the existence of that facility, and the large amount of equipment and technology and personnel attendant to it, could provide for a covert Iranian nuclear weapons program. And IAEA's safeguards of the reactor itself really would not deal effectively with that problem.

Senator AKAKA. In your statement, you mentioned, "The IAEA must have sufficient and predictable financial resources to fulfill all aspects of its mission." The IAEA has determined that it will need an additional $40 million to fulfill all the safeguard activities that it is being asked to do. The United States share amounts to $10 million. Is the United States providing this additional funding?

Mr. VAN DIEPEN. Senator, I do not know the exact answer to that particular question. I do know, again, that we have been making additional contributions, so-called voluntary contributions, that go beyond our assessed contribution. And we have been working both internally and with other countries to try to boost the overall level of funding for the IAEA safeguard activities.

If you wish, we could provide you an answer for the record that specifically addresses that question.

Senator AKAKA. Will you please do that?

And this next question is for both of you. The pledges by the United States and other nuclear states to never use nuclear weapons against a non-nuclear state were a significant factor in winning a consensus for an indefinite extension of the Non-Proliferation Treaty. Administration officials openly state that we should expand our options for nuclear attacks and widen the number of targeted nations.

Has the United States changed its policy? If so, do you think that this change will have any effect on compliance with the Non-Proliferation Treaty?

Mr. Billingslea.

Mr. BILLINGSLEA. Senator, I think that the policy of the United States has been clearly articulated by both the President and by

the National Security Advisor. It very much tracks other statements for the record under the previous administration.

Secretary Cohen, for instance, made clear that any use of WMD against the United States, its friends, its allies, or our troops overseas would be met with an overwhelming and devastating response. We would not specify in advance the nature of that response, but there should be no doubt in that fact.

Senator AKAKA. Would you have any comment, Mr. Van Diepen?

Mr. VAN DIEPEN. Just, Mr. Chairman, that I am certainly not aware of any change in policy in this area.

Senator AKAKA. To both of you, has the administration engaged in any new discussions with either India or Pakistan concerning a possible resolution to bringing them into Non-Proliferation Treaty compliance?

Mr. VAN DIEPEN. We have extensive dialogues with both countries that include extensive nonproliferation discussions. And certainly, in those discussions, we make clear our desire that those countries restrain their programs to the maximum extent possible. And of course, our ultimate objective would be to see them do what would be necessary to sign up to the NPT as non-nuclear weapons states.

But the current reality is that there is no near-term prospect that those countries will take that step.

Senator AKAKA. Would you have any comment to that, Mr. Billingslea?

Mr. BILLINGSLEA. No, sir. I would agree with that assessment.

Senator AKAKA. Mr. Van Diepen, last year, the GAO produced a report that showed minimal emphasis by the State Department in recruiting and placing Americans in international organizations. We understand that the number of Americans employed by the IAEA has been decreasing.

Could you tell us what efforts are being made to make it more attractive for Americans to accept employment at the IAEA?

Mr. VAN DIEPEN. Frankly, Senator, I do not know the answer to that question. I will have to take that one for the record.

Senator AKAKA. Well, I am not surprised at that answer, because, on this Subcommittee, Senator Voinovich and I have been pursuing what we call workforce or human capital issues. We find, according to some of the reports that we are receiving, that our country is going to be in critical need of people to work in our workforce. And we know that, by next year, the baby boomers are going to be eligible to retire. Eventually, they will have to retire. By then, we will be in deep trouble if we do not begin to plan to recruit and hire people for those jobs now.

Mr. Van Diepen, since September 11, the IAEA has moved to expand its programs to combat nuclear terrorism. Did the emergency appropriations supplemental include a request for programs for the protection against nuclear terrorism through IAEA? If not, does the State Department still support the programs proposed by IAEA?

Mr. VAN DIEPEN. Senator, I do not know what was in the supplemental, but we are certainly strong supporters of the IAEA's efforts to deal with nuclear terrorism. We have been providing a lot of direct assistance in that effort. They are trying to come to help deal with this problem of radiological dispersal devices, trying to locate

and secure so-called orphan sources, nuclear sources that could provide the basis for radiological dispersion devices that, particularly in the former Soviet Union, have literally been misplaced and cannot be located.

So they are in the process of doing a lot of good work to deal with this problem. We are certainly very supportive of it. But I am not aware of what was or was not in the supplemental.

Senator AKAKA. Thank you very much. I will yield to Senator Cochran for questions.

Senator COCHRAN. Thank you, Mr. Chairman.

I thought it was fortuitous that in this morning's paper there was a detailed discussion of the construction of the nuclear power reactor in Iran where Russia is actively involved in the construction of that facility.

In your opinion, so we will have this in the record, why is it there is so much concern about the construction of that nuclear power plant? And why does it pose a threat, in the view of some, to our security and the security of other countries in that region of the world?

Mr. BILLINGSLEA. Well, we should start with examining the Iranian claim that the power reactor is to help bolster Iran's energy grid. The truth of the matter is that Iran is a major natural gas-producing country, but they are flaring or venting six times more natural gas than any other major gas-producing nation.

Now, the energy equivalence of the gas that they are venting or flaring off is three times what they are going to get out of that one reactor at Bushehr. So they could, for a fraction of the cost at the Bushehr plant, simply capture three times as much energy, if they wanted to. So there is clearly something else going on here.

What is going on is Iranian recognition that possessing the Bushehr reactor will allow them to argue to have all of the other bits and pieces of a domestic nuclear infrastructure that ostensibly is designed to support the civil power plant but, in reality, we feel is designed to support nuclear weapons ambitions.

It also puts them in proximity to Russian firms and allows them to continue to try to obtain materials and expertise for what is, in effect, a violation of their NPT obligations.

Senator COCHRAN. Is it true, as the paper suggests, that we still have 5 or 6 years left within which to decide how we are going to react to this? Or do you think we are operating under a much shorter time constraint than that?

Mr. BILLINGSLEA. Senator, I read the press story this morning, and I do not want to be overly alarmist, but I would also say that this is a pressing matter that has very much got the administration's attention. We have a tendency in the nonproliferation business to be overly sanguine that we can predict when those red-line thresholds are crossed and frequently find ourselves surprised. Often, we only learn how wrong we were after the fact.

So the only surprise here is that, as Secretary Rumsfeld says, we keep allowing ourselves to get surprised. We should not do that.

So I would not want to debate 5 years, 7 years. It is an ongoing matter of the highest priority for the administration. We are dealing with the Russians on this issue.

Senator COCHRAN. Judging from press accounts, our President has been in active discussions with President Putin and others about this situation and has expressed our concerns, and has requested that Russia take steps to see that this activity, the proliferation aspects of it, come to a halt. Do you have any indication now whether progress is being made in that area? That is in the diplomatic effort to persuade and convince our friends in Russia that they have an obligation to take some positive steps here to ensure that security interests here and elsewhere, even in Russia, are not threatened by the development of this nuclear capability in Iran.

What is your reaction to that, Mr. Van Diepen? Could you give us the status on that? What is the latest?

Mr. VAN DIEPEN. Well, this continues to be an issue that is discussed with the Russians regularly and at the highest levels. It was discussed at the recent summit, and it has been discussed in every significant meeting of United States and Russian officials.

I think the honest answer is that it is a mixed picture. On the one hand, because of the high-level U.S. efforts since about mid-1997, the Russians have taken a number of important steps to help them deal with this problem. They have put in place very good export control legislation, including so-called catchall controls, to deal with items not on multilateral lists. They have investigated some entities. They have taken some level of action.

But the unfortunate truth is that Iranian entities, in particular, still continue to have substantial success in obtaining missile and nuclear-related technologies from Russian entities. And so we are far from satisfied with the level of performance from the Russians.

And so we continue to engage. We continue to try to get them to realize that this is a serious, ongoing problem that they need to devote the necessary resources and priority to, because it is happening in their territory, so it is fundamentally their responsibility to get it fixed.

Senator COCHRAN. We are also at a disadvantage with respect to discussions with Iranian officials because we do not have diplomatic relations, and we do not have people there. Is that true, that we have an impediment to our efforts to discuss this directly with Iranians?

Mr. VAN DIEPEN. Well, I guess potentially implicit in your question is some assessment of the effectiveness of having such discussions. Certainly, our European friends and others have had direct discussions with the Iranians on these matters, and the answers either range from, "We are not doing anything," to "Hey, we live in a tough neighborhood." So it is not clear to me that the addition of a direct U.S.-Iranian dialogue on this subject would necessarily be all that helpful, given where they are. I think, frankly, that our other range of nonproliferation activities is more effective in impeding Iran's activities than a direct dialogue would be.

Senator COCHRAN. There is a suggestion that the Iranian reactor and others that may come afterward would be subject to International Atomic Energy Agency safeguards and inspections. What is your assessment of that? And will that help assuage our concerns, or should it, that there is no plutonium being converted to nuclear weapons?

Mr. VAN DIEPEN. Well, by treaty, the Iranians must subject reactors to IAEA inspections, so that is not an extra offer on their part. That is part of their current obligation as being a party to the Nuclear Non-Proliferation Treaty. And likewise, the Russians in this case also are obligated under the treaty to subject reactors to those kinds of safeguards.

I think the real issue is less with the reactor itself than with, as Marshall indicated, what having the reactor and the reactor project in place may allow the Iranians to do under the surface and the sort of covert assistance that could facilitate to a nuclear weapons program.

Senator COCHRAN. It was also suggested in this newspaper article that the Russians plan to sell equipment to the Iranians for four or five additional reactors after this project is over. Do you have any assessment of whether that is true or not? And what, if anything, does our administration intend to do to convince them they should not do that or take steps to dissuade them from it?

Mr. VAN DIEPEN. Marshall, you may correct me, but my recollection is there has been talk off and on for years about potential additional units at Bushehr, and it remains to be seen to what extent they may eventuate.

By definition, our concerns about the current ongoing project would extend to any additional units, and additional units would simply make it easier to use the infrastructure of this project to try to facilitate a covert nuclear weapons program.

Senator COCHRAN. Mr. Billingslea, anything to add on that?

Mr. BILLINGSLEA. Well, Senator, all I would say is that, if we are upset about one reactor at Bushehr, you can imagine how upset we would be over the prospects of five or six.

Senator COCHRAN. This is considered to be a very serious matter, as far as this administration is concerned?

Mr. BILLINGSLEA. This is a very serious matter. And the concern over Bushehr predates this administration as well. There has been a great deal of success in turning off cooperation with the Bushehr project in terms of other countries. But the quest to obtain Russian cessation is ongoing and has not produced the kind of results we want yet.

Senator COCHRAN. There was some talk at one time about our offering lucrative incentives to Russia to help them understand that it would be in their own interest if they took steps to stop this proliferation of technology and information that could be converted to weapons use. Has there been any indication that those incentives have been a positive contribution to getting the Russians to do what we hope they will do?

Mr. VAN DIEPEN. Well, certainly some of the progress we have seen out of the Russians—for example, legislation, actions against specific entities—has come in the context of previous efforts to use sort of a carrot-and-stick approach.

For example, in 1998 and 1999, we used discretionary authorities to put penalties on certain Russian entities that were involved with Iran's missile or nuclear programs. And in the wake of that activity, there was a noticeable upsurge in Russian efforts on the legislative front.

So certainly, there is a generic understanding that the carrot-and-stick approach is helpful in getting progress. But we still have a substantial way to go, and the exact path ahead to get to where we want to go is sort of unclear right now.

Senator COCHRAN. Mr. Chairman, I see that the red light came on, and I think my time is up for this round.

Senator AKAKA. Thank you very much.

I have a number of questions. I want to switch from nuclear weapons proliferation to missile proliferation, and you may have time after that for further questions.

This is to both of you. Israel is considering arm sales of the Arrow missile defense system to India. Do either of you have concerns over the Arrow sale for Missile Technology Control Regime reasons? And do you think that Arrow sales to India might further destabilize the security situation in South Asia or exacerbate the regional arms race?

Mr. VAN DIEPEN. Mr. Chairman, let me try to answer that in generic terms. First of all, the Arrow interceptor is a so-called MTCR Category I rocket system. Israel is a country that unilaterally has pledged its adherence to the MTCR, so it, just as we or countries that are members of the MTCR, is committed to apply what is called a strong presumption of denial to exports of any Category I system, including Arrow, to any end-user for any purpose.

And so, in the example that you cite in that case, Israel would have to go through the necessary procedures to decide that it could overcome that strong presumption of denial and make that sale. And that is, by definition, not an easy matter.

Clearly, South Asia is a region of tension, as is obvious by ongoing events. India is a country that is pursuing programs of proliferation concern. So by definition, there would be issues that one would have to consider of that nature, in deciding whether or not to go ahead with such a sale.

Senator AKAKA. Do you have any comments on that, Mr. Billingslea?

Mr. BILLINGSLEA. Senator, this matter came up in a hearing last week on the Moscow Treaty, where Senator Levin asked Secretary Rumsfeld about this, so I will cleave to, in essence, what my Secretary had to say.

We believe that missile defenses, generally speaking, are part of an inherently stabilizing concept. The right to defend yourself against these missiles is something that we feel is a matter to explore with the Indians, with the Pakistanis, if they are interested. What I would say is that we need to look at it more from the standpoint of what do the Indians feel they need in terms of defense for the region.

The Arrow system, because it is an MTCR-class missile, does raise certain obligations that we have under the MTCR. And I do not think the administration has come to a position on that whole complex issue of balancing the MTCR, our defense cooperation with India, so on and so forth. But it is a matter under active discussion.

Again, we also need to hear from the Indians in terms of what they want and what they need.

Senator AKAKA. To both of you, the United States is considering collaborating with international partners on development and field-

ing of a missile defense system. Would the interceptor technology anticipated for use in a missile defense system violate the MTCR if it is shared with non-MTCR partners?

Mr. VAN DIEPEN. Well, Mr. Chairman, the answer is, it depends. It depends critically on what the capability of the missile system is we are talking about.

For example, Patriot PAC–3 is below the so-called Category I threshold, and so exports of PAC–3 would not be subject to this strong presumption of denial. MEADS, which Senator Cochran mentioned, falls below that line. So a lot of the more theater-oriented missile defense systems do not raise this issue of the strong presumption of denial.

If there were a future system that were capable enough to cross that line, then, again, we would be committed under the MTCR guidelines to apply that strong presumption.

Now, as we discussed in the UAV hearing, the strong presumption is not an absolute ban. It can be overcome on so-called rare occasions that are extremely well-justified in terms of five specific nonproliferation and export control factors in the MTCR guidelines. So another thing it would depend on would be who is the recipient, and how do they stack up against those factors?

So it is difficult to go too far down the hypothetical path, because the real world facts of what system to whom for what purpose really start to come into play very early on into this.

Senator AKAKA. Do you have a comment, Mr. Billingslea?

Mr. BILLINGSLEA. Well, happily, most of the countries with whom we would want and intend to work collaboratively on missile defense are within the MTCR framework as member countries. So a lot of this issue really goes away, in effect. I am certain that we will be able to balance these two priorities to get a good outcome.

Senator AKAKA. Mr. Van Diepen, in your testimony, you discussed the possibility of challenge inspections as provided in the Chemical Weapons Convention. Is the administration considering using challenge inspections? And if so, against whom?

Mr. VAN DIEPEN. Well, Mr. Chairman, I certainly could not say anything in open session about anyone we might be considering challenging. But it is an active tool in the toolkit, and we are looking for potential opportunities for using it that makes sense, balancing all the various factors, including the very important need to protect intelligence sources and methods.

Senator AKAKA. Mr. Van Diepen, in November 2001, the United States declared the Biological Weapons Convention draft protocols a dead issue and proposed voluntary measures for BWC members to demonstrate compliance. The question is, has the administration offered any standards or guidelines for these voluntary measures? And have any state parties enacted criminal legislation or stricter standards for security of biological agents?

Mr. VAN DIEPEN. Well, first of all, we made very specific proposals at the November 2001 review conference, along the lines that I described in my testimony. So there were very explicit proposals that we made.

Under the existing convention, states' parties are required to put in place criminal legislation to enforce their obligations under the convention. One of the things that we have found out, to our dis-

appointment, is that a large number of states' parties have not done so. And so we have been engaged in a remedial effort to try to get them to meet their treaty obligations in that respect. And certainly in the wake of September 11th and, in a sense, outside the context of the BWC, we have been engaged in separate efforts.

As Marshall indicated, it is very important to try to secure dangerous pathogens that might fall into the hands of terrorists. And we have been engaged in a number of efforts in the Australia Group and elsewhere to try to promote awareness of this problem and to try to urge countries to put on higher levels of security in biosafety.

Senator AKAKA. Here is a question about control lists. The BWC and CWC have their own control lists. Is it realistic to pursue a comprehensive control list?

Mr. VAN DIEPEN. I am not quite sure I understand the question, Mr. Chairman. But, first of all, the BWC, the convention, does not have attended to it any lists of pathogens or equipment. Such lists were posited in the context of this protocol, but as you have already noted, the protocol is not going anywhere.

The CWC has lists of agents, but the purpose of that list of agents is to facilitate the work of onsite verification. In addition, those lists are used, in effect, as a sanction against countries that are not members of the convention to try to get them to join. There are so-called trade restrictions that limit to varying extents the degree to which state parties to the CWC can trade with nonparties in listed chemicals.

But, strictly speaking, there is not really an export control component to the CWC.

Senator AKAKA. Before I yield to my friend, Senator Cochran, I would like to ask Mr. Billingslea a question.

In your testimony, you state the United States has proposed an amendment to the 1988 Suppression of Unlawful Acts against the safety of maritime navigation. The amendment would allow military forces to board ships in international waters if they were carrying items in violation of the CWC, NPT, and BWC. How have our allies and international partners responded to this proposal?

Mr. BILLINGSLEA. Senator, I do not have in front of me a roster of reactions. This is being worked through the International Maritime Organization.

What I will say is that there already exists a consent-based regime for dealing with narcotics trafficking. We have gotten good support out of a number of nations in terms of maritime operations to stop and board and inspect vessels suspected of trafficking or moving terrorists. And so there is a logical third piece to the puzzle that needs to be added here, which is the WMD cargo moving about.

If we feel that a vessel is carrying commodities that would assist a terror group or a terrorist-sponsoring state in acquiring WMD, we would like to see a consent-based regime, as well as a nonconsensual regime, established for stopping and searching certain vessels.

I am told that actually the United Kingdom has expressed a lot of interest in helping us on this, so it would appear that this piece of the puzzle also will be put in place.

Senator AKAKA. Senator Cochran.

Senator COCHRAN. Mr. Chairman, thank you. I want to explore just for a minute some of the policy decisions that are being made by the administration with respect to what is and what is not subject to Missile Technology Control Regime provisions.

For example, you mentioned already this Category I definition of the kind of missile that would be included or prohibited from being exported or shared, even with a cooperative arrangement with an ally and even if it is for a defensive purpose. It is not designed to be an offensive missile; it is designed strictly to defend against missile attacks; it is an interceptor that is supposed to intercept an incoming missile.

Now you mentioned that the standard, if I have this right, was whether a missile has enough energy or capacity to propel a 500 kilogram warhead a distance of 300 kilometers, not whether the missile is actually suitable as an offensive weapon.

And if such a missile has those characteristics, then, as I understand it, there would be a strong presumption to deny its export. Does this mean that there is room in that definition and that standard to decide that you could export the missile, even though it had the capacity to propel a certain size warhead a certain distance?

Mr. VAN DIEPEN. That's exactly right, Senator. Under the guidelines, we are allowed to overcome that strong presumption of denial in what are called rare occasions that, again, have to be very well-justified, in terms of these five specific nonproliferation and export control factors in the MTCR guidelines.

So in the past, for example, we sold Trident missiles and Tomahawk missiles to the UK as a rare occasion to overcome the strong presumption of denial. And that was a recipient that obviously scores very high in terms of those five——

Senator COCHRAN. But in the case of the Arrow system and Israel, for example, I understand that there may be a strong presumption of denial invoked there because it would fit within that category. If we co-produce the Arrow interceptor missile here and ship it back to Israel, because they cannot produce enough to really meet what they consider to be their need to protect their security interest, is it our policy right now to deny the export of those interceptor missiles if we co-produce them with Israel?

Mr. VAN DIEPEN. Well, actually, Senator, this is a good example of how we work to balance the various considerations that apply to these sorts of ideas.

In this case, we worked very closely with the government of Israel, with Israeli industry, with U.S. industry, and with the Missile Defense Organization, and came up with a way of increasing Israel's ability to make Arrow interceptors that did not require the United States to export Category I items to Israel. In effect, we designed what we are calling enhanced production of components for the Arrow.

And so Israel will be building more Arrows in Israel using more components from the United States. And so the Israelis will be able to get what they need in terms of enhanced production of the Arrow, while the United States will be able to support that basically in the way that we have supported the Arrow program since

1982. That does not rely on the transfer from the United States to Israel of Category I items.

And so, we found, in effect, a workaround that does not do coproduction in the sense of making it here and shipping it there, but having enhanced U.S. assistance to Israel making it there, so that they can make more, faster, by getting more components made in the United States.

Senator COCHRAN. Well, adhering to that, would you then say that it would be a prohibition of the regime if we decided to build the entire missile here and ship it back to Israel? Are you painting us in a corner where, in an emergency situation or under later developing challenges that Israel might face, we would not be able to build that missile here and send it to them, even if it meant it was critical and important to the protection of Israel from its adversaries?

Mr. VAN DIEPEN. Well, again, Senator, that same strong presumption of denial would apply and the United States would have the ability to decide as a matter of policy that, in that particular case, it was a rare occasion. But we would have to be prepared to justify that to our MTCR partners. In terms of the MTCR guidelines, we would have to be prepared to live with whatever precedents other countries decided to draw from that sale.

The problem being, of course, that Israel itself maintains certain programs of proliferation concern, and so if the United States said yes to a Category I rocket system export to Israel, it is going to be hard for us potentially to say no to a Russian export of Category I rocket technology to Iran.

I do not want to draw those kinds of parallels, but you can see people trying to make those kinds of arguments. And all of that would have to be taken into account in any decisionmaking on that kind of question.

But thus far, we have been able to provide very substantial support to the Arrow program by remaining below the Category I line, and that seems to be working out very well.

Senator COCHRAN. Another anomaly seems to me to be the situation with another missile system like the Theater High Altitude Area Defense System. It is a long, slender missile. It does not have the capacity, really, to accommodate a 500 kilogram payload. But because of the amount of energy and thrust it has and capabilities to propel objects long distances, could it probably be classified the same as the Arrow in terms of reaching the Category I definition?

Mr. BILLINGSLEA. Senator, let me ask for us to go away and come back to you with the technical parameters on that, because I am not certain that is a——

Senator COCHRAN. That is correct?

Mr. VAN DIEPEN. Yes, I also——

Senator COCHRAN. It would be good to know, because if we are adhering to a standard that is really going to get us in deep trouble in terms of our own security interests and our allies' security interest, then we need to rethink it. That is all I am saying.

And that is why, in my opening statement, I wondered aloud, what do we need to think through and what do we need to assess as serious challenges in this area? We are all in favor of doing everything we can to keep down the proliferation of weapons of mass

destruction and missiles, but in the effort to do that and adhering to the MTCR, we at the same time are putting ourselves in jeopardy by our own interpretations and our own policies and our cooperative efforts with our friends around the world. I just do not want us to go off down a trail that ends up putting us in jeopardy.

Mr. VAN DIEPEN. And there is certainly no intention to do that, Senator. I think what we were able to work out with our Defense Department colleagues on UAVs is very much proof of the idea that we can in fact think ahead——

Senator COCHRAN. These are the Unmanned Aerial Vehicles that we are seeing now, the Global Hawk, the Predator.

Mr. BILLINGSLEA. But that's a good example, I think. There are a lot of analogies to be drawn from that experience. When you look at operation Enduring Freedom, you see what systems worked really well, what systems did not. You come to the conclusion that there is a real future for UAV and weaponized UAV platforms.

Now, the UAV family of systems has a lot of technical ties to basic cruise missile technology and, therefore, do in fact potentially get caught up in the whole Missile Technology Control Regime effort.

But we were able to work out with the Department of State, recognizing this fact but also recognizing that we want to work with our NATO allies and our other allies to bring them along to capitalize upon this new generation of technology, we were able to work out a regime that lets us cooperate with allies but, again, in a way that does not jeopardize the effective functioning of the MTCR, which in and of itself, I have to say, is a valuable regime.

When you look at a lot of the threat missiles that we are dealing with today, one thing that can be said of a lot of it—now, this is not perfectly true, because you have a lot of Russian and Chinese technology increasingly mixed in—but a lot of this stuff is based on Soviet Arrow Scud technology that has been configured and reconfigured in new and interesting ways to give longer and longer and more dangerous range. So we have effectively channeled some of the foreign missile programs, and the MTCR gets a lot of credit for that.

But that is only part of the picture, and both active and passive defenses have to be brought into the equation here.

And in the case of India, Arrow with India, Israeli cooperation with India, the jury is still out on that. The administration is working the issue, but we also need to hear from the Indians in terms of what they need, what they want, what kind of missile defense systems do they want to have, and for what ends. And we are pursuing that.

Senator COCHRAN. Well, thank you very much. I think your testimony today and your participation in this hearing have been very helpful to our depth of understanding and appreciation of the challenges that we face in trying to help support the administration's good efforts in this area. Thank you.

Senator AKAKA. Thank you very much, Senator Cochran.

Mr. Van Diepen and Mr. Billingslea, thank you very much again for being with us today and for your statements. No question, it will be a big help to this Subcommittee.

As your testimony indicates, without help from the states with weapons of mass destruction, terrorists will have significant difficulty in acquiring a WMD capability. We need to work on both ends of the problem, discouraging state WMD programs, as well as destroying terrorist organizations.

We also need to strengthen current nonproliferation regimes. As Mr. Van Diepen indicated, an activist agenda must use a broad range of tools—and I like that toolkit description—to limit proliferation. These tools include our bilateral assistance programs. We must be careful about the impact that weakening one of these tools will have on our overall nonproliferation goals.

For example, the administration froze funding for all cooperative threat reduction programs because of Russian noncompliance to the Biological Weapons Convention and the Chemical Weapons Convention. Is America more secure after several months of stalled projects in the former Soviet Union? Is Russia more open to U.S. pleas to end their assistance to Iran's nuclear power plant? These issues are linked and must be answered.

Press reports indicate that Russia is proposing to construct five additional nuclear power plants in Iran. Where our bilateral efforts are insufficient, we should strengthen multilateral regimes. A fully funded IAEA is a good way to ensure that a new Iranian nuclear reactor is not being used to advance a weapons program.

Preventing terrorists from acquiring WMD is a complicated task. However, it is easier than the alternative of responding to a WMD terrorist attack.

Gentlemen, we have no further questions at this time. However, Members of this Subcommittee may submit questions in writing for any of the witnesses. We would appreciate a timely response to any questions. The record will remain open for these questions and for further statements from my colleagues.

Again, if my friend does not have anymore statements——

Senator COCHRAN. I have nothing further.

Senator AKAKA [continuing]. I would like to express my appreciation to our witnesses for their time and for sharing their insights with us. The hearing is adjourned.

[Whereupon, at 3:47 p.m., the Subcommittee was adjourned.]

APPENDIX

Testimony of
Michael Moodie
President
Chemical and Biological Arms Control Institute
To the
Subcommittee on International Security,
Proliferation and Federal Services
Committee on Governmental Affairs

7 November 2001

Mr. Chairman, Members of the Committee,

I appreciate the opportunity to appear before the Subcommittee as it addresses "Current and Future Weapons of Mass Destruction (WMD) Proliferation Threats" and considers the effectiveness of export controls in meeting the threat. My remarks are drawn from work conducted over the last six years by the Chemical and Biological Arms Control Institute (CBACI) on issues related to chemical and biological weapons and CBRN terrorism. My remarks today will focus on chemical and, especially, biological weapons threats.

I would like to address three inter-related issues: the need for better threat assessments; the linkage between state and non-state threats; and the need for a strategic response in which export controls continue to play an important role.

My starting point is the recommendation of the Gilmore Commission (The Advisory Panel to Assess Domestic Response Capabilities for Terrorism Involving Weapons of Mass Destruction) that we must improve our threat assessments. This is true not only

with respect to the threat of terrorism but also for the challenge of proliferation at the state level.

Traditionally, threat assessments have been overly simplistic. They have tended to focus on only a single factor such as the agent that might be used or the motivations of the state or terrorist who might use them. In addition, threat assessments have emphasized vulnerabilities rather than risks, which are a combination of vulnerability and likelihood.

The emphasis on vulnerabilities that derives from a focus only on a single factor such as the agent has several drawbacks:

- First, vulnerability assessments, especially those focused on BW, portray dangers that are virtually infinite. As a result they provide no criteria or metric against which to plan. The result is either policy paralysis in the face of an overwhelming challenge or pressure to commit enormous funds that will never be enough.
- Second, they foster worst case thinking that skews resources toward high-consequence, low probability contingencies.
- Third, vulnerability assessments transform "what ifs" into tangible contingencies. They provide no sense of whether what is theoretically possible in fact matches the reality of what is likely to happen.

An example of this kind of vulnerability assessment is one that often focuses on the agent smallpox. A scenario is posited that begins, "Assume a terrorist has smallpox…," and it proceeds to describe events that lead to a global smallpox pandemic. While it is possible

that use of smallpox could have such consequences, the assessment itself says nothing about the likelihood of such an occurrence. And yet, appreciating the likelihood of an event is critical to effective policy planning. Where, for example, would the terrorist get the smallpox initially? Unlike anthrax, smallpox is not present in nature since it was eradicated as an infectious disease by the World Health Organization. There are potential sources of smallpox, but the scenario of the kind posited above does not address the issue of acquistion. Would not the issue of availability have some bearing on the likelihood of that particular scenario and, hence, be of interest and concern to a decision maker?

Conducting more complex threat assessments is not easy. It demands good intelligence and creative analysis. But a better threat assessment will do three things. First, it describes a "threat envelope" that identifies the most plausible contingencies. Such contingencies may be far-reaching. We have tended to focus on smallpox and anthrax, for example, to the detriment of looking in detail at the implications of use of many other potential agents. These could include such traditional BW agents as plague or hemorrhagic fevers, simple agents such as salmonella, e-coli, or industrial chemicals, or more exotic possibilities that lie at the edge of advancing science and technology.

Second, it provides a means to identify those contingencies that require hedging, in that, due to the severity of their consequences, some preparation for them should be undertaken, even if they are relatively unlikely. The combination of the threat envelope and the hedging contingencies should give policy makers some measure for making decisions regarding policy priorities and resource allocations.

Third, a good threat assessment will highlight the fact that the threat is not unidimensional; rather, it is composed of several elements, including

- *Who*: the actor—his motivations, intentions regarding casualties, and capabilities
- *What*: the agent
- *Where*: the target
- *How*: issues regarding the mode of attack, such as the dissemination mechanism, and other operational considerations.

Each of these elements, in turn, entails a significant array of possibilities. The key to successful threat assessment is disaggregating the threat into these component elements and assessing the possibilities that various combinations of them produce. Some combinations of factors will yield significant consequences; others will produce no consequences at all.

Historical examples illustrate how the various elements that make up the threat interact to produce varying results. The Rajneeshis in Oregon in the mid-1980s, for example, combined the goal of incapacitating but not killing a significant number of people with a relatively common agent (salmonella) and simple delivery system (pouring the agent on salad bars) to produce a reasonably effective outcome (from their perspective). In contrast, the Aum Shinrikyo was motivated to take mass casualties, selected an appropriate target, and committed both considerable money and scientific effort to the enterprise. It only had access, however, to an attenuated strain of anthrax and its attempts to use biological weapons were totally unsuccessful.

This approach to threat assessment leads to important findings that should inform policy decisions.

- First, a key relationship exists between the degree of risk and the level of casualties desired in an attack. This relationship, however, is not the straightforward one that higher risk is associated with catastrophic casualty scenarios. Indeed, the degree of risk declines as the level of desired casualties increases, insofar as it becomes less likely.
- Second, despite the low probability of catastrophic attacks in the United States, there is still ample cause for concern because we do not know how "massive" a mass attack has to be. Worst-case scenarios need not happen to stress the response system to the point of collapse. It is unlikely that any regional or local response system, and perhaps even a national one, will be capable of dealing with an attack that produces catastrophic levels of casualties. But it is critical to raise the systems' "breakpoints" by expanding capacity on a realistic basis to deal with low-to-middle size CBW incidents.

  Moreover, the danger and harm inherent in the use of chemical and, especially, biological weapons is not limited to physical casualties. As we have seen with the anthrax attacks, psychological impacts and social and economic disruption are also potentially severe.
- Third, the connections between states with CBW programs and non-state actors warrant increased attention. State-sponsored terrorists are among the few actors who could assemble the requisite resources, skills, and materials to conduct a

> successful attack in the United States that produces mass casualties. Linkages between states and non-state actor could also take less direct forms, such as terrorists' employment of scientists who once worked in a state program.

The events of September 11 and the subsequent anthrax attacks suggest that the state-non-state actor connection is more important than ever before. Analysts have tended to conceptualize and address the state CBW proliferation challenge and chemical and biological terrorism along separate tracks. Today, however, we must appreciate that we confront a new challenge that is neither war nor terrorism as we have known them. The distinction between the two has become blurred; in fact, war and terrorism have become inextricably linked as has been demonstrated by the fact that Osama bin Laden has both depended on and provided support to various national governments. Our challenge is to see the problem as a whole.

We do not confront terrorism as we have witnessed it for the last 30 years, that is, the discrete use of violence to achieve defined, limited political objectives. Rather, our adversaries have declared war on the West, and the United States in particular, and they are using terrorist tactics as part of their campaign. And we confront an adversary that is not a state but, nevertheless, has chemical and biological weapons potential (at a minimum). State involvement, however, cannot be ruled out. Press accounts have raised the possibility that the anthrax used in the recent attacks can perhaps be linked to weapons programs in Iraq, the former Soviet Union, or some other states pursuing a CBW capability (including North Korea, Syria, or Libya). These reports may be true.

But they still highlight the need to understand better the links between states and non-state actors who may be joined by a common interest in chemical and biological weapons.

As this war unfolds, then, the United States may find itself at war against one or more CBW-armed adversaries, whether state or non-state. How do they think about the strategic and tactical utility of chemical, and especially biological weapons? Their willingness to resort to such capabilities depends, of course, on their strategic objectives. Certainly, CBW's role in asymmetric strategies of adversaries who seek to avoid direct confrontations with overwhelming U.S. conventional military power is an important consideration. But saying CBW capabilities will be part of an asymmetric strategy is not enough. Different strategic goals point to different CBW uses. A number of alternative possibilities – each of which has both a limited and ultimate form – suggest themselves as examples:

- The desire to generate fear among the U.S. population, ultimately pushing such fear to the point that it raises questions about the integrity of U.S. society;
- slowing military action, or ultimately crippling U.S. strategies, for example, that depend on power projection and coalition warfare; or
- disrupting the U.S. economy, or ultimately undermining it by attacking such critical components as the agricultural sector (a threat that has received insufficient attention) or the financial centers of the country.

The importance of understanding the strategic objective, whether of the leadership of a terrorist group or of a nation-state, underlines the need for better intelligence about and analysis of the strategic cultures of our adversaries.

What does this approach to defining the threat suggest about the needs for responding effectively to that threat?

First, because the threat is multidimensional and complex, an effective response must be strategic in nature. Effective action depends on the existence of a strategy that – for both the military and domestic defense dimensions – defines the contribution of each individual tool of policy, relates them to one another, and integrates them in such a way that they all work together toward the achievement of defined goals and objectives.

A strategic response addresses requirements that span a spectrum: deterrence-prevention-defense-preparedness-response. Today, to perform each of these strategic missions effectively, difficult challenges must be overcome. Although there is a temptation to rely on deterrence, for example, because the problem has often looked too hard, the concept of deterrence cannot be translated easily from its Cold War context. We need to understand better the requirements of deterrence and how to do it in the current, more complex environment. Similarly, effective responses – whether on the battlefield or in terms of homeland defense – demand meeting both short-term needs such as adapting military concepts of operations or upgrading the public health systems, and long-term measures, including an effective research and development program.

Second, a strategic response is also a multifaceted response. A range of tools must be exploited. These include intelligence, defenses (both passive and active), diplomacy, legal measures, preparedness efforts, financial measures, and military options. Arms control is also important, but, particularly with respect to biological weapons, classic multilateral arms control (of the kind reflected in the Chemical Weapons Convention) is unlikely to yield significant results. The combination of politics, science and technology, and treaty language that surrounds the Biological Weapons Convention (BWC) and efforts to negotiate a legally binding protocol to the BWC argue for an approach that goes beyond the traditional modalities of arms control to new ways of thinking about how to strengthen the Convention and the norm against BW which the treaty embodies.

Export controls also have an important role to play, but it is not necessarily the traditional contribution of the past. Export control regimes – which do not really control but rather regulate through licensing systems – can be effective in delaying the acquisition of sensitive technologies, but in the longer term they cannot realistically be expected to stop the transfer of technology that may be used for weapons purposes, particularly since so much of that technology also has legitimate commercial, medical, and other uses. If Iraq was capable of assembling the necessary materials and equipment for a robust CBW program as much as 15 years ago, how much more difficult will it be to deny access to technology to a determined player in an era of rapidly expanding knowledge and accelerating global dissemination of capabilities?

But this does not mean that export controls should be abandoned; they perform other functions. Regulation through export controls facilitates the global dissemination of materials and equipment. By defining the rules of the game by which companies must abide, for example, export controls is easier for those companies to engage in international trade and cooperation. As Brad Roberts, chair of the CBACI Research Council, has argued, export controls can, in fact, be trade enablers rather than trade constraints. It is this role for export controls that should be emphasized in the future. At the same time, the United States must maintain open markets and avoid neoprotectionist practices that deny or severely limit access to markets or appropriate technology which would make key states less inclined to pursue cooperative measures.

Each tool of policy contributes something to an effective response to the CBW proliferation challenge. But each tool also has shortcomings that must be overcome, and none of them constitutes a silver bullet that provides the total answer. Rather, for an effective response, the individual tools of policy -- including export controls – must be integrated into a coherent strategic framework that realizes the synergies among the various tools of strategy, and facilitates tradeoffs among them so that they do not work at cross-purposes but maximize their potential contribution.

The CBW threat is not static and will continue to evolve. Changing actors and evolving technology – especially in biology-related areas – will be major drivers of such change. In this fluid environment, like the offense-defense relationship in military affairs, the relationship between CBW proliferators -- whether state or non-state -- and responders is constantly in flux. It is not always possible to state precisely at any given time how the balance stands between them. The important point, however, is that certainty will only be achieved if we take ourselves out of the game and do nothing. Then we are certain to lose. It is not a loss that the nation or the world can afford.

The Proliferation of Chemical and Biological Weapons Materials and Technologies to State and Sub-state Actors

Testimony by
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before the
Subcommittee on International Security,
Proliferation, and Federal Services
of the
U.S. Senate Committee on Governmental Affairs

November 7, 2001, 2:30 p.m.
Room 342, Dirksen Senate Office Building
Washington, D.C.

Mr. Chairman, distinguished Members of the Subcommittee, and guests:

Many thanks for the opportunity to testify before you this afternoon on a topic of great importance and concern in the aftermath of September 11: the proliferation of chemical and biological weapons to states and terrorist organizations.[1] The recent series of anthrax attacks through the U.S. mail indicates that the global spread of dual-use technologies, materials, and scientific know-how relevant to the production and delivery of chemical and biological weapons (CBW) poses a direct threat to U.S. national security. Indeed, although to date the exposures to anthrax-contaminated letters have so far remained limited, a large-scale attack with a chemical or biological agent against U.S. targets at home or abroad now appears to be a real possibility.

Until the recent wave of anthrax attacks, experts disagreed over the likelihood that such an attack would occur in the foreseeable future. Previously, only a few terrorist groups had acquired and used unconventional weapons, and nearly all had encountered major technical hurdles in doing so. Perhaps the best-known example occurred in March 1995, when the Japanese doomsday cult Aum Shinrikyo released sarin nerve agent in the Tokyo subway, killing 12 people and injuring nearly a thousand. While psychologically devastating, this attack fell far short of the cult's goal of killing tens of thousands of civilians with the aim of triggering widespread anarchy and enabling Aum to seize control of the Japanese government. Despite Aum's estimated net worth of roughly $1 billion and its active recruitment of chemists and biologists from Japanese universities to create a CBW arsenal, the cult failed in repeated attempts to carry out true mass-casualty

[1] I am grateful to Cheryl Loeb and Gary Ackerman of the Monterey Institute for their invaluable assistance in preparing this testimony.

attacks with either chemical or biological weapons. This case suggests that terrorist acquisition and delivery of CBW agents on a large scale is technically challenging.

Nevertheless, the ongoing anthrax attacks against the United States indicate that the prospect of sub-state groups acquiring and using a biological weapon is no longer theoretical; bioterrorism has become a clear and present danger. Moreover, the high quality of the anthrax mailed to Senator Tom Daschle's office, containing dried spores that were reportedly milled to an extremely fine powder and processed with chemical additives so that they would readily become airborne and infect through the lungs, suggests that the perpetrators had access to specialized technology and know-how related to the "weaponization" of anthrax. Perhaps they acquired a limited supply of the material on the international black market, or—more worrisome—developed a manufacturing capability for dried anthrax powder. If the latter is true, the perpetrators would have the potential to disseminate larger quantities of dried anthrax spores through the air, potentially exposing thousands of people.

Given the real possibility that the perpetrators have received assistance from former weapons scientists or from a state-sponsor, it is important to assess: (1) which states have been assessed to possess chemical and biological weapons, and (2) the extent to which trade in dual-use materials and technologies contributes to clandestine CBW programs. My testimony will first discuss the state and sub-state actors of CBW proliferation concern. I will then turn to technologies and materials that could be employed to produce and deliver these agents.

States of CBW Proliferation Concern

Evidence from open sources indicates that roughly 13 countries are actively seeking biological and chemical warfare capabilities. Proliferant states of particular concern to the United States include Iraq, Iran, Libya, North Korea, Sudan, and Syria. (For more information on state-level chemical and biological weapons programs, see Table 1.)

Iraq

The current status of Iraq's chemical and biological weapons programs is unknown because of that country's efforts since 1991 to conceal the full extent of its prohibited activities. Iraq's expulsion of inspectors from the United Nations Special Commission (UNSCOM) in December 1998, and Baghdad's continuing refusal to admit inspectors from the successor agency, the United Nations Monitoring, Verification, and Inspection Commission (UNMOVIC), has further impeded international efforts to assess the status of Iraq's prohibited weapons programs. It appears likely, however, that Iraq has rebuilt key elements of its chemical and pharmaceutical production infrastructure that were destroyed during the Gulf War and by UNSCOM. These dual-use facilities could easily be converted to the production of CBW agents, and probably already have been.

Various reports indicate that Iraq may retain a sizable stockpile of chemical munitions, including 25 or more special chemical/biological warheads for the al-Hussein ballistic missile and 2,000 aerial bombs. Iraq is also believed to possess sufficient precursor chemicals to produce hundreds of tons of mustard gas, VX, and other nerve agents. In short, Iraq retains the materials and technical expertise to revive its chemical

warfare program within months, if it has not already done so. Iraq has not signed or ratified the Chemical Weapons Convention.[2]

Iraq is also believed to retain a substantial offensive biological warfare (BW) capability. During the UNSCOM inspections, Iraqi officials repeatedly misled the inspectors as to the nature and extent of its BW program and prevented them from verifying its claim to have unilaterally destroyed its biological arsenal. According to some estimates, Iraq may retain a stockpile of BW munitions, including more than 150 R-400 aerial bombs and 25 or more special warheads for the al-Hussein ballistic missile. Iraq may also have retained a mobile production facility with the capacity to produce dried biological agents, which are particularly lethal. Iraq has not accounted for 17 metric tones of BW growth media, and may possess undeclared stocks of smallpox virus. Iraq currently maintains the technical expertise and equipment to reconstitute its biological warfare capabilities within months, including production of anthrax bacteria, botulinum toxin, aflatoxin, and *Clostridium perfringens* (gas gangrene) toxin.[3]

Iran

Although Iran has ratified both the Chemical Weapons Convention and the Biological Weapons Convention, it continues to pursue the acquisition of technologies and materials needed for the production of chemical and biological agents. Iran began its chemical weapons program in the mid-1980s, in response to Iraqi chemical attacks during the Iran-Iraq War. After 1985, Iran began manufacturing and stockpiling blister, blood, and choking agents, including cyanogen chloride, phosgene, and mustard gas. Reportedly, Iran began nerve agent production in 1994. Iran continues to augment its chemical weapons production capability by seeking to acquire relevant production technology, technical expertise, and precursor chemicals from other states, including Russia and China.[4]

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[2] U.S. Central Intelligence Agency, "Unclassified Report to Congress on the Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions, 1 July Through 31 December 2000," September 7, 2001 <http://www.cia.gov/cia/publications/bian/bian_sep_2001.htm>; Javed Ali, "Chemical Weapons and the Iran-Iraq War: A Case Study in Noncompliance," *Nonproliferation Review* 8(1), Spring 2001, p. 43-58; Kelly Motz, "What Has Iraq Been Doing Since Inspectors Left? What Is On Its Shopping List?" *Iraq Watch*, http://www.iraqwatch.org/updates/update.asp?id=wpn200107231601; United Nations Special Commission on Iraq (UNSCOM), "Report: Disarmament," January 25, 1999, http://cns.miis.edu/research/iraq/ucreport/index.htm; Steve Bowman, "Iraqi Chemical and Biological Weapons (CBW) Capabilities" (Washington, D.C.: Congressional Research Service, February 17, 1998), pp. 1-5; U.S. Government White Paper, "Iraq Weapons of Mass Destruction Programs," February 13, 1998, http://www.state.gov/www/regions/nea/iraq_white_paper.html; Anthony H. Cordesman, *Weapons of Mass Destruction in the Middle East: Regional Trends, National Forces, Warfighting Capabilities, Delivery Options, and Weapons Effects*, Center for Strategic and International Studies, June 2001, <http://www.csis.org/burke/mb/me_wmd_mideast.pdf>, pp. 75-79; United Nations Special Commission (UNSCOM), "UNSCOM Main Achievements," May 1998, <http://www.un.org/Depts/unscom/achievement.htm>; Physicians for Human Rights, *Winds of Death: Iraq's Use of Poison Gas Against its Kurdish Population* (Boston, MA: Physicians for Human Rights, February 1989), pp. 1-2.

[3] United Nations Special Commission on Iraq (UNSCOM), "Report: Disarmament," January 25, 1999, http://cns.miis.edu/research/iraq/ucreport/index.htm; Kelly Motz, "What Has Iraq Been Doing Since Inspectors Left?" Steve Bowman, "Iraqi Chemical and Biological Weapons (CBW) Capabilities," (Washington, D.C.: Congressional Research Service, February 17, 1998), pp. 1-5; Barbara Starr, "UNSCOM Inspectors Still Doubt Iraq's Arms Claims," *Jane's Defence Weekly*, February 25, 1998, p. 18; U.S. Government White Paper 1998; Cordesman, *Weapons of Mass Destruction in the Middle East*, 2001, pp. 81-84; Jonathan B. Tucker, "Lessons of Iraq's Biological Weapons Programme," *Arms Control/Contemporary Security Policy*, 14(3), December 1993, pp. 229-271.

[4] E.J. Hogendoorn, "A Chemical Weapons Atlas," *Bulletin of the Atomic Scientists*, September 10, 1997, p. 37; Gregory F. Giles, "The Islamic Republic of Iran and Nuclear, Biological, and Chemical Weapons," in *Planning the Unthinkable*, Peter Lavoy, Scott Sagan, and James Wirtz, eds., (Ithaca, NY: Cornell University Press, 2000), pp. 79-

Iran appears to have initiated a biological weapons-related research program in the 1980s. It is possible that Iran has produced small quantities of agents and has begun weaponization, although the types of pathogens being produced are unknown. Iran is suspected of having a BW research laboratory at Damghan. Furthermore, Iran has attempted to purchase BW-related materials from foreign sources, ostensibly for civilian use.[5] Given the dual-use nature of many pathogens, materials, and equipment used in the pharmaceutical and biotechnology industries and biomedical research, it is difficult to ascertain the extent to which Iran is engaging in legitimate or illicit activity.

Libya

During the 1980s, Libya produced more than 100 metric tons of nerve and blister agents at the Rabta facility, which Libya claimed was a pharmaceutical plant. A project to build a large underground chemical production facility at another site called Tarhunah has been underway since 1995, although international attention has slowed the pace of construction. Libya has not signed the Chemical Weapons Convention and it is heavily dependent on foreign suppliers for precursor chemicals and production equipment.[6] The Libyan CW plant at Rabta was designed by the German firm Imhausen-Chemie and was supplied by a number of other West European and Japanese companies.[7]

Libya's biological weapons program has apparently not advanced beyond the research and development stage. It is possible, however, that Libya can produce small quantities of BW agents. Libya's offensive BW program is heavily dependent on dual-use materials and foreign assistance.[8]

North Korea

Evidence in the public domain suggests that North Korea has operated an extensive CW program for many years and has the ability to produce a variety of agents, including adamsite, mustard, sarin, and VX. North Korea has not signed the Chemical Weapons Convention.[9]

Although North Korea is a party to the Biological Weapons Convention, it has pursued BW capabilities since the 1960s and reportedly conducts research on the biological agents that cause anthrax, plague, smallpox, typhoid, and hemorrhagic fever.

103; W. Seth Carus, "Iran's Weapons of Mass Destruction: Implications and Responses," *Middle East Review of International Affairs*, 1998, 2(1), pp. 1-14; Henry L. Stimson Center, "CWC Status: States of Chemical Weapons Proliferation Concern," May 27, 1998 <http://www.stimson.org/cwc/status.htm>; Office of the Secretary of Defense, "Iran: Objectives, Strategies and Resources," *Proliferation: Threat and Response* (Washington, DC: U.S. Department of Defense, 1997) < http://www.defenselink.mil/pubs/ptr20010110.pdf>, pp. 3-4; Michael Eisenstadt, *Iranian Military Power: Capabilities and Intentions* (Washington, DC: Washington Institute for Near East Policy, 1996), pp. 9-25; Anthony H. Cordesman, "Weapons of Mass Destruction in the Middle East: National Efforts, War Fighting Capabilities, Weapons Lethality, Terrorism, and Arms Control Implications," (Washington, DC: Center for Strategic and International Studies, February 1998), pp. 22-24; Centre for Defence and International Security Studies (CDISS), "Devil's Brew Briefings: Iran," <http://www.cdiss.org/cbwnb1.htm>.

[5] Cordesman, "Weapons of Mass Destruction in the Middle East," February 1998, p. 24; Centre for Defence and International Security Studies (CDISS), "Devil's Brew Briefings: Iran," p. 24; Office of the Secretary of Defense, "Iran: Objectives, Strategies and Resources," p. 5; U.S. Arms Control and Disarmament Agency, *Adherence to and Compliance with Arms Control Agreements* (Washington, DC: U.S. Government Printing Office, August 1996), p. 68.

[6] Office of the Secretary of Defense, "Proliferation: Threat and Response," January 2001, p. 47.

[7] Robert M. Gates quoted in William Tuohy, "U.S. Pressing Allies on Libya Chemical Plant," *Los Angeles Times*, January 3, 1989, p. 10.

[8] Office of the Secretary of Defense, *Proliferation: Threat and Response*, pp. 47.

[9] Ibid., p. 9.

Given the advanced status of North Korean missile programs, it is capable of delivering warheads filled with chemical or biological agents.[10]

Sudan

A party to the Chemical Weapons Convention, Sudan has pursued the capability to produce chemical warfare agents since the 1980s. Sudan has sought foreign assistance from a number of countries that have CW programs, including Iraq. During the 1990s, Sudanese officials allegedly produced chemical weapons in collaboration with Osama bin Laden's al-Qaeda terrorist network, although the evidence in the public domain for this allegation remains equivocal.[11] There are no confirmed reports that Sudan is pursuing a biological weapons program.

Syria

Syria has one of the largest and most advanced chemical warfare capabilities in the Middle East. Analysis indicates that Syria has chemical warheads for Scud ballistic missiles and chemical gravity bombs for delivery by aircraft. With an estimated CW stockpile in the hundreds of tons, Syria is believed to be capable of producing and delivering sarin and VX nerve agents, as well as mustard agent. Major Syrian CW production facilities are located near Damascus and Homs, with hundreds of tons of agents produced annually. Syria's chemical warfare program remains dependent on foreign precursor chemicals and equipment, and it has continued to solicit foreign sources of these materials.[12] Syria has not signed the Chemical Weapons Convention.

While it is likely that Syria is developing an offensive BW capability, current evidence indicates that it is restricted to a research program.[13] With significant assistance from other proliferant states, however, Syria could acquire a BW production capacity. Syria has signed but not ratified the Biological Weapons Convention.

Sub-state Proliferation Concerns

Trends in terrorism over the past two decades indicate a shift from political to religious motives. Today's most pernicious terrorists are not motivated by political ideology on the far left or far right, but are more likely to be extremists on the fringe of traditional religions or idiosyncratic cults with an apocalyptic mindset. Because religion acts as a legitimizing force by subordinating individual responsibility to divine will, groups motivated by religious extremism are more likely to experience fewer constraints on the use of violence to inflict indiscriminate casualties. For example, a millenarian ideology that espouses a belief in the imminence of Armageddon could serve to justify

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[10] Ibid.

[11] Michael Barletta, "Chemical Weapons in the Sudan: Allegations and Evidence," *The Nonproliferation Review*, Fall 1998,< http://cns.miis.edu/pubs/npr/barlet61.htm>, pp. 115-36.

[12] Michael Eisenstadt, "Syria's Strategic Weapons," *Jane's Intelligence Review*, May 1993, p. 170. Office of the Secretary of Defense, "Syria: Objectives, Strategies and Resources," *Proliferation: Threat and Response*, (Washington, DC: U.S. Department of Defense, 1997), pp. 18-19. Cordesman, "Weapons of Mass Destruction in the Middle East," 2/98, p. 21. "Devil's Brews Briefings: Syria," Centre for Defence and International Security Studies (CDISS), 1996 <http://www.cdiss.org/cbwnb5.htm>. Ahmed S. Hashim, *Chemical and Biological Weapons and Deterrence Case Study 1: Syria* (Alexandria, VA: Chemical and Biological Arms Control Institute, 1998), p. 5. Uzi Mahnaimi, "Syria Builds Nerve Gas Arsenal," *London Sunday Times*, November 17, 1996 <http://personal.the-times.co.uk:80>. Paul Beaver, "Syria To Make Chemical Bomblets For Scud Cs," *Jane's Defence Weekly*, September 3, 1997, p. 3.

[13] Office of the Secretary of Defense, *Proliferation: Threat and Response*, January 2001.

mass-casualty attacks. Moreover, many of the so-called "new breed" of terrorists have an almost mystical fascination with chemical and biological agents because of the ability of toxic weapons to instill a pervasive sense of dread and their similarity to biblical plagues.

Over the past decade, there has been an upsurge of interest by sub-state groups in acquiring chemical and biological weapons. Aum Shinrikyo, the apocalyptic Japanese cult, was most notable for the breadth of its activities. Aum tried to produce several biological agents, including anthrax and botulinum toxin, but because of technical problems the cult failed to inflict any known casualties in nine attempted biological attacks. The cult then focused on acquiring a chemical weapons factory and succeeded in producing several gallons of sarin, as well as smaller amounts of VX and mustard agent.[14] Although Aum sought to inflict mass casualties in its March 1995 sarin attack on the Tokyo subway, the lack of an effective delivery system limited the impact to 12 deaths.

Another terrorist group, the Kurdistan Worker's Party (PKK), has also demonstrated interest in CBW agents. Seydo Hazar, an ex-PKK member, reportedly told the British newspaper*The Observer* that he had been ordered to build a sarin bomb and that, after fleeing Turkey, he had left a cache of explosives and chemical precursors for sarin at a PKK safe house in Drosia, Greece.[15]

Of course, the most prominent non-state actor believed to be involved with CBW agents is Osama Bin Laden. Numerous reports have claimed that bin Laden has attempted to acquire unspecified chemical weapons from entities in Iraq and Sudan, and biological agents (including botulinum toxin, plague, and anthrax) from biological suppliers in the Czech Republic, Kazakhstan, and Indonesia. No hard evidence is available to verify these claims, however.[16]

Dual-Use Equipment and Technologies

Nearly all of the materials and equipment used to make CBW agents are dual-use, complicating the control, detection, and interdiction of proliferation-relevant exports.

Chemical Agents

Chemical warfare agents can be produced using 40-year-old technology and synthetic methods that have been widely published in the open scientific literature. Certain World War I-era chemical warfare agents, such as phosgene, hydrogen cyanide, and sulfur mustard, are relatively easy to produce. There are, for instance, at least nine documented synthetic methods for sulfur mustard[17], small quantities of which could be manufactured in a crude facility such as a basement laboratory. Nerve agents require more technical sophistication, primarily because of the difficult and hazardous cyanation and alkylation reaction steps.

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[14] David A. Kaplan, "Aum Shinrikyo (1995)," *Toxic Terror: Assessing Terrorist Use of Chemical and Biological Weapons,"* Jonathan B. Tucker, ed, (Cambridge, MA: MIT Press, 2000), p. 221.

[15] Republic of Turkey, Ministry of Foreign Affairs, "Excerpts from News Reports, Commentaries and Statements on PKK Terrorism," 09/28/97, < http://www.mfa.gov.tr/grupe/eh/eh04/01.htm>; Nils Lathem, "Osama Bought a Batch for 10G," NYPost.com <http://www.nypost.com/news/worldnews/32458.htm>.

[16] Simon Reeve, *The New Jackals: Ramzi Yousef, Osama bin Laden* (Boston, MA: Northeastern University Press, 1999).

[17] Office of Technology Assessment, *Technologies Underlying Weapons of Mass Destruction,* OTA-BP-ISC-115, December 1993, pp. 21-22.

Although the Chemical Weapons Convention and the Australia Group (an informal forum of 33 exporting countries) restrict trade in chemical weapons precursors, proliferant states have often been successful in circumventing these controls by purchasing these chemicals from unscrupulous suppliers and evading interdiction efforts by means of transshipment points and front companies. Thus, although export controls can slow proliferation, they do not constitute a long-term solution to the problem. Moreover, all of the key chemical weapons precursors can themselves be produced (with substantial effort) from more basic chemicals containing phosphorus, chlorine, and fluorine. Many of these more basic substances are commodity chemicals widely used in industry to make pharmaceuticals, pesticides, and other commercial products.

Even if trade in these common chemicals could be curtailed, states often have the capability to use indigenous materials to derive more complex compounds through a process known as "back-integration." In the early 1980s, for example, Iraq was initially unable to produce thiodiglycol, a key ingredient in the production of mustard agent, and ordered more than 1,000 tons of this chemical from foreign suppliers. When the West imposed an embargo on chemical exports to Iraq, the Iraqis developed a way to produce thiodiglycol indigenously by reacting ethylene oxide with hydrogen sulfide.[18]

States or terrorists need not seek to acquire proscribed chemical precursors if they desire a limited chemical warfare capability for use against civilians. Several chemicals not usually classed as battlefield weapons are still highly toxic, such as organophosphate insecticides. While not as lethal as sarin or soman, these "second tier" chemical agents have similar physiological effects to nerve agents and are far more accessible.

Almost all of the equipment used to produce CW agents is dual-use and available to almost any country; no "smoking gun" piece of equipment exists. Corrosion-resistant reactor vessels and pipes and special ventilation and waste-handling equipment may be suggestive of illicit CW agent production, but states or groups unconcerned with worker safety or environmental contamination could easily eschew such precautions.

Biological Agents

The dual-use problem is even more acute with respect to the production of biological warfare agents, such as anthrax and botulinum toxin. Pathogens are widely available, either from the natural environment in areas where diseases such as anthrax or plague are endemic, or from the hundreds of culture collections scattered across the globe that provide seed stocks for biomedical researchers and commercial biotechnology firms.[19] The various types of nutrient media ("broth") needed to grow microorganisms are ubiquitous and widely traded. This situation is further complicated by the fact that some dangerous pathogens are not only studied by researchers but have also become commercial products. For example, pharmaceutical companies produce botulinum toxin (trade name Botox) for medical and cosmetic purposes, creating a large commercial market for this product.

The equipment used to produce biological agents is almost completely dual-use: the same stainless-steel tanks suitable for growing anthrax are routinely used to produce

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[18] Ibid., p. 23.

[19] U.S. culture supply houses are now under stricter federal controls, but comparable controls do not apply to culture collections overseas. See Jonathan B. Tucker, "How to Regulate the Trade in Toxins" [op-ed], *New York Times*, October 26, 2001, p. A23.

legitimate products such as vaccines, vitamins, food supplements, biopesticides, and fermented beverages. A multitude of companies manufacturing this equipment has grown up to service the burgeoning biotechnology industry, complicating attempts to impose restrictive export controls. Even freeze-drying (lyophilizing) and milling machines, which can be used to convert bacterial or viral agents into a dry powder for optimal dissemination as a fine-particle aerosol, have become standard equipment in the pharmaceutical industry.

Military facilities that produce biological weapons are nearly indistinguishable from civilian vaccine plants, particularly if a proliferator deliberately cuts corners on environmental protection and worker safety to minimize the "signatures" of illicit production. Moreover, as occurred in Iraq, ostensibly commercial facilities such as vaccine plants or single-cell protein factories can be converted from legitimate to illicit production. Technological advances such as computer-controlled continuous-flow fermenters and hollow-fiber bioreactors have greatly reduced the size of a facility capable of producing large amounts of BW agents. Moreover, fermentation tanks equipped with "clean-in-place" technology make it possible to remove telltale residues of biological agent production in a matter of hours. As a result, detection of illicit military production has become substantially more difficult.

Two simple facts highlight the difficulty of preventing terrorist access to dangerous biological pathogens. First, an individual with a modest amount of scientific knowledge and experience could culture small amounts of agent in something as innocuous as a laboratory flask. Second, the exponential growth of microorganisms means that a small seed stock of cultures can yield large amounts of agent in a relatively short amount of time.

Nevertheless, chemical and biological agents do not become weapons unless there is a means to deliver them. Producing specialized munitions, such as artillery shells and missile warheads, requires a high degree of technical sophistication, but several more primitive delivery systems are dual-use. Unmodified agricultural sprayers (such as crop-dusters) are not well suited for disseminating biological agents, but these devices could be used to spread chemical agents over a fairly large area, provided that the perpetrator takes precautions when filling the sprayer tanks and is aware of meteorological dynamics. Some agents, such as sarin, do not burn readily and hence could be dispersed using an explosive charge. Both of these delivery methods would be within reach of most states and certain sub-state terrorist groups.

Accessibility to Dual-Use Technologies

Attempts to regulate trade in dual-use technologies to countries of proliferation concern have faced intense opposition not only from non-aligned states that claim that such controls are discriminatory, but also from international suppliers, companies, and research institutes that benefit from the commercial sale and transfer of such technologies.

Another problem is that the chemical and biotechnology industries are no longer confined to the highly industrialized countries of the West. In a number of developing countries, the availability of turn-key production facilities, an increasingly skilled work force, and low labor and regulatory costs have encouraged governments to promote these industries as a driver of economic growth. This trend has resulted in international trade in

a wide variety of chemicals amounting to millions of tons per year, as well as a newfound interest in the indigenous production of generic pharmaceuticals and vaccines. Although the production processes utilized in developing countries might be a generation or two behind those in the United States and Europe, they are still more than adequate to produce both chemical and biological warfare agents.

The burgeoning global commerce in the chemical and biotechnology sectors has spurred technological advances, some of which can facilitate the production of chemical or biological weapons by state or non-state actors. One example is the advent of microreactors that can process large volumes of chemicals yet are small enough to be disguised as laboratory equipment.[20] Given the explosion of dual-use technologies, it seems more than likely that global commerce will continue to make it easier for state and sub-state actors to obtain chemical and biological WMD. A number of cases illustrate this ominous trend.

- Iran is only one of a number of counties in the Middle East that has relied heavily on foreign assistance to establish its unconventional weapons programs. Over the past few years, the Iranian government has attempted to acquire CW precursor chemicals, production technology, and scientific expertise from Russian and Chinese suppliers. Iran has also attempted to acquire a large amount of dual-use biological materials from Russian and other foreign suppliers, ostensibly for civilian purposes.[21]
- Although current Iraqi capabilities are unknown, Iraq received extensive foreign assistance to establish its offensive BW program. Between 1985 and 1989, U.S. suppliers exported to Iraq cultures of *Bacillus anthracis* (anthrax), *Clostridium botulinum* (botulism), *Histoplasma capsulatam, Brucella melitensis* (brucellosis), *Clostridium perfringens* (gas gangrene), *Clostridium tetani* (tetanus), and dozens of other dangerous pathogens.[22] In the 1980s, Iraq's State Establishment for Pesticide Production ordered and received incubators and culture media from West Germany.[23] Many of the dual-use materials that Iraq ordered from foreign sources, ostensibly for civilian purposes, were used in biological weapons research.
- The Aum Shinrikyo cult utilized dual-use chemical and biological materials. Aum agents reportedly purchased *Clostridium botulinum* from a pharmaceutical company[24], 16 industrial-grade filters from an Osaka pharmaceutical company, and chemical precursors and technologies from other commercial suppliers.[25]
- On May 5, 1999, Larry Wayne Harris, an Ohio lab technician with ties to the white-supremacist Aryan Nations, ordered three vials of freeze dried *Yersinia pestis*, the pathogen that causes bubonic and pneumonic plague, from American

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[20] Scientists at DuPont and MIT have used microreactors to produce hydrogen cyanide and phosgene, two chemical warfare agents. See Nicolas P. Chopey with G. Ondrey and G. Parkinson, "Microreactors Find New Niche," *Chemical Engineering,* March 1997, pp. 30-33.

[21] Office of the Secretary of Defense, "Proliferation: Threat and Response," January 2001 <http://www.defenselink.mil/pubs/ptr20010110.pdf>.

[22] William Blum, "Anthrax for Export: U.S. Companies Sold Iraq the Ingredients for a Witch's Brew," *The Progressive* 4, April 1998, p. 18.

[23] *Der Spiegel* , FBIS-WEU-90-196, "We Have Surprises," October 8, 1990, pp. 148-152.

[24] Robert Guest, "Cult Germ Was Claim as Police Find Bacteria," *Daily Telegraph,* March 29, 1995, p. 13.

[25] Mainichi Daily News, "Bacteria Used in Germ Warfare Found at Cult Site," March 29, 1995, p. 1; Kyodo, "Aum Bought Experimental Cells Before Subway Gas Attack," May 18, 1995.

Type Culture Collection, a leading biological supply company. Harris also purchased other dual-use equipment and materials, which he used to conduct research on anthrax.[26]

State-Sponsors of Terrorism

The continued proliferation of chemical and biological weapons to states and sub-state actors poses real and immediate threats for U.S. national security. The unprecedented use of anthrax as a biological weapon against the United States has resulted not only in widespread fear and panic but has highlighted our vulnerability to larger-scale biological attacks.

Although the recent attacks have been relatively small-scale and not designed to inflict mass casualties, the disproportionate psychological and economic effects on American society may inspire further BW proliferation by rogue states and terrorists. If the perpetrators are not found and punished, others could be inspired to acquire and use biological agents. Moreover, in a unipolar world in which U.S. conventional military might predominates, it is increasingly likely that rogue states will turn to chemical and biological weapons as a force equalizer or a means of "asymmetric" warfare.

Further compounding the threat to U.S. interests from the continued proliferation of chemical and biological weapons is the possibility that rogue regimes could supply CBW materials, equipment, know-how, or even finished weapons to terrorist organizations. As the number of states with CBW capabilities rises, the risk of direct or indirect transfer to terrorists will also increase.

Of all state-sponsors of terrorism, Iran is still viewed as the most energetic.[27] Current recipients of Iranian largesse include Hamas, Hizbollah, and Islamic Jihad. The rise of the (relatively) moderate Mohammad Khatami in recent years has done nothing to halt this behavior. Conservatives are still in control of the Iranian military and intelligence services, and it is estimated that Iran provides more than $100 million in aid to terrorist organizations each year.[28] Iran's terrorist-sponsoring activities are directed mainly by the Islamic Revolutionary Guards Corps (IRGC), controlled by hard-line ayatollahs who are also responsible for Iran's WMD programs. Despite Iran's official condemnation of the September 11 attacks, it is still considered a sponsor of Hamas, Hizbollah, and Islamic Jihad, and may have provided these groups with CBW training and materials before any recent change of heart.

Before Iran became a vigorous supporter of such groups, Libya was considered the overlord of international terrorism. As recently as 1996, Libya provided support and possibly training bases for the Abu Nidal Organization (ANO), Palestinian Islamic Jihad (PIJ), and the Popular Front for the Liberation of Palestine—General Command (PFLP-GC). Recently, however, Libyan leader Muammar Qaddafi has appeared to moderate his behavior. In addition to extraditing the Pan Am 103 bombers to Scotland for trial, Qaddafi has reportedly cut ties with some radical groups such as Hamas.[29] Nevertheless,

[26] Jessica Eve Stern, "Larry Wayne Harris (1998)," in *Toxic Terror: Assessing Terrorist Use of Chemical and Biological Weapons,*" Jonathan B. Tucker, ed. (Cambridge, MA: MIT Press, 2000), pp. 227-246.
[27] U.S. Department of State, Office of the Coordinator for Counterterrorism. "Overview of State-Sponsored Terrorism," *Patterns of Global Terrorism 2000*, April 2001,<http://www.state.gov/s/ct/rls/pgtrpt/2000/>.
[28] Boaz Ganor, "Countering State-Sponsored Terrorism", <http://www.ict.org.il/articles/articledet.cfm?articleid=5#Conflicts>, p. 4.
[29] Ray Takeyh, "The Rogue Who Came in From the Cold," *Foreign Affairs*, May-June 2001.

the State Department maintains that Libya maintains contact with other terrorist groups, including Islamic Jihad.[30] U.S. government officials are also concerned about Libya because of its known chemical weapons capability and its close relationship with Iraq.[31]

Finally, Iraq's substantial experience with chemical and biological weapons needs no introduction. As a state-sponsor of terrorism, Iraq has supported the Abu Nidal Organization and the Palestine Liberation Front, although not as generously as Iran. Past allegations indicate that Iraq may be working closely with Islamic Jihad.[32] Saddam Hussein's defiant and often erratic behavior, his hatred of the United States and Britain, and his history of attempting to enhance his stature as a regional hegemon, suggest that the transfer of Iraqi CBW materials or know-how to terrorists cannot be ruled out.

Given the precedent that has now been set by the actual use of biological weapons against civilian targets in the United States, it is important for the international community to continue to strengthen the existing international norms against the possession and use of biological and chemical weapons. Although the Chemical Weapons Convention (CWC) and the Biological Weapons Convention (BWC) impose a blanket prohibition on such weapons, both regimes have serious weaknesses that undermine their effectiveness. Accordingly, both regimes must be strengthened if they are to promote the international norm of non-use and possession by states of concern and, by extrapolation, by sub-state actors as well.

For example, the United States has repeatedly accused Iran, a party to the CWC, of systematically violating its treaty obligations. A Central Intelligence Agency report to Congress in August 2000, states that "Iran, a . . . CWC party, already has manufactured and stockpiled chemical weapons, including blister, blood and choking agents and the bombs and artillery shells for delivering them. During the second half of 1999, Tehran continued to seek production technology, training, expertise, and chemicals that could be used as precursor agents in its chemical warfare (CW) program from entities in Russia and China. It also acquired or attempted to acquire indirectly through intermediaries in other countries equipment and material that could be used to create a more advanced and self-sufficient CW infrastructure."[33] To date, however, Washington has failed to request a challenge inspection of Iran as permitted under the CWC, undermining the credibility of this key element of the treaty's verification regime.

With respect to the BWC, the Bush administration decided in July 2001 to withdraw from a six-year effort to negotiate a legally binding compliance regime. Although the administration has recently proposed a package of alternative proposals, these measures appear insufficiently intrusive or effective to deter violations or to enhance compliance with the treaty.[34]

[30] U.S. Department of State, Office of the Coordinator for Counterterrorism. "Overview of State-Sponsored Terrorism."
[31] In the late 1980s, evidence surfaced that Libya had built two large chemical weapons facilities, including a secret underground plant at Tarhunah. The CIA also fears Libya may have engaged in joint BW development activities with Iraq.

[33] Central Intelligence Agency, "Unclassified Report to Congress on the Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions, 1 July Through 31 December 1999," available on-line at http://www.cia.gov/cia/publications.bian/bian_aug2000.htm.
[34] White House, Office of the Press Secretary, "Statement by the President: Strengthening the International Regime Against Biological Weapons," November 1, 2001.

Conclusions

In recent years, the growing availability of dual-use technologies, materials, information, and expertise associated with the production and delivery of chemical and biological weapons has exacerbated the CBW proliferation problem. Indeed, the relative ease of acquiring these weapons, when compared with advanced conventional or nuclear weapons, has increased their attractiveness to states that cannot afford more advanced weapons or are technically incapable of developing them. Moreover, history has shown that both state suppliers and unscrupulous companies are willing to sell sensitive technologies and materials to customers willing to pay. The legacy of the Soviet chemical and biological weapons programs, and the proliferation of these weapons to other countries, has also increased the risk that sub-state groups could acquire relevant technologies by stealing them from unguarded facilities or by recruiting unemployed weapons scientists.

Given the dual-use dilemma and the rapid diffusion of legitimate chemical, pharmaceutical, and biotechnology industries around the globe, strengthened CBW export controls can buy time but do not offer a long-term solution to the proliferation problem. Instead, a strengthened international legal regime banning possession and use of these weapons, backed up with a credible threat of severe economic and military sanctions against violators, offers the best hope of reversing the spread of these heinous weapons. To achieve this goal, the United States should devote greater political and financial capital to strengthening the CWC and the BWC, make more effective use of existing treaty instruments (e.g., by requesting a CWC challenge inspection of Iran and other suspected violators), and seek to make the possession and use of chemical and biological weapons a "crime against humanity" under international law.

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Table I: Chemical and Biological Weapons: Possession and Programs, Past and Present

This table summarizes data available from open sources. Precise assessment of a state's capabilities is difficult because most weapons of mass destruction (WMD) programs were, and/or are, secret and cannot be independently assessed. Evidence for the existence of a program is characterized as:

- *Known* - where states have either declared their programs or there is clear evidence of chemical weapons possession
- *Probable* - where states have been publicly named by government or military officials as "probable" chemical weapons possessors or as producing chemical weapons
- *Possible* - where states have been widely identified as possibly having chemical weapons or a CW program by sources other than government officials
- *Former* - where states have acknowledged having a chemical weapons stockpile and/or CW program in the past

Detailed references for the table are available on the Center for Nonproliferation Studies web site at <http://www.cns.miis.edu/research/cbw/possess.htm>.

	Chemical				Biological			
Country	Possession Status[2]	Possible Agents	Signed CWC[3]	Ratified CWC[3]	Program Status	Possible Agents	Signed BWC[4]	Ratified BWC[4]
Algeria	Possible[5]	Unknown	01/13/93	08/14/95	Research effort, but no evidence of production[6]	Unknown	No	No
Canada	Former[7]	-mustard gas -phosgene -lewisite[8]	01/13/93	09/26/95	Former program[9]	-anthrax -rinderpest virus -botulinum toxin -Rocky Mountain spotted fever -plague -tularemia -ricin[10]	04/10/72	09/18/72
China	Probable[11]	Unknown	01/13/93	04/25/97	Likely maintains an offensive program[12]	Unknown	-	11/15/84
Cuba	Possible[13]	Unknown	01/13/93	04/29/97	None/Unknown	None/Unknown	04/10/72	04/21/76
Egypt	Probable[14]	-mustard gas -phosgene -sarin -VX[15]	No	No	Research program[16]	-anthrax -botulinum toxin -plague -cholera -tularemia -glanders -brucellosis -melioidosis -psittacosis -Q fever -Japanese B encephalitis -Eastern equine encephalitis -influenza -smallpox -mycotoxins[17]	04/10/72	No

Ethiopia	Probable[18]	Unknown	01/14/93	05/13/96	None/Unknown	None/Unknown	04/10/72	05/26/75
France	Former[19]	-mustard gas -phosgene[20]	01/13/93	03/02/95	Former program[21]	Unknown	-	09/27/84
Germany	Former[22]	-phosgene -cyanide -mustard gas -tabun -sarin -soman[23]	01/13/93	08/12/94	Former program[24]	-plague -cholera -yellow fever -typhus[25]	04/10/72	11/28/72
India	Known[26]	Unknown	01/14/93	09/03/96	Defensive research [27]	Unknown	01/15/73	07/15/74
Iran	Probable[28]	-mustard gas -sarin -cyanide phosgene[29]	01/13/93	11/03/97	Research with possible production of agents[30]	Unknown	04/10/72	08/22/73
Iraq	Known; Possible program reconstitution in absence of UN Inspections and Monitoring[31]	-mustard gas -sarin -tabun -VX[32]	No	No	Previously active research and production program; possible reconstitution of program in absence of UN inspections and monitoring [33]	-anthrax -botulinum toxin -gas gangrene -aflatoxin -trichothecene mycotoxins -wheat cover smut -ricin -hemorrhagic conjuctivitis virus -rotavirus -camel pox[34]	05/11/72	06/19/91
	Chemical				**Biological**			
Country	**Possession Status[2]**	**Possible Agents**	**Signed CWC[3]**	**Ratified CWC[3]**	**Program Status**	**Possible Agents**	**Signed BWC[4]**	**Ratified BWC[4]**
Israel	Probable[35]	Unknown[36]	01/13/93	No	Research program, no evidence of production [37]	Unknown	No	No
Italy	Former[28]	-mustard gas phosgene[39]	01/13/93	12/08/95	None/Unknown	None/Unknown	04/10/72	05/30/75
Japan	Former[40]	-phosgene -chloropicrin -cyanide -mustard gas -lewisite[41]	01/13/93	09/15/95	Former program[42]	-anthrax -tularemia -plague -botulinum toxin -smallpox -glanders -typhoid -typhus[43]	04/10/72	06/08/82
Libya	Probable[44]	-mustard gas -sarin -tabun -lewisite phosgene[45]	No	No	Research program[46]	Unknown	-	01/19/82
Myanmar (Burma)	Probable[47]	Unknown	01/14/93	No	None/Unknown	None/Unknown	04/10/72	No
N. Korea	Probable[48]	-adamsite -mustard gas -hydrogen cyanide -phosgene	No	No	Research program[50]	-anthrax -cholera -plague -smallpox -botulinum toxin	-	03/13/87

		-soman -tabun -VX[49]				fever -typhoid -yellow fever[51]		
Pakistan	Probable[52]	Unknown	01/13/93	10/28/97	Unknown/Probable[81]	None/Unknown	04/10/72	09/25/74
Russia	Known[53]	-VX -sarin -soman -mustard gas -lewisite -phosgene -A-232 -Novichok binary agents[54]	01/13/93	11/05/97	Defensive research program; some work beyond legitimate defense activities may continue[55]	-anthrax -tularemia -brucellosis -plague -Venezuelan equine encephalitis -typhus -Q-fever -botulinum toxin -smallpox -glanders -Marburg infection -Ebola -Machupo virus -Argentinian hemorrhagic fever -yellow fever -Lassa fever -Venezuelan equine encephalomyelitis -Japanese encephalitis -Russian spring-summer encephalitis -psittacosis -ornithosis -rinderpest virus -African swine fever virus -wheat stem rust -rice blast[56]	04/10/72	03/26/75
	Chemical				**Biological**			
Country	**Possession Status[2]**	**Possible Agents**	**Signed CWC[3]**	**Ratified CWC[3]**	**Program Status**	**Possible Agents**	**Signed BWC[4]**	**Ratified BWC[4]**
S. Africa	Former[57]	-cyanide -Ecstasy -thallium -Mandrax -paraquat -paraoxon[58]	01/14/93	09/13/95	Former program[59]	-anthrax -cholera -botulinum toxin -salmonella[60]	04/10/72	11/03/75
S. Korea	Probable[61]	Unknown	01/14/93	04/28/97	None/Unknown	None/Unknown	04/10/72	06/25/87
Sudan	Possible[62]	Unknown	05/25/99	05/29/99	None/Unknown	None/Unknown	No	No
Syria	Probable[63]	-mustard gas -sarin -VX[64]	No	No	Research program[65]	-anthrax -botulinum toxin[66]	04/14/72	No
Taiwan	Probable[67]	Unknown	No	No	Possible research program[68]	Unknown	04/10/72	02/09/73
U.K.	Former[69]	-phosgene -mustard gas -lewisite[70]	01/13/93	05/13/96	Former program[71]	-anthrax[72]	04/10/72	03/26/75

U.S.	Known[73]	-mustard gas -sarin -soman -VX -lewisite -binary agents[74]	01/13/93	04/25/97	Defensive research program[75]	-anthrax -brucellosis -botulinum toxin -Eastern and Western equine encephalitis -Venezuelan equine encephalomyelitis -Argentinian hemorrhagic fever -Korean hemorrhagic fever -Bolivian hemorrhagic fever -tularemia -Q-fever -Lassa fever -glanders -melioidosis -plague -yellow fever -psittacosis -typhus -dengue fever -Rift Valley fever -Chikungunya disease virus -ricin -rice blast -rice brown spot disease -late blight of potato -stem rust of cereal -rinderpest virus -Newcastle disease virus -fowl plague virus[76]	04/10/72	03/26/75
Viet Nam	Possible[77]	Unknown	01/13/93	No	None/Unknown	None/Unknown	-	06/20/80
Yugoslavia, Federal Republic of (FRY)	Known[78]	-sarin -sulfur mustard -nitrogen mustard -BZ -CS -CN -LSD-25 -chloropicrin -cyanogen chloride -soman -tabun -VX -siperit -lewsite phosgene[79]	-	04/20/00	None/Unknown[80]	None/Unknown	04/10/72	10/25/73

Statement of Rose Gottemoeller
Senior Associate of the Carnegie Endowment for International Peace
Before the Senate Subcommittee on International Security,
Proliferation and Federal Services
Committee on Governmental Affairs
November 7, 2001

This is a critical time to review weapons of mass destruction (WMD) technologies and materials and examine the effectiveness of export controls to curb these threats. Suddenly, the press is full of terrible scenarios: Nuclear weapons in the hands of Osama bin Laden. A suitcase bomb detonating in the middle of the Golden Gate Bridge. A radiological bomb spewing plutonium over the White House, creating a keep-out zone in central Washington that could last for many years. After reading about threats such as these, many people are worried. I commend the Subcommittee on International Security, Proliferation and Federal Services for confronting these complex and difficult issues in the search for new answers.

I would like to begin my remarks by examining the nuclear and radiological threats, how they differ, and what the level of concern should be about them. In describing these threats, I will also summarize the kind of technological challenge that they present to any would-be proliferator, whether state-sponsored, or non-state actors with a terrorist agenda. I will then move on to discuss the nuclear and radiological threats that, in my view, deserve more attention than they currently receive. I will conclude by commenting on how export controls have related to the nuclear nonproliferation regime and peaceful uses of nuclear technologies in the past, and offer my view of how they should relate in the future.

Nuclear and Radiological Weapons: The Threats and The Technologies

A simple nuclear device of the Hiroshima design is actually not the easiest nuclear capability for a proliferator to acquire, be he a terrorist or a rogue state actor. Although the design is now almost fifty years old, the Hiroshima device, also called a "gun-type" weapon, requires a large amount of nuclear material to achieve a nuclear explosion. We assume that 15-30 kg of highly enriched uranium or 3-4 kg of plutonium are needed for a sophisticated nuclear weapon.[1] Cruder devices may require more. One estimate, for example, places the likely size of a Pakistani weapon at around 1,500 pounds.[2] Therefore, although achieving a workable trigger device and other components would not be a trivial matter, the principal barrier to acquiring a nuclear weapon is the large amount of weapons-usable material that is needed.

For this reason, international nonproliferation policy has stressed keeping nuclear material production and enrichment technologies out of proliferators' hands. The crisis

[1] David Albright, Frans Berkhout and William Walker, "Plutonium and Highly Enriched Uranium 1996: World Inventories, Capabilities and Policies," SIPRI (Oxford Press, 1997), p. 8.
[2] William J. Broad, Stephen Engelberg and James Glanz, "Assessing Risks, Chemical, Biological, Even Nuclear," *New York Times,* November 1, 2001.

begun in 1994, when North Korea threatened to pull out of the Nonproliferation Treaty, was over its production of plutonium at the Yongbyon reactor. The more recent disagreement with Russia over its potential sale of laser isotope enrichment technology to Iran is another example. In all cases, the acquisition of sufficient nuclear material to achieve a nuclear detonation is the goal of would-be proliferators; it is the goal of U.S. nonproliferation policy to prevent that acquisition.

Following the breakup of the Soviet Union in 1991, the possibility that large amounts of weapons-usable material could be stolen from former Soviet nuclear facilities has become a major concern for the nonproliferation policy community worldwide. What would have had to be achieved through years of arduous and expensive production, enrichment and separation work—a sufficient amount nuclear material to build a bomb—could be acquired in an instant through thievery. Therefore, in the past decade, an enormous amount of attention and significant U.S. dollars ($173 million in FY 01 alone) have been spent on cooperating with Russia and the other states in the region to enhance the physical protection of weapons-usable materials in facilities that housed the Soviet weapons complex.

These sites stretch in an archipelago across the former Soviet territory—a vestige of Stalin's mania to spread industrialization to every corner of the Soviet land. In the case of nuclear production, facilities were especially located in remote areas, away from prying eyes and imprudent questions. In addition, operational weapons such as those deployed with the Russian Navy are often located at remote bases in areas such as the Arctic and Far East. The United States is currently working with the Ministry of Atomic Energy and Russian Navy to improve security of nuclear material and weapons at 95 sites in Russia and the former Soviet Union.[3] This program complements and strengthens efforts to control exports of nuclear technology. Barriers to the acquisition of weapons-usable nuclear material, in short, take several forms.

In contrast to bombs that would produce a nuclear detonation, radiological weapons are a simpler capability for a proliferator to acquire, if only because the threat in the case of a radiological device exists in a wide spectrum. The spectrum could range from low-level nuclear waste planted as a package in an urban location, through highly toxic nuclear material exploded as a "dirty bomb", using conventional explosives to spread it over a wide area. At the extreme end of the spectrum would be an aircraft attack on a nuclear facility that would turn the facility itself into a radiological weapon. As Mohamed El Baradei, the Director-General of the International Atomic Energy Agency (IAEA), has said, "We are not just dealing with the possibility of governments diverting nuclear materials into clandestine weapons programs. Now we have been alerted to the potential of terrorists targeting nuclear facilities or using radioactive sources to incite panic, contaminate property and even cause injury or death among civilian populations."[4]

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[3] A useful summary of this program, with an excellent map of the sites, is contained in "MPC&A Program Strategic Plan," National Nuclear Security Administration, U.S. Department of Energy, July 2001.
[4] Quoted in Mark Henderson, "Terrorists 'Could Make Atom Bomb By Raiding Hospitals,'" *London Times*, November 1, 2001.

It is important to stress the differences among the types of radioactive materials that may come into play in a radiological attack. Since 1993, the IAEA has tracked 175 cases of trafficking in nuclear materials and 201 cases of trafficking in radioactive materials used for medical and industrial purposes. Of all of these cases, however, only 18 involved small amounts of plutonium or highly enriched uranium, the "weapons-usable" material that is required to make a nuclear bomb.[5]

Therefore, a radiological attack would most likely involve lower-level radioactive material or even nuclear waste. Depending on what the material was and the amount of conventional explosive that was used to spread it around, it would potentially sicken people and contaminate large swaths of territory. However, it would not kill thousands of people outright, as would a nuclear explosive blast. Relatively few people, for example, were killed in the immediate aftermath of the 1986 accidental explosion at the Chernobyl nuclear reactor. They were mostly the firefighters who were bravely fighting the blaze, and were dead within a few days from radiation exposure. A thirty-kilometer area around Chernobyl remains a contaminated keep-out zone today, however, and many people have suffered thyroid and other illnesses that are directly related to the Chernobyl disaster.

But even a small amount of low-level nuclear waste, if planted in an urban setting, would have the potential to sow considerable panic unless authorities were quickly able to neutralize the incident in the public's mind. Chechen operatives, for example, planted low-level nuclear material in a park in Moscow in the mid-1990s and brought television cameras to the site to advertise that they had a "nuclear capability". The Russian authorities were quickly able to convey to the public that the material did not amount to a serious threat, thereby neutralizing the incident and preventing widespread panic. Similar quick action to analyze and clarify for the public the nature of radiological threats should be an important goal of public policy in the current environment, both in the United States and in other countries where such incidents might occur.

Nuclear and Radiological Threats Deserving More Attention

In my view, we now must begin to strike a balance between the most dangerous nuclear threats, and the less lethal but profoundly disruptive radiological threats. For many years, we have rightly emphasized in our nonproliferation policy preventing weapons-usable nuclear material and weapons-related technologies from falling into the hands of would-be proliferators—the most urgent and dangerous threat to counteract, given that a taboo against using nuclear material in a terrorist attack seemed to be operating. Nowadays, however, the taboo has disappeared. As David Albright, President of the Institute for Science and International Security, has said, "You'd always reach the point where you'd say, 'yes, a terrorist could theoretically do it…and you'd look at the terrorists and say…they're not capable or they don't want to.' That's what's changed. Al Qaeda could do it, and they want to."[6]

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[5] John Tagliabue, "A Warning From An Official About An Increased Possibility of Nuclear Terror," *New York Times*, November 2, 2001.
[6] Quoted in Broad, et. al., *New York Times*, November 1, 2001.

Given the disappearance of this taboo, the relative ease with which a proliferator might acquire nuclear or radioactive material for use as a radiological device is a cause for strong concern. I believe, therefore, that radiological threats deserve greater attention in our efforts to secure nuclear materials and technologies then they have had in the past. At the same time, we cannot short-change the priorities that we have placed on preventing the proliferation of weapons-usable material and weapons-related technologies. We have to do both.

But resources are limited, and new funding for nonproliferation and nuclear threat reduction activities will have to compete with other urgent priorities in the conduct of the U.S.-led campaign against terrorism. Clearly, ongoing programs in the nuclear threat reduction arena should continue. They are receiving resources, and should not be interrupted in any way.

I would, however, like to suggest that we focus immediately on three new priorities as threats that deserve more attention. Given the demand on resources, we should also consider new methods of funding such projects, which I will specifically suggest in one case. The three priorities that I would suggest are: (1) halting the production of weapons-grade plutonium in Russia, (2) securing nuclear facilities that remain vulnerable in the former Soviet Union, and (3) improving security at nuclear reactors and other sites where lower-level (non-weapons-usable) nuclear material is stored or used. The order in which these priorities are presented does not in any way reflect their relative importance. In my view, each of them is critical, and should be given serious and urgent consideration.

The first priority is halting the production of weapons-grade plutonium in Russia, which also deserves consideration as a project that could benefit from new methods of funding. The shutdown of plutonium production reactors in Russia has been a long-standing goal of the U.S. nuclear threat reduction programs. Originally built to pump out plutonium for the Soviet bomb program, the reactors now provide heat and electricity to the cities of Tomsk and Krasnoyarsk. In the process, they continue to produce a ton-and-a-half of weapons-grade plutonium every year, adding to Russian stocks that are well over 100 tons already. Since it takes about four kilograms to build a nuclear bomb, the Tomsk and Krasnoyarsk reactors are producing every year enough plutonium for over 300 new bombs.

The Bush Administration, however, has not been enthusiastic about the shut-down plan, which involves replacing the three plutonium reactors with fossil fuel alternatives. They have apparently argued that we should not be building fossil fuel plants in Russia when the Russians could be building them themselves. The Bush team does have a point. The Russian Federation is no longer in such desperate straits as it was a decade ago. Indeed, while the U.S. economy has ceased growing, the Russian economy is growing at an annual rate of over 5 percent. Russia should therefore be in a position to shoulder more of the responsibility for nonproliferation priorities.

I believe that we should not take this argument too far, since the size of the Russian economy is still miniscule compared to that of the United States. As one Russian

counterpart commented when he heard about the $40 billion supplemental that has been put in place in the U.S. to fund post-September 11 requirements, "That is more than double the entire Russian defense budget for this year." To square this circle, perhaps Russia could focus on programs, such as shutdown of the plutonium reactors, that the United States finds difficult to fund. At the same time, we could take special action to help the Russians to finance such programs.

One good idea in the funding arena is the so-called "debt-for-security" swap that Senators Biden and Lugar have proposed in new legislation. Under this concept, we would forgive Soviet-era debt in exchange for Russia putting rubles into nonproliferation programs. These swaps would have to be carefully structured. Moscow and Washington would have to agree firmly in advance what the priorities will be, and what schedule will be followed to achieve them. The shutdown of the Tomsk and Krasnoyarsk reactors, for example, would have to be decided in advance as an absolute and urgent priority.

In addition to new rubles, some new dollars should go into priority programs as well. The second priority that I would suggest, securing nuclear facilities that remain vulnerable in the former Soviet Union, falls into this category because it is a straightforward expansion of the existing Material Protection, Control and Accounting (MPC&A) program. This expansion would enable us to counter the potential for nuclear theft. Every time we go into a Russian nuclear site, we immediately survey it to decide what "quick fixes" are needed to urgently upgrade security. Is there a splintered old door that needs to be replaced on a nuclear storage building? Do windows need to be bricked up or equipped with bars? Does underbrush need to be cleared away from the perimeter, so no one can sneak up to the building unseen? These "quick fixes" can generally be completed within three months, if the weather cooperates.

If we began next April, the start of the summer construction period, within nine months we could complete quick fixes on all of the facilities in the Russian weapons complex that so far have not been touched under the MPC&A program. The Russian government would have to agree to give the U.S. access to the sites, and the U.S. government would have to move fast to get all the planning and paperwork in place before April. But it could be done, and would give a huge boost to the nuclear security of the United States, Russia, and the rest of the world community.

The third priority, improving security at nuclear reactors and other sites where lower-level (non-weapons-usable) nuclear material is stored or used, addresses the radiological threat that has taken on a new importance in the wake of September 11. Traditionally, U.S. cooperation with the countries of the former Soviet Union to reduce the risk of nuclear proliferation has emphasized so-called higher value material and facilities—sites associated with the weapons complex and especially with nuclear material that can be used in the manufacture of nuclear weapons. Uranium, for example, must be enriched to a level above 20 percent before it is considered a proliferation threat in current U.S. programs. Materials below 20 percent enrichment have been considered a lower priority.

Given that radiological threats have taken on a new importance, programs to address them should also take on a new importance. One simple step that the United States could accomplish, for example, would be to restore the funds for international nuclear safety in the federal budget. For nearly a decade, the United States has been working with the countries of the former Soviet Union to upgrade the safety of Soviet-built nuclear reactors. The focus of the program has been precisely on safety, the rationale to prevent another Chernobyl-style disaster.

It has largely been successful in achieving these goals, and in fact, the permanent shut-down of the last Chernobyl reactor was accomplished in December 2000. For that reason, the program is slowly ramping down, dropping from over $30 million in FY 99 to just $10 million in the FY 02 budget. This program could be quickly ramped up in order to improve security at nuclear reactors and other sites where lower-level (non-weapons-usable) nuclear materials are stored. It could be extended not only to Russia and the former Soviet Union, but also to other countries around the world where such facilities are vulnerable.

How Export Controls Relate to the Nuclear Nonproliferation Regime

With regard to export controls, there is one essential difference between nuclear weapons, and chemical and biological weapons. Chemical and biological weapons are both banned by international protocols, and thus there is a global norm against them. Clearly both chemical and biological weapons are related to a host of dual-use technologies, which complicates efforts to control their proliferation. However, the ban represents a useful prohibition that somewhat simplifies the export control problem.

Nuclear weapons differ in that an essential deal was reached in the Nonproliferation Treaty (NPT), permitting five states to retain nuclear weapons, and other countries who agree to remain non-nuclear weapon states to acquire nuclear technology for peaceful purposes. Trade in support of these peaceful uses of nuclear technology has grown up over the years, principally relating to nuclear energy systems, but also related to medical, agricultural, and other technologies.

This situation is complicated by the fact that many of the peaceful uses of nuclear technology were born along with weapon uses, employing very similar technologies. The Tomsk and Krasnoyarsk reactors, producing weapons-grade plutonium at the same time they are producing heat and electricity for civilian populations, are extreme examples of this phenomenon, but they serve to illustrate the point. During the first fifty years of the nuclear era, it has often been complicated to distinguish between weapon and peaceful uses of the atom.

In this complicated environment, an export control regime has nevertheless grown up in the form of the Nuclear Suppliers Group (NSG), which makes use of mechanisms such as trigger lists of dual-use items to steer trade in nuclear technologies. The NSG has been an effective instrument, and no doubt will go through further development and improvement to address new challenges, such as the presence of nuclear weapons in

South Asia. As this topic will receive full attention in the following panel on export control, I will not delve into further detail on it, but instead consider the future of nuclear export controls in a strategic sense.

Increasingly, those who are engaged in nuclear technology development, particularly for electricity generation purposes, are interested in new approaches that have limited cross-over to the weapon sector. They want to avoid the situation inherent in Tomsk and Krasnoyarsk, rather than continuing to proceed along that trajectory. For that reason, the nuclear industry today is beginning to concentrate on developing *proliferation-resistant* reactors that will minimize the production of weapons-usable material in their cycles. Ideally, proliferation-resistant reactors would burn up plutonium rather than breed it.

Although such reactors may be 20 years or more from commercial application, it is important that a new strategic approach is developing in the nuclear industry. The industry is emphasizing proliferation resistance along with other attributes such as minimization of nuclear waste, and stringent design for safety and security. If this trend develops successfully, it will simplify the export control problem for nuclear technologies. It may also prove to be the best way to fulfill the promise of peaceful nuclear uses in the Nonproliferation Treaty.

United States General Accounting Office

GAO

Testimony

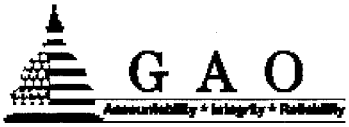
Before the Subcommittee on International Security, Proliferation, and Federal Services, Committee on Governmental Affairs, U.S. Senate

For Release on Delivery
2:30 p.m., November 7, 2001

WEAPONS OF MASS DESTRUCTION

Assessing U.S. Policy Tools for Combating Proliferation

Statement of Joseph A Christoff, Director,
International Affairs and Trade



GAO-02-226T

Mr. Chairman and Members of the Subcommittee:

I am pleased to be here today to discuss the efforts of the United States and the international community to stem the spread of weapons of mass destruction (WMD) and their related technologies.

The attacks of September 11, 2001, and recent anthrax exposures have heightened long-standing concerns about the proliferation of weapons of mass destruction. The United States and the international community have initiated a number of successive efforts over the years to secure these weapons and prevent their spread. There is renewed need to maintain strong international controls over such weapons and related technologies, as well as the need to reevaluate the effectiveness of the controls. I will describe and provide observations based on work we have conducted over the past several years on each of the mechanisms the United States has historically used to reduce proliferation risks.

Summary

The United States has used four key policy instruments to combat the proliferation of weapons of mass destruction: (1) international treaties, (2) multilateral export control arrangements, (3) U.S. export controls, and (4) security assistance to other countries. Each instrument is important to the collective framework for preventing the transfer of weapons of mass destruction and associated technologies to terrorists or rogue states, but each also has limitations.

- International treaties obligate members to restrict transfers of WMD technologies, but their effectiveness depends on whether treaties can be verified and enforced and whether all countries of concern are members. These treaties also depend on the integrity and honesty of the countries party to the treaty.

- Multilateral export control arrangements are voluntary, nonbinding agreements under which countries that produce the technologies used to develop weapons of mass destruction agree to restrict the transfer of these technologies. Such arrangements depend on the national discretion of member governments, which are free to implement these arrangements as they see fit. Member countries do not always agree on which countries and technologies are of greatest concern. We are currently examining how the extent to which members abide by their commitments, establish laws and regulations to restrict transfers, and coordinate their actions with other members limit these arrangements.

- U.S. export controls set the legal and regulatory conditions under which goods and technologies can be exported. While the goal of export controls is to prevent the transfer of sensitive technologies, a number of factors hinder their implementation. These include a failure to assess the security risk associated with the transfer of sensitive goods and technologies, and difficulties in screening out end-users and monitoring the use of items after export.

- Security assistance to other countries helps control or eliminate nuclear, chemical, and biological weapons and otherwise stem the proliferation of weapons of mass destruction. U.S. efforts have helped make large quantities of WMD-related materials more secure and have supplemented the incomes of several thousand former Soviet scientists in hopes they will not sell their knowledge to terrorists or countries of concern. However, the cost of U.S. efforts to reduce the proliferation risks of former Soviet WMD has been and will continue to be substantial, and it will take much longer than was once thought to secure sensitive materials and weapons. In addition, the United States' ability to demonstrate that these efforts have had a positive impact is limited primarily because of Russian restrictions on U.S. access to relevant sites and materials and inherent difficulties in assessing the effect of U.S. aid on the motivations of former Soviet scientists.

Background

U.S. policy states that weapons of mass destruction and their delivery systems pose a direct and serious threat to the national security of the United States, and its friends, forces, and allies. President Bush has said that the United States must have a comprehensive strategy to counter this complex and dangerous challenge. Terrorists or rogue states can acquire weapons of mass destruction by buying materials and equipment from countries that produce and export them or by stealing them from inadequately protected stockpiles in states of the former Soviet Union. Elements of U.S. current nonproliferation strategy are to (1) strengthen existing international nonproliferation treaties, promote new ones that meet U.S. interests, and upgrade the means of verifying them; (2) persuade or induce proliferating governments to change course; (3) deny proliferators the supply of equipment, material, or technology from abroad; and (4) use U.S. threat reduction programs to secure or eliminate weapons of mass destruction and missile capabilities left over from the Cold War.

With the increasing globalization of the world economy, dual-use items and technologies used to develop weapons of mass destruction cannot be effectively controlled without cooperation among exporting and transit countries. Thus, foreign purchasers denied a critical item by one country may be able to obtain the same item from another country that does not control its exports as stringently. The U.S. government has made it a priority to strengthen and deepen multilateral cooperation on export controls.

The goal of the U.S. export control system is to manage risk. Exports to some countries involve less risk than to other countries, and some exported items involve less risk than others. In controlling the export of sensitive dual-use technology, U.S. policy seeks to balance the U.S. economic interest in promoting economic exports with the need to maintain national security by preventing the proliferation of technologies used to develop weapons of mass destruction.

Effectiveness of International Treaties Relies on Enforcement Mechanisms

The international community has established treaties to eliminate chemical and biological weapons and prohibit the spread of nuclear weapons. These treaties reflect the international community's will to reduce the threat posed by these weapons. Three key treaties have been established to stem the proliferation of weapons of mass destruction: (1) the Nuclear Non-Proliferation Treaty, (2) the Chemical Weapons Convention, and (3) the Biological Weapons and Toxins Convention. Although the treaties' mechanisms for verifying and enforcing treaty compliance vary, these treaties are legally binding and share similar objectives. In addition, a majority of the world's nations adhere to them.

The Nuclear Non-Proliferation Treaty, signed in 1968, was prompted by widespread concerns that there might be dozens of countries with nuclear weapons in a few decades. The treaty obliges the five nuclear-weapon states[1] recognized by the treaty to refrain from the transfer of nuclear weapons, other nuclear explosive devices, or related technology to any country that does not have nuclear weapons. Countries that do not have nuclear weapons agree to refrain from acquiring or producing such items in return for the peaceful use of nuclear technology. There are 187 countries party to the treaty.

The Chemical Weapons Convention, signed in 1997, prohibits the production, acquisition, stockpiling, transfer, retention, and use of chemical weapons. Outbreaks in the use of chemical weapons prompted the world community to reach an agreement banning their use. The Convention obligates countries to destroy any chemical weapons and related production facilities they possess by 2007.[2] It also has the administrative structure and procedures to inspect declared and undeclared sites on short notice. There are currently 143 countries party to the treaty.

The Biological and Toxin Weapons Convention obliges parties not to develop, produce, stockpile, or acquire biological agents or toxins that are not used for peaceful purposes, as well as related weapons and means of delivery. The Convention entered into force in

[1]The treaty designated the five nuclear weapon states as China, France, Russia, the United Kingdom, and the United States.

1975 but did not have an enforcement protocol. In September 1986, the parties agreed to share data on permitted biological activities to enhance confidence and promote cooperation. In July 2001, the United States rejected a draft protocol designed to strengthen the inspection and enforcement mechanisms of the treaty. Currently, 144 countries are party to the treaty.

The effectiveness of these treaties depends on the mechanisms in place for verifying and enforcing compliance. For example, the Nuclear Non-Proliferation Treaty relies on the International Atomic Energy Agency (IAEA) to monitor members' nuclear facilities. IAEA monitoring techniques, also known as safeguards, were enhanced after it was learned that Iraq had circumvented IAEA inspection procedures. Although the Chemical Weapons Convention contains intrusive inspection provisions, its most important tool—challenge inspections—has yet to be used. The organization tasked with oversight of the Convention—the Organization for the Prohibition of Chemical Weapons—is confronting a serious financial crisis that may force a cutback in verification activities. In contrast, the 1975 Biological and Toxin Weapons Convention has no mechanisms for conducting inspections. One party to the Convention, the former Soviet Union, was able to conduct a massive covert biological weapons program during the 1970s and 1980s.

A second factor constraining the effectiveness of these treaties is the scope of their membership. Although the overwhelming majority of the world's countries are party to these treaties, significant countries of concern remain outside their scope. For example, Israel, India, and Pakistan are not party to the Nuclear Non-Proliferation Treaty, and Iraq, Syria, Libya, and North Korea have not signed the Chemical Weapons Convention. Finally, treaties rely on the integrity and accuracy of declarations made by the member countries. U.S. government officials have raised questions regarding the integrity of Russian, Iranian, and Chinese declarations concerning the Chemical Weapons Convention, as well as North Korean commitments to the Biological and Toxins Weapons Convention and the Nuclear Non-Proliferation Treaty.

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[2]According to the Convention, a 5-year extension may be granted.

Constraints on Consensus and Cooperation Within Multilateral Export Control Arrangements

Multilateral export control arrangements are voluntary, nonbinding agreements under which countries that produce the technologies used to develop weapons of mass destruction agree to restrict the transfer of these technologies. These arrangements include lists of sensitive materials and technologies that are to be controlled through each member's national laws.

There are four important multilateral export control arrangements, each with between 32 to 38 members.

- The Nuclear Suppliers Group, established in 1974, seeks to ensure that nuclear trade for peaceful purposes does not contribute to the proliferation of nuclear weapons or explosive devices.

- The Australia Group, which aims to control chemical and biological weapons, was established in 1984. This arrangement seeks to ensure that the industries of participating countries do not assist—either on purpose or by accident—other countries seeking to obtain the technology to build chemical and biological weapons.

- The Missile Technology Control Regime, established in 1987, addresses missiles and technologies useful for developing missile systems capable of delivering weapons of mass destruction—that is nuclear, chemical, and biological weapons.

- The Wassenaar Arrangement was established in 1996 in part to address technologies not covered by the other arrangements. This arrangement aims to prevent the destabilizing buildup of conventional arms, as well as goods and technologies that have both civilian and military applications. Rather than establishing prohibitions on transfer, this arrangement encourages transparency and national restraint.

Both the executive and legislative branches have affirmed support for strengthening the effectiveness of multilateral export control arrangements as a critical aspect of U.S. nonproliferation policy. However, the effectiveness of multilateral controls has been increasingly questioned in recent years. As part of our ongoing work in this area, we are examining

- how the effectiveness of these voluntary arrangements may be limited by the degree of consensus among members and by controls implemented at the national discretion of member governments;
- whether member countries abide by their commitments to not export items that other members have denied;
- the extent to which member countries share relevant information about their export decisions;
- the sufficiency of coordination among the arrangements in sharing information about rogue states and terrorists; and
- whether countries that are not members of an export control arrangement can undermine the arrangement's ability to prevent the transfer of controlled technology.

Implementation Issues Hamper U.S. Export Control Policy

Members of multilateral export control arrangements implement multilateral controls through each country's domestic laws and regulations. Under U.S. law, the President has the authority to control and require licenses for the export of items such as nuclear, chemical, biological, or missile technologies that may pose a national security risk or foreign policy concern. The President also has the authority to revise or remove those controls as U.S. concerns and interests change. The U.S. export control system is administered by two agencies. The Commerce Department licenses sensitive dual-use

items under the Export Administration Act of 1979, as amended (P.L. 96-72),[3] while the State Department licenses munitions items under the Arms Export Control Act (P.L. 90-629).

In our past work, we have identified weaknesses in implementation of selected U.S. export controls. These weaknesses also raise questions about how well the United States implements controls on transfers of technology that can be used to develop weapons of mass destruction.

- Assessing proliferation risks. The executive branch has not assessed national security risks of items such as high-performance computers and semiconductor manufacturing technologies to determine whether such items at specified performance levels need to be controlled. As a result, the executive branch has not adequately justified changes in some export controls, even when the law required specific justifications for raising computer control levels. We have recommended that the executive branch conduct these assessments, in part to determine how the uses of certain items would threaten U.S. national security interests, but it has not done so.[4]

- Screening recipients of exported items. Limitations of both government and private industry screening of proposed recipients of sensitive American exports has long been an issue. For example, the Commerce Department does not have complete intelligence information on license applicants that may serve as fronts for proliferators or terrorists engaged in illicit activities. Also, the U.S. government increasingly relies on industry to determine whether an export needs to be licensed,

[3]The Export Administration Act ended Aug. 20, 1994. Under Executive Order 12924, issued on Aug. 19, 1994 (59 Fed. Reg. 43437), the President, to the extent permitted by law, extended the application of the act. In addition, the Nuclear Regulatory Commission licenses exports of nuclear reactors. The Department of Commerce, in consultation with a number of other agencies, licenses dual-use nuclear exports.

[4]*Export Controls: System for Controlling Exports of High Performance Computing is Ineffective* (GAO-01-10, Dec. 18, 2000); *Export Controls: Inadequate Justification for Relaxation of Computer Controls Demonstrates Need for Comprehensive Study* (GAO-01-534T, Mar. 15, 2001).

even though industry has raised questions about its capability and willingness to make this assessment without government support.

- Monitoring illicit use of exports. The U.S. government has difficulties confirming the appropriate use of exported technologies. For example, certain countries of concern, such as China, restrict U.S. officials' visits to recipients' facilities. In addition, the U.S. government makes limited efforts to monitor exporters' and end users' compliance with conditions set forth in export licenses for computers.

Controlling the Spread of Former Soviet Weapons of Mass Destruction Will Be Costly and Time-Consuming

The states of the former Soviet Union possess an enormous quantity of assets that could help terrorists or rogue states acquire weapons of mass destruction. By some estimates, the former Soviet Union had, at the time of its collapse in 1991, about 30,000 nuclear weapons, 650 metric tons of weapons-usable materials, 40,000 metric tons of chemical weapons, an extensive biological weapons infrastructure, and thousands of systems capable of delivering weapons of mass destruction. The Soviet collapse also left 30,000 to 75,000 senior nuclear, chemical, and biological weapons scientists and thousands of less experienced junior scientists without full-time employment.

Since 1991, the Departments of Defense, Energy, and State have helped Russia and other newly independent states eliminate weapons of mass destruction, secure WMD materials, and control the spread of WMD knowledge. Their efforts have focused on

- destroying the vehicles for delivering nuclear weapons and securing former Soviet nuclear weapons and their components,
- securing and protecting weapons-usable nuclear materials such as highly enriched uranium[5] and plutonium that may be subject to theft and diverted to terrorists and countries of concern,

[5]The United States has also arranged for the purchase of highly enriched uranium from Russia for conversion to reactor fuel.

- securing weapons of mass destruction from theft, and
- engaging scientists formerly engaged in weapons development in peaceful projects in the hope that they will not be tempted to sell their skills to terrorists or countries of concern.

Reducing the formidable proliferation risks posed by former Soviet WMD assets is clearly in the U.S. national interest. U.S. efforts have helped make large quantities of WMD-related materials more secure and have supplemented the incomes of several thousand former Soviet scientists. However, the cost of such efforts has been substantial and will continue to grow, and the timeframes for completing them have been extended considerably. Since 1991, the Congress has authorized about $5.5 billion for U.S. programs to reduce former Soviet WMD threats and is now doing so at a rate of several hundreds of millions of dollars annually. U.S. agencies plan to spend billions of dollars to continue to address these threats over the next two decades. For example, the Department of Energy now estimates that it will spend more than $2.2 billion by 2020 to help Russia secure certain nuclear materials that could be used for weapons. The Department of Defense also is seeking to build a $890 million facility that would destroy Russian chemical weapons at one of Russia's several chemical weapons storage sites.

While these efforts are potentially valuable, the reliability of such cost estimates is uncertain, at best, due to Russia's apparent inability to shoulder a substantial portion of the burden and to changing Russian requirements. For example, the United States estimated in 1996 that the Department of Defense would pay no more than $275 million to help Russia design and build a facility intended to store plutonium extracted from dismantled weapons. However, in 1998, Russia's apparent inability to contribute its share of funding to the project led the United States to agree to pay more than $412 million for a substantially downsized version of the facility. It is worth noting that the Department of Defense's recent estimate that it will pay $890 million to design and build a Russian chemical weapons elimination facility rests on the assumption that Russia will pay more than $750 million in related infrastructure and operations costs. In addition, the Department of Energy's hopes of controlling the cost of securing Russian nuclear

materials by consolidating storage sites rests on Russia's willingness to reduce its requirements by closing certain sites and consolidating nuclear material.

The ability of the United States to conclusively demonstrate that its efforts are having a positive impact is limited at best. In many cases, it may never be proved that these programs have substantially achieved their intended purpose. We can be fairly confident that DOD aid has helped two former Soviet states meet their arms control obligations by destroying launchers for intercontinental ballistic missiles. However, we may never know if our aid to underemployed former Soviet weapons scientists has reduced the desire of any one of them to sell his or her skills to terrorists or countries of concern. Also, because U.S. assistance generally employs these scientists part-time, they often continue to work at former Soviet WMD research institutes. Under certain circumstances, aiding such scientists without careful screening and monitoring could create new risks for U.S. national security. Our ability to assess the impact of our aid is also made difficult, in some cases, by Russia's reluctance to provide U.S. officials with full access to relevant sites and materials.

Conclusion

The tragic events of the last few months provide the impetus for reexamining the U.S. policy instruments used to restrict the spread of weapons of mass destruction to terrorists and rogue states. Ten years ago, the international community made major changes in its controls over nuclear technology after revelations about the Iraqi nuclear weapons program. We may be at a similar juncture today. We need to reassess the adequacy of our current policy tools to address our new vulnerabilities and changed perceptions of the threats we face.

Mr. Chairman and Members of the Subcommittee, this concludes my prepared statement. I will be happy to answer any questions you may have.

Contacts and Acknowledgments

For future contacts regarding this testimony, please call Joseph Christoff at (202) 512-8979. F. James Shafer, Stephen M. Lord, Eugene Aloise, Lynn Cothern, Diana Glod, Jeffrey D. Phillips, Nanette J. Ryen, and Pierre R. Toureille made key contributions to this testimony.

Appendix I

MEMBERSHIPS OF MULTILATERAL EXPORT CONTROL ARRANGEMENTS

Countries	Australia Group	MTCR[a]	NSG	Wassenaar Arrangement
Argentina	•	•	•	•
Australia	•	•	•	•
Austria	•	•	•	•
Belarus			•	
Belgium	•	•	•	•
Brazil		•	•	
Bulgaria			•	•
Canada	•	•	•	•
Cyprus	•		•	
Czech Republic	•	•	•	•
Denmark	•	•	•	•
Finland	•	•	•	•
France	•	•	•	•
Germany	•	•	•	•
Greece	•	•	•	•
Hungary	•	•	•	•
Iceland	•	•		
Ireland	•	•	•	•
Italy	•	•	•	•
Japan	•	•	•	•
Latvia			•	
Luxembourg	•	•	•	•
Netherlands	•	•	•	•
New Zealand	•	•	•	•
Norway	•	•	•	•
Poland	•	•	•	•
Portugal	•	•	•	•
Romania	•		•	•
Russia		•	•	•
Slovakia	•		•	•
Slovenia			•	
South Africa		•	•	
South Korea	•		•	•
Spain	•	•	•	•
Sweden	•	•	•	•
Switzerland	•	•	•	•
Turkey	•	•	•	•

Countries	Australia Group	MTCR[a]	NSG	Wassenaar Arrangement
Argentina	•	•	•	•
Ukraine		•	•	•
United Kingdom	•	•	•	•
United States	•	•	•	•

[a]Countries pledging to abide by MTCR guidelines include the People's Republic of China, Israel, Romania, and Slovakia.

Source: Center for International Trade and Security, *Nonproliferation Export Controls: A Global Evaluation*, 2001.

Appendix II

SELECTED GAO REPORTS ON EXPORT CONTROLS AND FORMER SOVIET WEAPONS OF MASS DESTRUCTION

EXPORT CONTROLS

- *Export Controls: State and Commerce Department License Review Times Are Similar,* GAO-01-528, June 1, 2001
- *Export Controls: Regulatory Change Needed to Comply with Missile Technology Licensing Requirements,* GAO-01-530, May 31, 2001
- *Export Controls: Inadequate Justification for Relaxation of Computer Controls Demonstrates Need for Comprehensive Study,* GAO-01-534T, March 15, 2001
- *Export Controls: System for Controlling Exports of High Performance Computing Is Ineffective,* GAO-01-10, December 18, 2000
- *Department of Energy: National Security Controls Over Contractors Traveling to Foreign Countries Need Strengthening,* RCED-00-140, June 26, 2000
- *Export Controls: Challenges and Changes For Controls on Computer Exports,* T-NSIAD-00-187, May 26, 2000
- *Export Controls: National Security Risks and Revisions to Controls on Computer Systems,* T-NSIAD-00-139, March 23, 2000
- *Export Controls: National Security Risks and Revisions To Controls on Computers,* T-NSIAD-00-104, February 28, 2000
- *Export Controls: Statutory Reporting Requirements for Computers Not Fully Addressed,* NSIAD-00-45, November 5, 1999
- *Export Controls: International Space Station Technology Transfers,* NSIAD-00-14 November 3, 1999
- *Export Controls: Implementation of the 1998 Legislative Mandate for High Performance Computers,* T-NSIAD-00-53, October 28, 1999
- *Export Controls: 1998 Legislative Mandate for High Performance Computers,* NSIAD-99-208, September 24, 1999
- *Defense Trade: Department of Defense Savings From Export Sales Are Difficult to Capture,* NSIAD-99-191, September 17, 1999
- *Export Controls: Better Interagency Coordination Needed on Satellite Exports,* NSIAD-99-182, September 17, 1999
- *Department of Energy: DOE Needs To Improve Controls Over Foreign Visitors To Its Weapons Laboratories,* T-RCED-99-28, October 14, 1998
- *Export Controls: Change in Licensing Jurisdiction for Commercial Communications Satellites,* T-NSIAD-98-222, September 17, 1998
- Export Controls: Changes in Controls Applied to the Export of High Performance Computers, T-NSIAD-98-250, September 16, 1998
- *Export Controls: Information on the Decision to Revise High Performance Computer Controls,* NSIAD-98-196, September 16, 1998

- *Export Controls: National Security Issues and Foreign Availability for High Performance Computer Exports*, NSIAD-98-200, September 16, 1998.
- *Export Controls: Issues Related to the Export of Communications Satellites*, T-NSIAD-98-211, June 17, 1998
- *Export Controls: Issues Related to Commercial Communications Satellites*, T-NSIAD-98-208 June 10, 1998
- *Department of Energy: DOE Needs to Improve Controls Over Foreign Visitors to Weapons Laboratories*, RCED-97-229, September 25, 1997.
- *Export Controls: Sales of High Performance Computers to Russia's Nuclear Weapons Laboratories*, T-NSIAD-97-128, April 15, 1997.
- *Export Controls: Change in Export Licensing Jurisdiction for Two Sensitive Dual-Use Items*, NSIAD-97-24, January 14, 1997
- *Export Controls: Sensitive Machine Tool Exports to China*, NSIAD-97-4 November 19, 1996
- *Export Controls: Sale of Telecommunications Equipment to China*, NSIAD-97-5, November 13, 1996.
- *Nuclear Weapons: Russia's Request for the Export of U.S. Computers for Stockpile Maintenance*, T-NSIAD-96-245, September 30, 1996
- *Nuclear Nonproliferation: Information on Nuclear Exports Controlled by U.S.-EURATOM Agreement*, RCED-95-168, June 16, 1995
- *Export Controls: Issues Concerning Sensitive Stealth-Related Items and Technologies*, T-NSIAD-95-158, May 11, 1995
- *Export Controls: Concerns Over Stealth-Related Exports*, NSIAD-95-140, May 10, 1995
- *Export Controls: Some Controls Over Missile-Related Technology Exports to China Are Weak*, NSIAD-95-82, April 17, 1995

FORMER SOVIET WEAPONS OF MASS DESTRUCTION

- *Cooperative Threat Reduction: DOD Has Adequate Oversight of Assistance, But Procedural Limitations Remain*, GAO-01-694, June 19, 2001
- *Weapons of Mass Destruction: State Department Oversight of Science Centers Program*, GAO-01-582, May 10, 2001
- *Nuclear Nonproliferation: DOE's Efforts to Assist Weapons Scientists in Russia's Nuclear Cities Faces Challenges*, GAO-01-429, May 3, 2001
- *Nuclear Nonproliferation: Security of Russia's Nuclear Material Improving; Further Enhancements Needed*, GAO-01-312, February 28, 2001
- *Biological Weapons: Effort to Reduce Former Soviet Threat Offers Benefits, Poses New Risks*, GAO/NSIAD-00-138, April 28, 2000
- *Cooperative Threat Reduction: DOD's 1997-98 Reports on Accounting for Assistance Were Late and Incomplete*, GAO/NSIAD-00-40, March 15, 2000
- *Weapons of Mass Destruction: U.S. Efforts to Reduce Threats from the Former Soviet Union*, GAO/T-NSIAD/RCED-00-119, March 6, 2000
- *Nuclear Nonproliferation: Limited Progress in Improving Nuclear Material Security in Russia and the Newly Independent States*, RCED/NSIAD-00-82, March 6, 2000

- *Nuclear Nonproliferation: Status of Transparency Measures for U.S. Purchase of Russian Highly Enriched Uranium*, RCED-99-194, September 22, 1999
- *Weapons of Mass Destruction: Effort to Reduce Russian Arsenals May Cost More, Achieve Less Than Planned*, NSIAD-99-76, April 13, 1999
- *Nuclear Nonproliferation: Concerns with DOE's Efforts to Reduce the Risks Posed by Russia's Unemployed Weapons Scientists*, RCED-99-54, February 19, 1999
- *Nuclear Nonproliferation and Safety: Uncertainties About the Implementation of U.S.-Russian Plutonium Disposition Efforts*, RCED-98-46, January 14, 1998
- *Weapons of Mass Destruction: Review of DOD's June 1997 Report on Assistance Provided*, NSIAD-97-218, September 5, 1997
- *Cooperative Threat Reduction: Status of Defense Conversion Efforts in the Former Soviet Union*, NSIAD-97-101, April 11, 1997
- *Weapons of Mass Destruction: DOD Reporting on Cooperative Threat Reduction Assistance Has Improved*, NSIAD-97-84, February 27, 1997
- *Nuclear Safety: Status of U.S. Assistance to Improve the Safety of Soviet-Designed Reactors*, RCED-97-5, October 29, 1996
- *Weapons of Mass Destruction: Status of the Cooperative Threat Reduction Program*, NSIAD-96-222, September 27, 1996
- *Nuclear Nonproliferation: U.S. Efforts to Help Newly Independent States Improve Their Nuclear Material Controls*, T-NSIAD/RCED-96-118, March 13, 1996
- *Nuclear Nonproliferation: Status of U.S. Efforts to Improve Nuclear Materials Controls in Newly Independent States*, NSIAD/RCED-96-89, March 8, 1996
- *Nuclear Safety: Concerns with Nuclear Facilities and Other Sources of Radiation in the Former Soviet Union*, RCED-96-4, November 7, 1995
- *Weapons of Mass Destruction: DOD Reporting on Cooperative Threat Reduction Assistance Can Be Improved*, NSIAD-95-191, September 29, 1995
- *Weapons of Mass Destruction: Reducing the Threat From the Former Soviet Union--An Update*, NSIAD-95-165, June 17, 1995
- *Weapons of Mass Destruction: Reducing the Threat From the Former Soviet Union*, NSIAD-95-7, October 6, 1994
- *Nuclear Safety: International Assistance Efforts to Make Soviet-Designed Reactors Safer*, RCED-94-234, September 29, 1994
- *Soviet Nuclear Weapons: U.S. Efforts to Help Former Soviet Republics Secure and Destroy Weapons*, NSIAD-T-93-5, March 9, 1993
- *Soviet Nuclear Weapons: Priorities and Costs Associated with U.S. Dismantlement Assistance*, NSIAD-93-154, March 8, 1993
- *Russian Nuclear Weapons: U.S. Implementation of the Soviet Nuclear Threat Reduction Act of 1991*, NSIAD-T-92-47, July 27, 1992

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Export Controls and WMD Proliferation Threats

New Opportunities for Reform

Prompted by the Gulf War, in the early 1990s the United States and its partners strengthened the system of multilateral export control arrangements related to Weapons of Mass Destruction (WMD) and their means of delivery. In recent years, however, the impetus to adapt export controls continuously to the emerging challenges of the post-Cold War world dissipated. Consequently, the four major export control arrangements entered into an era of stagnation without their members having resolved several critical deficiencies in the multilateral system.[1]

The tragic events of the past two months not only emphasize the need to reform the multilateral system, they have shaken the international community enough that reform initiatives may succeed. In particular, the attacks on September 11 scuttled any doubts that some terrorists have the will to use WMD if they have the capability to do so. The importance of limiting WMD capabilities of terrorists and states that support terrorists never has been more clear to the international community.

Squandering this opportunity will have severe consequences. The world of WMD export controls has two fundamental principles:

[1] The four major export control arrangements are the Australia Group (for chemical and biological items), the Missile Technology Control Regime (MTCR), the Nuclear Suppliers Group (NSG), and the Wassenaar Arrangement (for advanced conventional weapons).

- If your system is not getting better, it is getting worse. No system is perfect and those that seek to acquire WMD always will find ways to exploit existing vulnerabilities; and,
- ~~Export controls can not prevent WMD proliferation, they only buy time for other policies to work.~~ A good export control system will make WMD acquisition more difficult, more expensive, and more time-consuming. In some cases these factors will dissuade WMD acquisition, but not all. Export controls can not prevent WMD proliferation, but they can buy time for other policies to work.

Failure to strengthen the multilateral export control arrangements and the larger nonproliferation regimes now will increase the likelihood that terrorists or states that support terrorism will obtain new or increase existing WMD capabilities.

Multilateral Coordination of WMD Export Controls

The international community witnessed several important advances regarding WMD export controls, particularly in the early 1990s. These achievements included:

- Developing new guidelines to control nuclear, chemical, biological, and missile weapons;
- Developing new control lists for nuclear, chemical, biological, and missile weapons;

- A sharp increase in the number of governments adhering to supplier group guidelines and control lists, including several countries of proliferation concern; and,
- Increased harmonization of national export control licensing systems.

Nonetheless, several recent projects have portrayed a spate of problems with current multilateral efforts to coordinate WMD export controls.[2] In summary, these reports identify several broad classes of problems:

- Infrastructure weaknesses, especially limited sharing of licensing, enforcement, and intelligence information;
- Inadequate and irregular threat assessments for list reviews, especially regarding general purpose dual-use goods;
- Inadequate harmonization of national export control systems overall, especially in enforcement;
- Lack of consensus regarding end-user controls, especially regarding China and, to a lessor extent, Iran; and,
- Inadequate recognition of the impact of new global models of research, commerce, and industry.

A paucity of systematic evidence on the export control policies and practices of key US allies, much less other critical suppliers, moreover, has made efforts to assess these issues very problematic.[3]

[2] See, for example, the Study Group on Enhancing Multilateral Export Controls for US National Security, *Final Report*, Washington, DC: The Henry L. Stimson Center, April 2001; and CSIS Commission on Technology Security in the Twenty-First Century, *Computer Exports and National Security in a Global Era*, Washington, DC: CSIS, May 2001.

[3] The National Export Control Evaluation Project of the Center for International Trade and Security of the University of Georgia (CITS/UGA) is one effort to address this problem, at

In no small measure, the United States bears considerable responsibility for both the successes and failures of multilateral export controls. Above all, the inability of the US government to design new WMD export control policies --- exemplified by repeated reverses in developing a new Export Administration Act (EAA) --- has undermined US efforts to provide international leadership. Almost by default, the policies of the European Union now appear to have greater influence on international export control standards than those of the United States.

Coordinating Multilateral WMD and Anti-Terrorism Export Controls

These same problems endanger prospective efforts to coordinate WMD and anti-terrorism export controls. Before September 11, the multilateral export control arrangements did not serve as centers for discussion and information exchange regarding transnational terrorist WMD threats (indirectly, some terrorist issues could be addressed in discussing some state projects of proliferation concern, such as those in North Korea, Iran, and Libya). In addition, no comprehensive study of the anti-terrorist export control policies of key US allies or the emerging anti-terrorist coalition exists. Although it seems certain that terrorist WMD threats will reach the agenda of the Wassenaar Arrangement and perhaps the other supplier groups in the coming months, without fixing several fundamental problems the members of the arrangement will end up with no more than a primitive attempt to coordinate disparate national policies unlikely to have

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http://www.uga.edu/cits. See, for example, CITS/UGA, *Nonproliferation Export Controls: A Global Evaluation 2001*, Athens, GA: CITS/UGA, June 2001. Also see Stockholm Peace Research

much impact on WMD terrorism. Using the problems of multilateral coordination mentioned above, for example, one should expect to see at least five difficulties in efforts to improve WMD anti-terrorism export control coordination, including:

1. *A weak infrastructure for coordinating anti-terrorism WMD export controls.*

While the events of September 11 appear to have brought down many of the barriers between national law enforcement and intelligence agencies, sharing of critical information within and between supplier groups is not always timely, adequately distributed, or sufficiently substantive. Establishing a new arrangement for anti-terrorism export controls will only make information sharing that much more complex. Creating working groups on WMD terrorism in each of the supplier groups also will make information sharing more complex, unless nascent attempts to coordinate the activities within and between the existing supplier arrangements become much more active. In addition, the various supplier groups do not include key parties to the emerging anti-terrorism coalition.

2. *A list of sensitive items based mainly on delaying state-sponsored WMD proliferation.*

Pursuant to the Commerce Control List (CCL), for example, the United States controls a few dual-use items only for anti-terrorist purposes, such as some vaccines, explosive detection devices, and oil well perforators. The vast majority of items it controls for anti-terrorism purposes, it also controls for

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Institute (SIPRI) Export Control Project, available at http://projects.sipri.se/expcon/expcon.htm.

national security, nuclear nonproliferation, missile proliferation, and chemical or biological proliferation purposes. Terrorists operating without the support of state sponsors will almost certainly adopt WMD acquisition, production, and dispersal methods different than those used by states, and an appropriate control list should reflect these differences.

3. *Divergent national anti-terrorism WMD export control systems.*

As noted earlier, no comprehensive, open source study of foreign anti-terrorism export controls exists. Starting as early as January 1995, the United States has developed a mix of anti-terrorist export control regulations, which it does not coordinate multilaterally.[4] The US Commerce Department, for example, administers anti-terrorism export controls on Iran, Syria, and Sudan unilaterally, in addition to the broad, sometimes unilateral, trade embargoes the United States maintains against the seven governments identified as supporting international terrorism (the United States also has had special controls on exports to the Taliban controlled regions of Afghanistan since 1999).[5] Regarding dual-use items, the Commerce Department, with a presumption of denial, requires a license for the export or re-export of any item on the CCL to individuals on the Specially Designated Terrorist (SDT) or the Foreign Terrorist Organization (FTO) lists, a requirement no licensing exemption overrides. In addition, no US person may export or re-export any item subject to the Export Administration

[4] The Office of Foreign Assets Control (OFAC) of the Treasury Department, for example, implements the Terrorism Sanction Regulations (TSR), the Terrorism List governments sanctions Regulations (TLR), and the Foreign Terrorist Organizations Sanctions Regulations (FTOR), while the Commerce and State Department have additional anti-terrorist export controls..

Regulations (EAR), whether it appears on the CCL or not, to such individuals or entities without a license.[6] For defense articles (i.e., items on the United States Munitions List (USML) under the International Traffic in Arms Regulations (ITAR), the State Department has a policy of license denial for exports destined or bound for countries designated as supporting international terrorism. For violation of these and other anti-terrorist regulatory provisions, the United States maintains a range of criminal and civil sanctions. Given that many governments define and implement their WMD export control policies on dual-use and defense items somewhat (and at times very) differently from the United States, and that the existing supplier regimes operate on the basis of national discretion, harmonizing anti-terrorism export controls will take considerable effort.

At the same time, the success of persistent US efforts to promote "catch-all" controls will have at least an indirect impact on WMD anti-terrorism controls. Most members of the four supplier arrangements control the export of items on the international control lists going to any WMD program, conceivably including projects undertaken by terrorists as well as government authorities (or both). Through catch-all controls, many states also can restrict a broad range sensitive items, whether they appear on the control lists or not, going to any WMD program. This may provide the framework for coordinating WMD anti-terrorism export controls.

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[5] The seven include Cuba, Iran, Iraq, Libya, North Korea, Sudan, and Syria.
[6] Although the export of virtually all goods, technologies, and services are subject to the EAR, some critical exceptions, such as products classified as fundamental research or subject to the exclusive jurisdiction of another agency, exist.

4. *Divergent views on the targets of anti-terrorist WMD export controls.*

President Bush has indicated that the administration seeks to bring international terrorists to justice. Once past the Al Qaeda network and the Taliban, however, it remains uncertain that the United States can create international agreement on the individuals, entities, and governments appearing on its roster of SDTs, FTOs, and Terrorism List Governments. Disagreements about WMD export controls on trade with China, Iran, and India, for example, already plague the supplier groups. Even where they agree on which groups are international terrorists, it seems likely that countries will disagree on which terrorists constitute WMD threats. Given the imprecision and politicization involved in defining terrorism, much less on which entities pose a threat to use WMD, considerable disagreement will emerge outside of several clear-cut cases.

5. *Divergent approaches to industry – government cooperation.*

Although the United States and several other governments have strong sets of outreach programs to inform industry about WMD export controls, evidence suggests that industry compliance remains haphazard in the United States, even among the biggest high-tech exporters.[7] Several countries, such as Denmark and Japan, already rely more extensively on corporate compliance programs to implement export control policy than does the United States.[8]

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[7] See Richard T. Cupitt, "Survey on US Industry Compliance and Export Controls: Findings," available on line at http://www.uga.edu/cits/news/news_us_indi_full.htm.

[8] See, for example, Center for Information on Strategic Technology Controls (CISTEC), *Export Control System in Japan*, Tokyo: CISTEC, February 2001; or Danish Agency for Trade and Industry, *On the Way to a New Export Control System*, Copenhagen: Ministry of Trade and Industry, September 2000, also available in Danish at www.efs.dk.

Arguably, the most effective actions the United States might take in developing better WMD and anti-terrorism export controls would be to create and certify minimum standards for industry internal compliance programs and export control administrators (some companies already do the latter). These will be particularly important for those companies that operate most of the functions at the US national laboratories.

Conclusion

Unfortunately, the international nonproliferation export control community appears much better at reacting to catastrophic events than undertaking proactive reforms. The 1974 Indian nuclear test, the use of chemical weapons by Iraq in the 1980s, and the exposure of the extensive Iraqi WMD programs after the Gulf War, among other events, all prompted long-needed reforms in multilateral coordination of export control policies. The tragic events of the last two months appear to offer another opportunity to make the international system more effective. The fundamental weaknesses of the existing multilateral system, however, will hamper coordination on WMD anti-terrorism export controls if left untreated. Let me suggest a few immediate steps to address these concerns:

- *Develop working groups in each supplier arrangement to address anti-terrorism, but coordinate their work with a small international anti-terrorism export control working group.*

- *Identify anti-terrorism export control policies of other countries, especially those related to WMD, starting with the G-8 and other key members of the supplier groups.*
- *Develop a list of items to control that are of greatest concern related to WMD anti-terrorism as a basis for international negotiations on anti-terrorism export controls.*
- *Develop a list of terrorists and terrorist organizations that pose the greatest WMD threat as a basis for international negotiations on anti-terrorism export controls.*
- *Be willing to provide funding, technical assistance, and critical information to help US partners implement and coordinate WMD anti-terrorist export control intelligence, licensing, and enforcement policies.*
- *Create new standards for industry compliance programs that make it more likely that companies, research institutions, and especially the national laboratories of greatest WMD concern do not inadvertently export items that enhance the treat of WMD terrorism.*

Export controls alone can not prevent WMD terrorism. Nonetheless, they will play an important role in the anti-terrorism campaign. Without appropriate export controls, those groups already willing to use WMD could more easily obtain WMD capability.

As important, without improving existing export controls, sufficient weaknesses in the multilateral export control system may be exposed so that terrorists now dissuaded by the difficulties in obtaining WMD will recalculate the costs and benefits of using WMD that will lead to more terrorists seeking and acquiring WMD. Making it harder for terrorists to acquire WMD capabilities through export controls, without unnecessarily impeding legitimate commercial and scientific exchange, is an important preventative step in that direction.

Current and Future Weapons of Mass Destruction Proliferation Threats
Senate Committee on Government Affairs
Subcommittee on International Security, Proliferation and Federal Service
Testimony of James A. Lewis
Center for Strategic and International Studies
November 7, 2001

Mr. Chairman, let me thank you and the other members of the Committee for the opportunity to testify on the effectiveness of export controls in curbing the proliferation of material and technology used for weapons of mass destruction.

Through the 1980s and 1990s, the U.S. created an extensive export control architecture. Export controls became an important tool to slow the spread of sensitive technologies to states of concern. However, over the last decade, two major developments have changed the significance of export controls for national security. First, a far more complex security environment has replaced the tidy Cold War alignment of friends and foes. International security is now complex and unpredictable. Second, the global economy has evolved in ways we did not foresee when the U.S. established its export controls.

The result is that export controls grow less effective every year. This is particularly true for dual-use export controls. The principle reason for this is the continuing economic development and integration of countries around the globe. Fewer obstacles and lower costs for international trade mean that industries and production are increasingly international. The volume of international trade has tripled in the last fifteen years. Improvements in communications technologies make it easy to transfer data and ideas around the world in a few seconds. Container ships and jumbo jets have made transportation cheap and easy, allowing millions of tons of cargo and millions of people to travel around the world every year. These changes have significant implications for U.S. security, particularly for counter-terrorism and for nonproliferation.

Business and science have become more international and more collaborative. International research and development alliances among corporations has increased eight-fold since the mid 1980s. Companies place plants or development centers in different countries or even different continents. They move their research and development ideas rapidly among these facilities to gain competitive advantage in a global market place. Scientific capabilities have also diffused around the world, as more countries build scientific and research institutions and as scientists find that they gain an advantage from research conducted by multinational teams of specialists in different countries.

For nonproliferation, these changes make it harder to deny access to technology, especially as much of the technology needed for weapons of mass destruction does not need to be particularly advanced. Proliferators can use industrial equipment from the 1970s or even 1950s to build weapons of mass destruction. Determined nations, such as Iraq, Iran or North Korea will be able to continue their WMD programs despite export control efforts. Iraq exemplifies this best, for despite the most restrictive sanctions regime in the world, it has been rebuilding its WMD programs.

Multilateral Regimes and Nonproliferation

While export controls have become less useful, the Missile Technology Control Regime, the Australia Group and the Nuclear Suppliers Group continue to make positive contributions to security. The characteristics that make the regimes more effective are:

-- They have strong multilateral support, so a denial by one country will not be "undercut by another."

-- There is broad consensus to prevent exports that contribute to WMD proliferation.

-- They focus their efforts on specific chokepoint technologies.

-- They have good mechanisms for information sharing and consensus building on projects of concern.

These characteristics are a good test for measuring the effectiveness of national export controls. In an era of economic globalization, a single country's export controls will be ineffective unless it focuses on key technologies and other nations follow similar practices. Export controls can remain effective in an era of economic integration and globalization only if they focus on technologies that are not widely available in the world market and if they have a high degree of multilateral support.

A fourth regime, the Wassenaar Arrangement, demonstrates the need for focus and cooperation. Unlike the three nonproliferation regimes, the Wassenaar Arrangement is ineffective. There is little consensus among Wassenaar members on its mission or on what technologies are crucial for control. As a result, we can no longer prevent countries from acquiring many items on the Wassenaar control list.

However, Wassenaar has little to do with nonproliferation. It focuses on controlling conventional dual-use technologies. Many of these technologies are not key WMD technologies and not controlled by other countries for proliferation purposes. Items on the Wassenaar List that are useful for WMD are already controlled by the three nonproliferation regimes. This is because when the Wassenaar Arrangement was established, our allies insisted that any item or technology for weapons of mass destruction be moved from Wassenaar control lists to one of nonproliferation regimes. The result is that for WMD, Wassenaar controls are redundant.

"Catch-All" Controls

Wassenaar controls are also redundant for nonproliferation if a country has effective "catch-all" controls. "Catch-all" controls apply to any export when the intended recipient is a proliferation-related entity. The U.S. created its "catch-all" control, known as EPCI (Enhanced Proliferation Control Initiative), in response to Iraqi efforts in 1990 to acquire U.S. equipment for WMD production. EPCI allows the U.S. to stop shipments of any

item going to questionable end-users for proliferation related purposes. It allows the U.S. to impose licensing requirements on exports and reexports of any good and technology where there is a risk of diversion to WMD or missile proliferation. This remains an important part of U.S. export controls.

EPCI also gives the U.S. the authority to "inform" an exporter that a foreign entity is ineligible to receive U.S. goods without prior approval. The informing process can occur through a letter to the U.S. exporter or through publication of an entity or list of entities in the Federal Register Notice. Once listed, exporters must obtain a license before selling to these entities. This authority also remains essential.

Finally, EPCI requires exporters to screen potential sales to avoid transfers to WMD programs. Exporters must apply for a license whenever they 'know or have reason to know' the export could be associated with WMD-related activities. Screening is the least effective part of EPCI because of changes in business practices and because of problems in sharing information with exporters. Finding ways to increase information sharing and refine EPCI screening would make U.S. export controls more effective, and continuing the U.S. effort to encourage more countries to adopt strong catch-all controls would make multilateral nonproliferation efforts more effective.

Problems for Nonproliferation Export Controls

The distinction between Wassenaar and the WMD regimes has important implications for U.S. export controls. Many recent debates on export controls have been over items that fall under the Wassenaar regime, such as satellites, machine tools and computers. Other countries would not regard these as proliferation-related. Our difficulties in moving from Cold War technology controls to a nonproliferation export control system have hampered efforts to make export controls more effective and have drawn attention away from the larger problems that confronts nonproliferation export controls.

These larger problems result from the evolution of the international security environment. WMD-related export controls are part of a larger nonproliferation strategy that uses diplomatic pressure and sanctions to persuade potential WMD producers to end their programs. Export controls, by slowing these programs and making them more costly, give time for diplomacy to work. This approach was developed in the early 1990s and it has met with considerable success. A number of countries abandoned their WMD programs in light of the combination of diplomatic pressure and export controls. However, a small core of determined nations continued with their weapons programs irrespective of diplomatic pressure, export controls or sanctions.

We now need to reconsider the original diplomatic rationale for WMD export controls in dealing with these nations. Export controls still slow WMD programs and make them more costly, but they will not stop them. In one case, North Korea, a new approach that used economic incentives and a broader effort to address fundamental security issues seems to have paid off. However, India and Pakistan have been able to develop nuclear weapons (and in India's case, long-range missiles), and Iran and Iraq continue to pursue

the acquisition of WMD. We cannot rely on export controls and sanctions to stop these programs, and one of the challenges for the U.S. will be to find a new approach to nonproliferation.

In addition to facing these very difficult problems in the old nonproliferation paradigm, we face new problems with "non-state actors" who seek to acquire WMD. These are principally terrorist groups and they pose a serious challenge to current nonproliferation controls, which were aimed at countries and large government programs.

Nonproliferation is now more than an arms control problem to be approached in the traditional diplomatic and military context. This means less emphasis on traditional nonproliferation activities, where foreign ministries agree on licensing policies and demarches and more emphasis cooperation in law enforcement and intelligence. Export licensing will be less important for dealing with efforts by terrorist organizations to acquire WMD. Most WMD export controls focus on exports of production equipment and capital goods. Terrorists are unlikely to acquire these items. Terrorists will not be applying for licenses and they may not even try to export material. A more plausible scenario is that terrorists will attempt to acquire WMD-related materials in the country where they intend to use them, bypassing all of the current export control mechanisms.

For example, while most countries have strong export controls in place for the export of spent nuclear fuel, it is not clear that all of them have taken the necessary steps to safeguard this fuel from theft. A terrorist organization could steal spent nuclear fuel and use it to build radiological weapons. These weapons do not require the extensive infrastructure and investment needed for nuclear arms. Similarly, security measures at many U.S. and foreign laboratories are not adequate to prevent the theft of dangerous biological samples. In the U.S., samples of some pathogens like smallpox are kept under very tight security, but samples of others, like anthrax, are housed in research laboratories across the country with minimal safeguards. International cooperation, and domestic security measures may be as important today for nonproliferation as export controls.

As part of the reorientation of U.S. security policy since September 11, nonproliferation must become a part of the larger, integrated system of homeland security and the response to terrorism. The nonproliferation regimes can still make important contributions by identifying WMD-related items that need additional safeguards and by coordinating the development of effective and mutually reinforcing security measures. They can also provide a forum for the exchange of information on common threats, between law enforcement and internal security agencies as well as diplomatic and intelligence agencies. WMD-related technology transfer should form a part of a larger homeland defense policy. Effort to ensure that WMD does not fall into the hands of terrorists must become part of a multilateral defense against terrorism, and the support we have received from our allies since September 11 could be channeled into reinvigorating cooperative efforts to deal with WMD proliferation.

"Deemed Exports"

The larger counterterrorism and homeland defense effort also has implications for "deemed exports." A "deemed export" occurs when a person comes to the United States and learns something. Students coming to the U.S or other countries to study and do research at universities and labs have been a problem for nonproliferation for many years. The automatic response is to ban foreign students or require that they all be licensed. This would be a fiasco. Hundreds of thousands of students enter the U.S. every year. In almost all cases, our intelligence agencies have no information about them, not because of any failure in collection but because these people have never been anything other than legitimate students and there is no information to collect. A license review based on no information is open to question as a protective measure.

Expanding "deemed export" controls can also have a hidden cost for the U.S. One of the sources of U.S. technological strength is that many of the best minds in the world are attracted here to learn and to work. The benefits we receive from having these people here outweighs the potential cost of technology leaks. This was the conclusion that the Reagan Administration came to in National Security Decision Directive 189, and this decision should remain the core of our policy.

Most "deemed export" licenses are for information technologies, not proliferation-related technologies. The challenge is not to try to find some way to keep using export control techniques developed for the Cold War, but to think in terms of a larger approach to homeland security. Immigration control is among the most serious vulnerabilities revealed by September 11. Greater international cooperation in immigration control and improved screening and tracking processes for foreign visitors is one of the imperatives for Homeland Defense. As the U.S. improves immigration screening, it may want to rely less on export licensing to govern technology transfer in the U.S. Export licenses should only be required when positive information is developed regarding proliferation-related risk. Our current practice, which is to let people in with a visa or license and then ignore them, is no longer supportable

Building Strong Nonproliferation Controls

Export controls can still play a role in nonproliferation and national security, but this role is shrinking. Building an export control system that will serve nonproliferation and national security in the 21st century will not be easy. The consequences, however, of failing to reform could be costly. In looking at how to move ahead in export controls and nonproliferation, we may want to consider the following:

--The U.S. needs to reexamine the fundamental approach to nonproliferation export controls (buy time for diplomacy") that we have taken for the last ten years.

--We would benefit from strengthening nonproliferation regimes by expanding their role to include not just diplomatic and arms control functions, but additional law enforcement and counterterrorism functions as well.

--The U.S. should seek to find ways to use the strengths of the three nonproliferation regimes to support efforts in homeland defense and counterterrorism.

--Trying to control access to items that are widely available on the global market wastes time and resources without slowing WMD programs. U.S. export controls will be more effective if they focus on the items listed by the three nonproliferation regimes.

--Work on deemed exports should focus less on licensing and more on a broader solution to foreign visitor screening system that includes nonproliferation information as part of the process.

-- Effective nonproliferation export controls can be built with the lists and procedures of the three nonproliferation regimes, the use of catch-all controls and improved immigration procedures.

Finally, in considering how to adjust export controls to better support nonproliferation after September 11, we must be careful in assessing whether new measures cost more, in both civil liberties and long term economic and technological strength, than the benefits they provide.

Thank you.

Testimony of Gary Milhollin

Professor Emeritus, University of Wisconsin Law School
and
Director, Wisconsin Project on Nuclear Arms Control

I am pleased to appear before this distinguished Subcommittee to discuss the effect of export controls on the spread of mass destruction weapons.

I will cover four topics. First, whether export controls are succeeding in protecting our security; second, whether they are now being weakened; third, whether violations are being punished; and fourth, what could be done to make export controls stronger.

The first thing to recognize about export controls is that they can work. They can make it more expensive, more time-consuming and more difficult for countries to develop mass destruction weapons. They can also buy the time needed to turn a country off the nuclear weapon path. Argentina and Brazil agreed to give up nuclear weapons in part because of the costs that export controls imposed upon them. And in Iraq, documents discovered by the United Nations inspectors showed that export controls on dual-use equipment seriously hampered the Iraqi nuclear weapon team. Export controls also stopped Iraq's drive to make a medium-range missile. In addition, these controls are now hampering India's effort to build an ICBM and will hinder the efforts of both India and Pakistan to build more efficient nuclear warheads.

But despite these successes, American export controls are now weaker than ever before in our history. Today's export controls are but a shadow of what they were in the 1980's, when Saddam Hussein was building his mass destruction war machine and we were still in the cold war. Since 1988, applications to the Commerce Department have dropped by roughly 90%. Cases have fallen from nearly 100,000 in 1989 to roughly 10,000 in fiscal year 2000. The reason is simple: fewer items are controlled, so fewer applications are required. When applications do come in, they are almost always approved. In fiscal year 2000, only 398 applications were denied – about four percent of the total received. Perhaps we could put up with this system in a time of peace, but we now know that there are terrorist organizations willing to do us harm, and that weapons of mass destruction in their hands would threaten our way of life.

There is little doubt that the present system allows American exports to endanger our security. A recent example is American transfers to Huawei Technologies, the Chinese company caught helping Iraq improve its air defenses by outfitting them with fibre optic equipment. The assistance to Iraq was not approved by the United Nations, and thus violated the international embargo.

The history of Huawei shows how American exports to China can wind up threatening our own armed forces. At about the time when this company's help to Iraq was revealed earlier this year, Motorola had an export license application pending for permission to teach Huawei how to build high-speed switching and routing equipment –

ideal for an air defense network. The equipment allows communications to be shuttled quickly across multiple transmission lines, increasing efficiency and reducing the risk from air attack.

Motorola is only the most recent example of American assistance. During the Clinton Administration, the Commerce Department allowed Huawei to buy high-performance computers worth $685,700 from Digital Equipment Corporation, worth $300,000 from IBM, worth $71,000 from Hewlett Packard and worth $38,200 from Sun Microsystems. In addition, Huawei got $500,000 worth of telecommunication equipment from Qualcomm.

Still other American firms have transferred technology to Huawei through joint operations. Last year, Lucent Technologies agreed to set up a new joint research laboratory with Huawei "as a window for technical exchange" in microelectronics. AT&T signed a series of contracts to "optimize" Huawei's products so that, according to a Huawei vice president, Huawei can "become a serious global player." And IBM agreed to sell Huawei switches, chips and processing technology. According to a Huawei spokesman, "collaborating with IBM will enable Huawei to...quickly deliver high-end telecommunications to our customers across the world." Did IBM know that one of these customers might be Saddam Hussein?

As a result of deals like these, Huawei's sales rocketed to $1.5 billion in 1999, to $2.65 billion in 2000, and are projected to reach $5 billion in 2001. These are extraordinary heights for a company that began in 1988 as a $1,000 start-up. Real growth did not begin until the mid-1990s, when American help started rolling in. Texas Instruments started its assistance in 1994, and by 1997 had set up laboratories to help Huawei train engineers and develop digital signal processing technologies. Also in 1997, Motorola and Huawei set up a joint laboratory to develop communication systems.

These exports no doubt make money for American companies, but they also threaten the lives of American pilots.

Huawei is not an isolated case. From 1989 to 1993, the U.S. Commerce Department approved six licenses for the export of equipment to China Precision Machinery Import-Export Corporation (CPMIEC). This company has supplied C-801 and C-802 anti-ship cruise missiles to Iran, and, according to United States intelligence, it shipped M-11 missiles to Pakistan in 1992. It was sanctioned by the United States in August 1993 for missile proliferation.

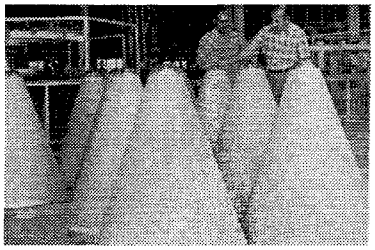
Among the items that the Commerce Department approved was a computer workstation for simulating wind effects. The ability to simulate wind effects is something the designer of an anti-ship missile could find useful. The missiles now pose a threat to

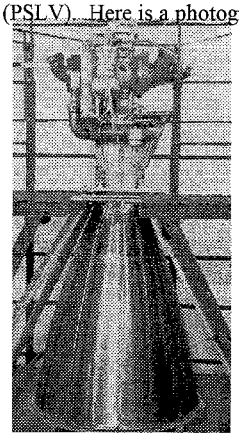
U.S. ships and sailors in the Persian Gulf as well as to commercial shipping.

And there is the China National Electronics Import-Export Corporation (CEIEC). It markets cryptographic systems, radars and mine detection equipment, among other things. In the mid-1990s, this company sold Iran the powerful JY-14 surveillance radar – it can detect targets up to 300 kilometers away – that Iran integrated into its air defense system. This radar was probably built by using U.S. equipment. Microwave research equipment, a very large scale integrated system for testing integrated circuits, equipment for making semiconductors, and computer equipment were all licensed for export to this Chinese company by the Commerce Department from 1989 to 1993. Only last month, the *Washington Times* reported that Iran was installing another JY-14 radar near Iran's border with Afghanistan.

The second thing to recognize is that export controls are being weakened. In reaction to the attacks on September 11, one would expect the United States to search for ways to strengthen controls on the sales of dangerous commodities. Instead, we are going in the opposite direction. The United States has just dropped sanctions against a long list of dangerous buyers in India and Pakistan that were denied U.S. exports after those two countries tested nuclear weapons in 1998. It seems hard to believe, but our response to a terrorist attack on American soil was to loosen our export controls and make it easier for foreign countries to build weapons of mass destruction.

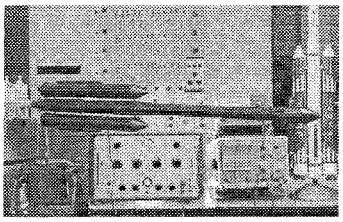
I would like to describe the activities of some of these companies. First is Hindustan Aeronautics Ltd. It produces major components for India's largest rockets, such as the Polar Satellite Launch Vehicle (PSLV). Here is a photograph of some rocket nose cones that this company makes.

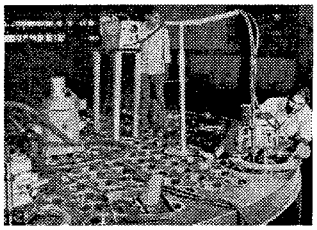




Sanctions were also dropped against the firm Godrej and Boyce. It too produces major components for India's rockets, such as engines, motor casings and heat shields. At left is a photograph of a liquid-fueled rocket engine that this firm produces.

India's National Aerospace Laboratory performs rocket and missile research. It does wind tunnel testing, ground vibration testing, and it analyzed the first flight test of the Prithvi missile. At right, I have included a photograph of a rocket model wired for testing in this firm's wind tunnel. It is now free to import American dual-use items.





And there is Walchandnagar Industries, which produces major components for uninspected Indian reactors that make plutonium free for use in atomic bombs. At left is a photograph of an end shield that this company produced for the Madras-2 nuclear reactor. Walchandnagar too was freed of export control sanctions.

I would like to emphasize that all of these firms are unquestionably making weapons of mass destruction, and all of them have just been cleared for American exports.

Third, there is the problem of enforcement. A company that violates the law by not applying for a license is rarely punished. For example, in 1996 Silicon Graphics Inc. of Mountain View, Calif., sold four supercomputers to one of Russia's leading nuclear weapon laboratories without the required export license. The U.S. computers were 10 times more powerful than anything the Russians had before. After the deal was done, Russia's nuclear chief told the press that Russia would start designing its warheads with simulated explosions using the American computers. There is strong evidence that Silicon Graphics broke the law. It clearly needed an export license and did not get one. The case went to a federal grand jury in 1997, where it has not been heard from since.

In 1999, the Cox Committee found that Hughes Electronics and Loral Space and Communications, two big American satellite makers, "deliberately acted without the legally required licenses and violated U.S. export control laws" when they helped China improve its largest rockets in 1995 and 1996. To boost their profits, these U.S. firms gave China technology that could, in the committee's words, increase "the reliability of all PRC ballistic missiles." These cases too went to a federal grand jury well over three years ago and have not been heard from since. I recommend that this Subcommittee ask the Department of Justice to report on their status.

The United States can do a much better job of export control. One improvement would be to make the process transparent. We could start down that path by publishing a comprehensive list of dangerous buyers. The United States now publishes such a list in the Federal Register but it is far too small. The list for China contains only nineteen names. Our government has claimed that a more extensive list would reveal intelligence sources and set off diplomatic conflicts. But it is well-known that scores, if not hundreds of firms in China are active in nuclear, missile and military production. Their names are not secret. It is silly to pretend we don't know they exist. The same is true of the Indian organizations I mentioned above and scores of other Indian organizations like them. The computer industry, in fact, would welcome a list of dangerous buyers. Industry would prefer to spend its scarce marketing dollars on buyers that don't present problems.

As a first step in building such a list, I have attached to my testimony the names of 50 firms that are well-known parts of China's nuclear, missile and military complex. I should point out that this is not a blacklist. It is only a warning list. These names have been selected on the basis of reliable, unclassified information. I recommend that Congress submit these names to the Department of State, and ask for an opinion on whether the names should be included on the published U.S. export warning list. If the State Department judges that these firms should be included, then the Subcommittee should ask the Commerce Department to add the names to the "entity" list in Part 744 of the Export Administration Regulations. American firms should not unwittingly make sales that undermine American security.

Appendix to the testimony of Gary Milhollin, November 7, 2001

Chinese organizations that should be placed on the U.S. "entities list."

22nd Construction and Installation Corporation (Yichang)
23rd Construction Corporation (Beijing)
Aviation Industries of China I and II (AVIC) (Beijing)
Beijing Institute of Aerodynamics (BIA) (Beijing)
Beijing Institute of Electromechanical Engineering (Beijing)
Beijing Institute of Electronic Systems Engineering (Beijing)
Beijing Institute of Nuclear Engineering (BINE) (Beijing)
Beijing Institute of Space System Engineering (Beijing)
Beijing Institute of Technology (BIT) (Beijing)
Beijing Research Institute of Uranium Geology (BRIUG) (Beijing)
Beijing Wan Yuan Industry Corporation (BWYIC) (also known as the China Academy of Launch Vehicle Technology [CALT]) (Beijing)
Chengdu Aircraft Industrial Corporation (CAIC) (Chengdu)
China Aerospace International Holdings Ltd. (CASIL) (Hong Kong)
China Aerospace Machinery and Electronics Corporation (CAMEC) (Beijing)
China Aerospace Science and Technology Corporation (CASC) (Beijing)
China Chang Feng Mechanics and Electronics Technology Academy (Beijing)
China Great Wall Industries Corporation (CGWIC) (Beijing)
China Haiying Electro-Mechanical Technology Academy (Beijing)
China Hexi Chemistry and Machinery Company (Beijing)
China Nanchang Aircraft Manufacturing Company (Nanchang)
China National Aero-Technology Import-Export Corporation (CATIC) (Beijing)
China National Aero-Technology International Supply Corporation (CATIC Supply) (Nanchang)
China National Nuclear Corporation (CNNC) (Beijing)
China North Chemical Industries Corporation (NOCINCO) (Beijing)
China North Industries Corporation (NORINCO) (Beijing)
China North Opto-electro Industries Corporation (OEC) (Beijing)
China Nuclear Energy Industry Corporation (CNEIC) (Beijing)
China Precision Machinery Import-Export Corporation (CPMIEC) (Beijing)
China Sanjiang Space Group (Wuhan)
Chinese Academy of Sciences (CAS) (Beijing)
Commission on Science, Technology and Industry for National Defense (COSTIND)
East China Research Institute of Electronic Engineering (ECRIEE) (Hefei)
Harbin Engineering University (Harbin)
Harbin Institute of Technology (HIT) (Harbin)

Hua Xing Construction Company (HXCC) (Yizheng)
Hubei Red Star Chemical Institute (also known as Research Institute 42) (Xiangfan)
Luoyang Electro-optical Technology Development Center (LEODC) (Luoyang)
Nanjing University of Science and Technology (Nanjing)
National University of Defense Technology (NUDT) (Changsha)
Nuclear Power Institute of China (NPIC) (Chengdu)
Research Institute 31 (Beijing)
Shaanxi Institute of Power Machinery (also known as Research Institute 41) (Shaanxi)
Shanghai Institute of Electromechanical Engineering (Shanghai)
Shanghai Power Equipment Research Institute (SPERI) (Shanghai)
Shanghai Xinfeng Chemical Engineering Research Institute (Shanghai)
Shanghai Xinli Research Institute of Power Equipment (Shanghai)
Shanxi Xingan Chemical Material Plant (Taiyuan)
Shenyang Aircraft Corporation (SAC) (Shenyang)
Shenyang Aircraft Research Institute (SARI) (Shenyang)
Xidian University (also known as the Xian University of Electronic Science and Technology) (Xian)

UNITED STATES SENATOR • NEBRASKA

CHUCK HAGEL

PRESS RELEASE

FOR IMMEDIATE RELEASE
Wednesday, November 14, 2001

Contact: Mike Buttry,
or Beth Lee 202-224-4224

TESTIMONY BY SENATOR CHUCK HAGEL

Governmental Affairs Subcommittee on International Security, Proliferation and Federal Services

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HEARING ON

THE PROLIFERATION OF WEAPONS OF MASS DESTRUCTION

"In April, I introduced the Nonproliferation Assistance Coordination Act to address the coordination of non-proliferation efforts in Russia and the former Soviet Union. Senators Lugar and Biden were original co-sponsors of this legislation.

The legislation I introduced was divided into eight sections. Section Four establishes a committee on nonproliferation assistance at the Assistant Secretary level or higher, to be chaired by a senior representative of the National Security Council and comprised of representatives from the Departments of State, Defense, Commerce and Energy. Section Five sets out the duties of the committee. Section Six relates to Administrative support. Section Seven protects confidentiality of information.

This morning the Senate Foreign Relations Committee gave its support to the Nonproliferation Assistance Coordination Act, by including it as part of the Security Assistance Act we passed out of committee.

The actions of the Foreign Relations Committee earlier today, and this current hearing, recognize the timeliness of the issue of nonproliferation. It has been ten years since the Congress took the important step to help reduce the threat of nuclear chaos emerging from the disintegration of the Soviet Union.

-MORE-

Under the foresight and leadership of Senators Nunn and Lugar, Congress established the Cooperative Threat Reduction program authorizing funding through the Department of Defense budget to assist with the safe and secure transportation, storage and dismantlement of nuclear, chemical and other weapons in the former Soviet Union. Thousands of nuclear warheads have been deactivated and missiles dismantled in Belarus, Ukraine, Kazakhstan and Russia.

In the past ten years the Nunn-Lugar initiative has grown into a multi-pronged effort by the Departments of Defense, State and Energy to ensure that weapons of mass destruction, weapons-usable material and technology, and weapons-related knowledge in Russia and the Newly Independent States remain beyond the reach of terrorists and weapons-proliferating states. The investments we have made in this area have yielded an impressive return. By assisting Russia in this area we have reduced, not eliminated, nuclear threats we face in the United States and the world, and have enhanced our national security.

But just as the Nunn-Lugar initiative has changed over the last decade, so too has the world changed since the terrorist attacks of September 11th. Nonproliferation is one of the key components of the war on terrorism. On November 6th, President Bush stated:

> "Al Qaeda operates in more than 60 nations, including some in Central and Eastern Europe. These terrorist groups seek to destabilize entire nations and regions. They are seeking chemical, biological and nuclear weapons. Given the means, our enemies would be a threat to every nation and, eventually, to civilization itself."

Last January, a bipartisan task force led by former Senator Baker and former White House Counsel Lloyd Cutler released a report calling for improved coordination within the United States government on non-proliferation assistance to Russia. In particular, the report noted:

> "Coordination within and among U.S. Government agencies is insufficient and must be improved. Although the Task Force focused on the DOE nonproliferation programs, the members heard from many interlocutors that the programs would be improved, as would the counterpart programs in other agencies, if there were more coordination at all levels among all U.S. Government programs."

This is what my legislation does:

President Bush recognized the need for greater coordination in our domestic security policy, as evidenced by the appointment of Governor Ridge as Director of the Office for Homeland Security.

-MORE-

The Baker-Cutler report recommended establishing a new position for nonproliferation coordination within the National Security Council, or creating a high-policy level nonproliferation czar. My legislation does not impose such a mandate on the President, but instead calls for coordination of our nonproliferation programs through a senior level coordinating committee.

A second aspect of my legislation is the inclusion of efforts undertaken by private sector programs in this area, such as corporations and non-governmental organizations, or NGOs. This subcommittee will hear testimony today from the Nuclear Threat Initiative, a private organization founded by Ted Turner and former Senator Sam Nunn to reduce the threat from nuclear weapons. You will also hear of NGO efforts through testimony from a representative of the Russian Newly Independent States Nonproliferation Program at the Monterey Institute. Currently, this private spending is small but is registering positive results. It will continue to increase. We should ensure that government and non-government spending on non-proliferation programs compliment each other and are not duplicative.

Our previous efforts have yielded significant results. But there is far more work yet to do. Yesterday, Senator Dodd and I wrote in the *New York Times* that Presidents Bush and Putin should use the current summit as an opportunity to discuss "effective ways to ensure that weapons and materials of mass destruction in and around Russia remain safe, accounted for and secure."

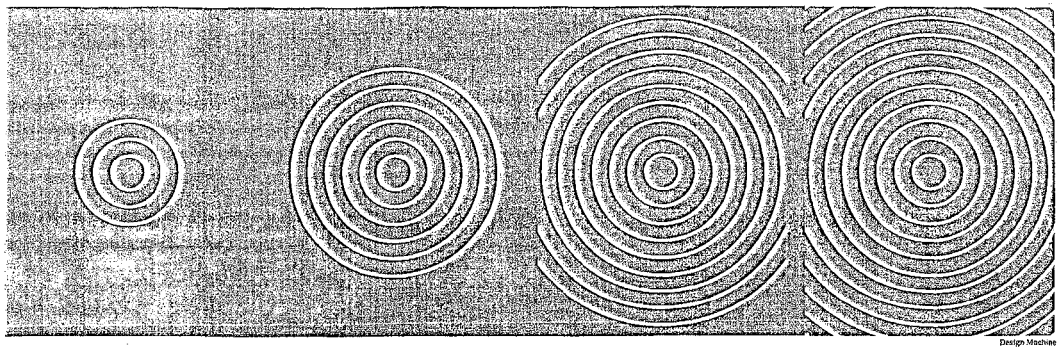
The discussions between Presidents Bush and Putin are already yielding agreements in this area. Yesterday afternoon, President Bush noted that the United States and Russia will, "strengthen our efforts to cut off every possible source of biological, chemical and nuclear weapons, materials and expertise." President Bush and Putin also announced yesterday that they will dramatically reduce nuclear arsenals in both countries. This will probably require more spending from the United States. If we in Congress are asked to spend more of our budget on this effort, we must ensure these funds are spent efficiently, effectively, and not on repetitive efforts.

I appreciate the Committee's review of this serious, timely and relevant issue. Thank You."

***Attached is an op-ed by Senator Chris Dodd (D-CT) and Senator Chuck Hagel (R-NE) that appeared in the New York Times.*

Can Bush and Putin Control Russia's Arsenal?

By Christopher J. Dodd and Chuck Hagel



Design Machine

WASHINGTON

The events of Sept. 11 shattered any illusion that America is secure from foreign attack. As horrible as that day was, future attacks could be far more deadly. If terrorists had used a nuclear weapon in lower Manhattan, hundreds of thousands might have died.

President Bush has noted the potential threat we face if Al Qaeda or other terrorist groups obtain weapons of mass destruction. These groups are seeking chemical, biological and nuclear weapons, he told European leaders last week. If they obtain them, they will be a threat "to every nation and eventually to civilization itself."

The primary sources for these materials of destruction are weapons plants and reactors in the former Soviet Union, where thousands of tons of weapons-grade uranium, plutonium, chemicals and pathogens are stored at hundreds of sites. Some of these sites lack fences, alarms or qualified security guards. Systems to account for fissile material are rudimentary or nonexistent.

Several times in the last decade, individuals or groups have attempted to steal and then sell nuclear, chemical or biological materials from sites in Russia. We know this because we have captured them. But how many incidents have happened that we don't know about? It would only take a softball-sized lump of highly enriched uranium, or a baseball-sized lump of plutonium, along with materials readily available on the commercial market, to put together a nuclear device that could fit in an S.U.V. Terrorists are also working to perfect the delivery of deadly chemical and biological agents on a broad scale.

As President Bush meets with President Vladimir Putin of Russia this week, he should discuss devising effective ways to ensure that weapons and materials of mass destruction in and around Russia remain safe, accounted for and secure.

> Nuclear materials, unguarded and unaccounted for.

In 1991, Congress approved legislation that provided money to Russia and other former Soviet states to help them dismantle their nuclear arsenals and create safe storage for weapons-grade nuclear material. Under the program, named for former Senator Sam Nunn and Senator Richard Lugar, more than 5,600 warheads have been deactivated since 1992. The United States has spent more than $2 billion to aid Belarus, Ukraine and Kazakhstan in the destruction of their weapons, and has helped Russia safely dispose of thousands of tons of nuclear weapons and materials. Despite this effort, most Russian nuclear material is inadequately secured.

Meanwhile, the United States government has hired or helped place thousands of former weapons scientists from the former Soviet Union to work in university labs, hospitals and power plants. Many more, however, remain out of work or underemployed. They are thus susceptible to selling their expertise to terrorist groups or rogue states.

Despite the success of these programs, we need a better plan to reduce the threat of these weapons — one that takes into account the new realities of the world after Sept. 11.

First, we need a clear mechanism for leadership and accountability. Coordination between the dozens of federal departments and agencies responsible for monitoring nonproliferation agreements must be improved. Funding for these programs must be drastically increased — and not just by the United States. America's allies, and international organizations like the United Nations and the International Atomic Energy Agency, should also do their part.

Russia's partnership is vital to the success of this effort. The protection and elimination of nuclear materials — as well as chemical and biological agents — must become a cornerstone of Russian-American relations. Preventing weapons of mass destruction from falling into the wrong hands is a goal we both share. Russian cooperation in neutralizing Iraq's program for weapons of mass destruction should be part of any new security arrangement between Washington and Moscow.

On Sept. 11, the unthinkable happened. Worse could be yet to come, especially if terrorists acquire and use nuclear weapons. The only real defense is an effective, long-term strategy that prevents the spread of dangerous chemical, biological and nuclear materials. The United States cannot do this alone. We need President Putin's help — and he needs ours. □

Christopher J. Dodd, Democrat of Connecticut, and Chuck Hagel, Republican of Nebraska, serve on the Senate Foreign Relations Committee.

THE NEW YORK TIMES, TUESDAY, NOVEMBER 13, 2001

United States General Accounting Office

GAO

Testimony

Before the Subcommittee on International Security, Proliferation, and Federal Services, Committee on Governmental Affairs, United States Senate

For Release on Delivery
2:30 p.m.
Wednesday,
November 14, 2001

NUCLEAR NONPROLIFERATION

Coordination of U.S. Programs Designed to Reduce the Threat Posed by Weapons of Mass Destruction

Statement of Ms. Gary L. Jones
Director, Natural Resources and Environment

GAO-02-180T

Mr. Chairman and Members of the Subcommittee:

We are pleased to be here today to discuss our recent work on U.S. nonproliferation programs designed to reduce the threat to national security posed by the former Soviet Union's weapons of mass destruction and to comment on S. 673—a bill to establish an interagency committee to review and coordinate U.S. nonproliferation programs. Our statement today, which follows our testimony before this Subcommittee last week that provided an overview of U.S. tools for combating proliferation,[1] emphasizes how the events of September 11, 2001, have heightened the importance to our national security of global U.S. nonproliferation programs.

In summary, our most recent work on the U.S. government's various nonproliferation programs has found that they have achieved some success, but more needs to be done to keep nuclear weapons, materials, and technologies out of the hands of terrorists and countries of concern. For example, hundreds of metric tons of nuclear material remain at some risk because DOE's program to secure this material continues to experience problems with access to sensitive Russian sites. Furthermore, there are questions about how to sustain the security improvements being made. In addition, DOE and State Department programs to employ weapons scientists face difficulty in conclusively demonstrating that they are achieving their intended goal of preventing the spread of weapons-related knowledge and expertise.

With respect to S. 673, there is some debate among officials both within and outside government about the need for more coordination of U.S. nonproliferation programs. Based upon our work and the findings of two independent commissions that recently examined these programs, we believe that additional coordination would be helpful and that the legislation could serve as a vehicle to share information and best practices for addressing the problems we identified in

[1] *Weapons of Mass Destruction: Assessing U.S. Policy Tools for Combating Proliferation* (GAO-02-226T, Nov. 7, 2001).

our work. However, the legislation would not address a number of other problems, such as limited access to sensitive Russian sites and various program management concerns that diminish the effectiveness of U.S. nonproliferation efforts. We also believe S. 673 could be strengthened by mandating development of an overarching strategic plan that clearly identifies overall goals, time frames for meeting those goals, and ways to set priorities for allocating resources governmentwide to address U.S. nonproliferation concerns.

Background

The states of the former Soviet Union possess enormous assets, including nuclear material and scientific expertise, that could help terrorists or countries of concern acquire weapons of mass destruction. By some estimates, the former Soviet Union had, at the time of its breakup 10 years ago, about 30,000 nuclear weapons, 650 metric tons of weapons-usable nuclear materials, 40,000 metric tons of chemical weapons, an extensive biological weapons infrastructure, and thousands of systems capable of delivering weapons of mass destruction. The political changes and ensuing economic turmoil left 30,000 to 75,000 senior nuclear, chemical, and biological weapons scientists, as well as thousands of less experienced scientists, without full-time employment. In addition, Russia's 10 closed nuclear cities, which form the core of the nuclear weapons complex, have massive unemployment problems and face an uncertain future because Russia is downsizing its nuclear weapons activities.

To date, the Congress has authorized in excess of $5.5 billion for U.S. programs aimed at helping Russia and the other newly independent states to reduce the threats posed by their weapons of mass destruction. Much of this money has been spent on DOD's efforts to eliminate vehicles for delivering nuclear weapons and securing former Soviet weapons and their components. DOE is also a major player in U.S. nonproliferation programs. Its programs focus on, among other things, (1) improving the security of hundreds of metric tons of nuclear materials at various sites located throughout Russia and (2) employing Russia's weapons scientists, including those in Russia's 10 closed nuclear cities, so that they will not

sell sensitive information to countries or terrorist groups trying to develop weapons of mass destruction. The State Department also oversees two international science centers in Russia and Ukraine that pay former Soviet weapons scientists to conduct peaceful research.

S. 673 calls for a committee that would consist of representatives from the Department of Commerce, DOD, DOE, and State, and be chaired by a representative of the Assistant to the President for National Security Affairs. The committee would be responsible for monitoring and coordinating nonproliferation efforts in the former Soviet Union (1) within and between U.S. government departments and agencies, (2) between the U.S. government and the private sector, and (3) between the United States and other countries in order to minimize conflict among the programs and to maximize the utility of U.S. public spending. Specifically, the bill calls for the committee to arrange for the development of analyses and provide guidance on the issues and problems relating to coordination within and between the U.S. government, the private sector, and other countries' nonproliferation programs.

Nuclear Nonproliferation Programs Have Had Success, but More Work Needed to Secure Weapons, Materials, and Technologies

Today, I will focus my comments on our recent work related to several key nonproliferation programs: DOE's Material Protection, Control, and Accounting Program; the 1993 U.S./Russia Highly Enriched Uranium Agreement; and DOE's and State's programs to employ Russian weapons scientists. Successful implementation of these nonproliferation programs is clearly in our national security interests. While these programs have had some success, much more needs to be done to ensure their successful implementation.

In February 2001,[2] we reported that the security systems installed by DOE's Material Protection, Control, and Accounting Program were reducing the risk of

[2] *Nuclear Nonproliferation: Security of Russia's Nuclear Material Improving; Further Enhancements Needed* (GAO-01-312, Feb. 28, 2001).

theft of nuclear material in Russia but that hundreds of metric tons of nuclear material still lacked improved security systems. At that time, DOE had spent about $601 million and had installed completed or partially completed systems protecting, among other things, 192 metric tons of the 603 metric tons of nuclear material identified at risk of theft. Nevertheless, Russian officials' concerns about divulging national security information continue to impede DOE's efforts to install systems for the remaining nuclear material at sensitive Russian sites. DOE has recently concluded an improved access agreement with Russia. However, the program's continued progress depends on DOE's ability to gain access to sensitive sites and reach agreement with Russia on reducing the number of sites and buildings where nuclear material is located and where security systems are needed. DOE estimates that the program will not be completed until 2020, at a cost of $2.2 billion. In the meantime, nuclear material remains at some risk of theft. DOE also has limited information on how much financial assistance each site throughout Russia will require to sustain the operation and maintenance of the systems that are being installed and how long the assistance will be needed.

In responding to our February 2001 report, DOE agreed with our recommendations to develop options for completing the program on the basis of the progress made in gaining access to these sites and agreement on the closure of buildings and sites. Furthermore, while DOE currently does not have a means to monitor the security systems it is installing to ensure that they are working properly on a continuing basis, it has agreed to implement our recommendation to develop a monitoring system in cooperation with Russia.

Security of Russian nuclear material has also been improved through the implementation of the 1993 U.S./Russia Highly Enriched Uranium Agreement. The agreement calls for USEC, Inc. to purchase 500 metric tons of weapons usable highly enriched uranium by 2013.[3] We reported in December 2000[4] that USEC had

[3] USEC, Inc.—formerly the United States Enrichment Corporation—enriches uranium for use as fuel in commercial nuclear power reactors.

[4] *Nuclear Nonproliferation: Implications of the U.S. Purchase of Russian Highly Enriched Uranium* (GAO-01-148, Dec. 15, 2000).

purchased low enriched uranium blended-down from 103 metric tons of highly enriched uranium, which, according to USEC, represents the equivalent amount of material from 4,000 nuclear warheads. The corporation continues to purchase additional weapons usable material. Despite this success, problems exist in this program. Specifically, several key measures that are intended to provide confidence that the highly enriched uranium is extracted from Russian nuclear weapons and that this highly enriched uranium is then blended-down into low enriched uranium have not been put in place. Furthermore, U.S. officials lack access to Russia's dismantlement facilities for its nuclear weapons and to the weapons dismantlement process. DOE officials have told us that they are continuing to negotiate with Russia to solve these problems.

The United States funds three programs that share the goal of employing Russia's weapons scientists in nonmilitary work and thereby preventing them from selling their knowledge to terrorists or countries of concern. These three programs take a somewhat different approach to solving the same problem. For example, in general, the State Department's Science Center program funds grant research projects,[5] while DOE's two programs—the Initiatives for Proliferation Prevention (IPP) and the Nuclear Cities Initiative (NCI)— fund commercial projects with industry partners. In early 1999,[6] we reported on a number of management weaknesses in the IPP program and recommended several corrective actions. DOE has since implemented all of our recommendations to improve program effectiveness. Among other things, DOE made program changes based on our findings that (1) the IPP program had not achieved its broader nonproliferation goal of long-term employment for weapons scientists, (2) some "dual-use" projects may have unintentionally provided defense-related information to Russia, and (3) most program funds were spent in the United States rather than in Russia.

[5] *Weapons of Mass Destruction: State Department Oversight of Science Centers Program* (GAO-01-582, May 10, 2001).
[6] *Nuclear Nonproliferation: Concerns With DOE's Efforts to Reduce the Risks Posed by Russia's Unemployed Weapons Scientists* (GAO/RCED-99-54, Feb. 19, 1999).

Similarly, as we reported in May 2001,[7] NCI had limited success during its first 2 years. DOE estimates that the program employs about 370 people, including many weapons scientists who work primarily on a part-time basis through research projects sponsored by the U.S. national laboratories. We found that a disproportionate amount of the NCI program's funding has been spent in the United States. About 70 percent, or about $11.2 million, of the $15.9 million that DOE spent through December 2000 was spent in the United States—primarily at its national laboratories—for such items as overhead, labor, equipment, and travel. The remaining 30 percent was spent for projects and activities in Russia. Our review found that DOE needs to address a fundamental question: Does it need two programs operating in Russia's nuclear cities with a shared goal and, in some cases, with the same types of projects? DOE agreed with our recommendation to consider consolidating the two programs in order to achieve potential cost savings and other efficiencies.

A major problem with the three programs designed to employ former Soviet-weapons scientists is the difficulty in conclusively demonstrating that they are achieving the programs' intended goal of preventing the spread of weapons-related knowledge and expertise to terrorists or countries of concern.

S. 673 Could Improve Coordination but Would Not Address Other Problems in Implementing DOE's Nonproliferation Programs

S. 673 is focused on improving the coordination of the various programs aimed at keeping weapons, materials, and technologies out of the hands of terrorists and countries of concern. Although there is debate about the need for more coordination of these U.S. nonproliferation programs, based on our work and the findings of two independent commissions that recently examined these programs, we believe that additional coordination would be helpful and that the requirements in the legislation represent a positive step overall. However, enactment of this legislation would not solve all of the problems we have

[7] *Nuclear Nonproliferation: DOE's Efforts to Assist Weapons Scientists in Russia's Nuclear Cities Face Challenges* (GAO-01-429, May 3, 2001).

identified with these programs and does not address the need for an overarching strategic plan for U.S. nonproliferation programs.

Knowledgeable officials both within and outside government disagree about the need for more coordination of U.S. nuclear nonproliferation programs. We spoke with representatives from DOD, DOE, State, and the Nuclear Threat Initiative—a private foundation dedicated to reducing the threat from nuclear, biological, and chemical weapons through direct action, education, and awareness building activities. These officials noted that the FREEDOM Support Act of 1992 (P.L. 102-511) establishes a coordinator in the State Department for assistance programs to the Newly Independent States of the former Soviet Union, including those programs dealing with nonproliferation. They were unanimous that coordination among federal agencies implementing nonproliferation programs is already taking place at a high enough level and that the coordinating mechanism established by this bill may not be needed. However, throughout the course of our work on various programs, officials from the U.S. government and the private sector told us that there is a need for greater coordination among U.S. nonproliferation programs and activities. Some officials also believe that improved coordination is needed between the United States and international programs, such as those implemented by the European Union. Officials have also stated that although coordination among U.S. nonproliferation programs does occur, it is frequently informal and subject to changes in program personnel.

Two independent commissions that have examined U.S. nonproliferation programs over the past 3 years share this view. In July 1999, the Commission to Assess the Organization of the Federal Government to Combat the Proliferation of Weapons of Mass Destruction (also known as the Deutch Commission) recommended the creation of a high-level council that would formulate policy, reach timely decisions, and harmonize the interagency process of program execution and resource allocation in accordance with an integrated national plan. In January 2001, the Secretary of Energy Advisory Board Russia Task Force (chaired by former Senator Howard Baker and former Counsel to the President

Lloyd Cutler) reported on DOE's nonproliferation programs in Russia. The task force recommended, among other things, improved coordination among programs of different agencies through the creation of a high-level leadership position in the White House. It also called for the development of a national strategic plan for U.S. nonproliferation programs.

In our view, enactment of this legislation could improve coordination and communication among U.S. government, private sector, and other countries' nonproliferation programs. Greater coordination could also have other impacts, such as (1) minimizing duplication, (2) leveraging resources, and (3) focusing programs more clearly on common goals and objectives. However, it would not solve many of the other problems facing the implementation of U.S. nonproliferation programs that we have previously reported on, such as access to sensitive Russian sites and various program management concerns. We agree with the views expressed by the Deutch Commission and the Baker-Cutler Task Force that a missing element from the current U.S. government implementation of nonproliferation programs is an integrated strategic plan. We believe that such a plan is needed and that S. 673 could be strengthened by mandating development of a plan that clearly identifies overall strategic goals, time frames for meeting those goals, and ways to set priorities for allocating resources governmentwide to address U.S. nonproliferation concerns. By delineating ways of measuring progress toward goals, a cross-cutting strategic plan would provide a mechanism to hold departments and agencies accountable for achieving the overall goals of U.S. government efforts to combat the spread of weapons of mass destruction. A governmentwide strategic plan could be built on strategic plans that have already been developed by the agencies that implement these programs and could address such issues as the following:

- Are the end dates for the completion of the various nonproliferation programs, such as securing nuclear materials in Russia, still viable?
- How can the security improvements made be sustained beyond the completion of the programs?

- In light of September 11, do we have the right mix of nonproliferation programs needed to address the varying security problems facing our nation?

This concludes my formal statement. I would be happy to respond to any questions that you or other Members of the Subcommittee may have.

Contact and Acknowledgement

For further information on this testimony, please contact Ms. Gary L. Jones on (202) 512-3841. Individuals making key contributions to this testimony included Gene Aloise, Ryan T. Coles, Joseph Cook, Beth Hoffman Leon, Hynek Kalkus, Glen Levis, and F. James Shafer.

(360157)

Statement of

Laura S. H. Holgate
Vice President for Russia/NIS Programs
Nuclear Threat Initiative

before the

Senate Committee on Governmental Affairs
Subcommittee on International Security, Proliferation, and Federal Services

hearing on

"Combating Proliferation of Weapons of Mass Destruction (WMD) with Nonproliferation Programs: Nonproliferation Assistance Coordination Act of 2001"

November 14, 2001

Mr. Chairman, thank you for the opportunity to testify today about how the United States government can strengthen its efforts to prevent the spread of nuclear, biological and chemical weapons – and keep them from falling into the hands of groups and states who would do U.S. harm.

The nation and the world discovered September 11 that there are terrorist forces in the world who will stop at nothing in their efforts to take innocent lives. The work that the U.S. government does to secure nuclear, biological and chemical weapons and materials is our first line of defense in keeping these weapons out of terrorist hands. These programs are even more important and more urgent than many had previously believed and consequently, they need to be expanded as part of a vigorous and accelerated national security commitment to protect U.S. from weapons of mass destruction. So I would like to thank the chairman and the members of the committee for putting the spotlight on this issue and giving me and others a chance to contribute our ideas.

When the Soviet Union collapsed, it left behind a legacy of 30,000 nuclear weapons, more than 1,000 tons of highly enriched uranium and 150 tons of plutonium – enough to build 60,000 to 80,000 weapons – in storage sites poorly secured, and many weapons scientists with no steady paychecks. We have seen hostile efforts to sell, steal and recruit weapons designs, materials and know-how out of Russia. The Washington Post reported yesterday that the head of the safety department at the Russian nuclear regulatory agency has just acknowledged a security violation of "the highest possible consequence" sometime during the last two years. Authorities recently thwarted an inside effort to smuggle 18.5 kilograms of highly enriched uranium out of a nuclear facility in the Urals.

That's enough material – with the right expertise – to build a small nuclear device. The International Atomic Energy Agency has recorded since 1993 more than a dozen thwarted efforts to smuggle plutonium or highly-enriched uranium. What we don't know is what percentage of the smuggling we stop? Is it one hundred percent … or closer to one percent?

Earlier this year, a distinguished bipartisan task force headed by Howard Baker and Lloyd Cutler published a major report on the need to secure Russian weapons, materials and know-how, declaring it "the most urgent unmet national security threat to the United States," and calling for a four-fold funding increase for these threat-reduction efforts.

This threat is understood and discussed at the highest levels of our government. Speaking just last week via satellite to the Warsaw Conference on Combating Terrorism, President Bush said: "These terrorist groups are seeking chemical, biological and nuclear weapons. Given the means, our enemies would be a threat to every nation; and, eventually, to civilization itself."

President Bush is not a newcomer to this concern. Two years ago at the Reagan Library, Candidate Bush praised "the foresight and statesmanship" of Senators Lugar and Nunn for their legislation to improve security at many Russian nuclear facilities. Then he added: "A great deal of Russian nuclear material cannot be accounted for. The next president must press for an accurate inventory of all this material, and we must do more. I will ask the Congress to increase substantially our assistance to dismantle as many of Russia's weapons as possible as quickly as possible."

The Administration's actions in the first months of its tenure fall short of the vision and purpose articulated by President Bush. Early this year, the Administration announced a review of nonproliferation programs, then cut the programs' budgets before it began the review. The review itself stopped action in its tracks. Travel was halted. Work was postponed. Momentum was lost. Program managers felt they lacked the authority to go forward. And the review was undertaken without the courtesy of telling our partners in Russia. Now we are told the review is complete, but we have not seen its outcome.

I strongly support a review of our nonproliferation programs; we have not had one since 1993. But it needs to be broad or strategic. The review that was recently completed appeared to be aimed merely at finding inefficiencies in individual program activities. That is a worthy purpose on its own terms, but it is no substitute for strategic thinking about U.S. national security goals and how threat reduction programs can help achieve them.

I have worked for many years, in many capacities, to implement and advance these programs to prevent nuclear, biological and chemical weapons, weapons materials and weapons know-how from falling into the wrong hands. It is my view that these programs are critically important, largely effective, and – because of the obvious urgency – more in need than ever of high-level attention, increased funding, greater staffing and continuous fresh thinking to help speed up the pace and widen the scope of the programs. If

terrorists are racing to acquire weapons of mass destruction, we ought to be racing to stop them.

This is a complex task. The expertise necessary for the job is wide-ranging – distributed across many agencies of government. The Defense Department is needed for its expertise in handling and destroying nuclear, chemical, and biological weapons; the Energy Department for its knowledge of fissile material management and the national labs' experience in scientist-to-scientist cooperation; the State Department for its role in bilateral and multilateral diplomatic negotiations and in-country expertise; the Agriculture Department for its understanding of animal and plant diseases as they might relate to bioterrorism; the Department of Health and Human Services for its epidemiologists; the Nuclear Regulatory Commission for its experience in licensing and oversight of nuclear facilities; the Customs and Treasury Departments for their knowledge of export control regulations and processes; the Overseas Private Investment Fund and the Trade and Development Agency for their support of U.S. businesses seeking Russian business partners.

Some point to the involvement of so many agencies as evidence of poor management. It is not. It is evidence that such a program, as I said, requires wide-ranging expertise, and therefore will always be a challenge to administer – a challenge that can be fully met, in my view, only with high-level leadership and coordination. This leadership and coordination has been hard to come by since the early days of these programs.

Despite the complexity of these nonproliferation cooperation activities, programmatic duplication is remarkably low, and program implementation is in general very effective. Improving the coordination and accountability of these programs should result in even greater improvements in U.S. national security.

What is missing in the process is a definitive statement of strategy and consistent advocacy of Administration goals. This must include holding agencies accountable for financing and implementing programs that accomplish those goals. Without this clear high-level direction, and the interagency process that creates and maintains it, agencies have set and articulated their own priorities, resources have not always been aligned with those priorities even within agencies, and differences among agencies' rhetoric and programmatic actions have created perceptions of inefficiency and contradiction which are exploited by opponents of the programs and missions. Programmatic inconsistencies also open doors for recipient nation counterparts to play agencies off against each other. All of this can be remedied with decisive and enduring leadership from the White House.

I would like to spend a few minutes reviewing the activities and accomplishments of our nonproliferation programs, discussing some of the barriers they face, and offering several recommendations about how we can make them more effective.

<u>USG nonproliferation programs in the former Soviet Union</u>

Ten years after the passage of the landmark Nunn-Lugar Act established the legal basis for nonproliferation cooperation with Russia and other former Soviet states, U.S. Government activities in this area approach $1 billion annually and involve multiple agencies, myriad contractors, and over a dozen Congressional committees and subcommittees. This growth has been by and large organic, with each agency pursuing its own contacts and relationships in recipient countries, assembling and justifying its own budget, implementing programs based on its own culture and approaches, and interacting with its own Congressional oversight committees.

In spite of proceeding without a comprehensive and coordinated vision, administered from the top, these programs, taken collectively, have massively improved U.S. national security, through projects in Russia and the former Soviet Union that secure, consolidate and/or reduce overall quantities of nuclear, biological and chemical weapons; the materials required to manufacture them; facilities and equipment required to make and maintain them; and the knowledge and experience necessary to create and use them.

Let me describe each in turn:

Weapons: The fall of the Soviet Union left behind four new nations with nuclear weapons on their territory, totaling over 10,000 strategic warheads deployed on missiles, bombers and submarines. Removing all Soviet weapons to Russia and helping them implement their arms control commitments to reduce these weapons has been the initial focus of U.S. Government threat reduction programs. In addition, tons of outdated chemical weapons are stockpiled at seven locations in Russia, and need to be destroyed.

- The Defense Department's Cooperative Threat Reduction program helped safely remove all nuclear weapons from Ukraine, Kazakhstan and Belarus – eliminating more nuclear weapons than those possessed in the arsenals of China, France and the United Kingdom combined.

- Cooperative Threat Reduction has destroyed more than 1600 missiles, silos, submarines and bombers – and deactivated more than 5,000 warheads.

- Cooperative Threat Reduction works with Russian military forces to secure tactical and strategic nuclear weapons in storage and during transport.

- The Department of Energy cooperates with the Russian Navy on securing naval weapons.

- Cooperative Threat Reduction provided the basis to purchase and transport to the United States 21 nuclear-capable MiG-29 aircraft from Moldova.

- The State Department's Nonproliferation and Disarmament Fund has funded similar "preemptive acquisition" efforts as well as elimination projects for SCUD missiles and other weaponry.

- Cooperative Threat Reduction has also offered Russia assistance for dismantling nuclear warheads – though Russia has not yet accepted the offer.

- The Department of Defense has reached agreement with the government of Uzbekistan to use the Cooperative Threat Reduction program to destroy what remains of Soviet-manufactured anthrax dumped on an island in the Aral Sea.

- Cooperative Threat Reduction is funding the design and construction of a chemical weapons destruction facility to help Russia eliminate a significant portion of its 45,000 tons of nerve gas.

Materials: Russia retains massive stockpiles of nuclear weapons materials. No one knows exactly how much because accounting has been so poor under the Soviet system. Best estimates, however, are that the Soviet Union manufactured more than 1,000 metric tons of highly enriched uranium and over 150 metric tons of plutonium which remain in Russia under inadequate security. Ironically, as weapons are dismantled, the challenge of safe storage of their materials increases. Smaller quantities, enough for a few weapons, are held at research facilities around the former Eastern Bloc. Stocks of biological weapons ingredients are also poorly secured.

- Department of Energy has led U.S. efforts to assist Russia and other new independent states (NIS) to secure weapons-usable plutonium and uranium against theft or unauthorized use.

- Cooperative Threat Reduction has funded the design and construction of a fissile material storage facility for plutonium removed from dismantled nuclear weapons.

- DOE funds a small program designed to consolidate nuclear material in fewer locations within Russia, in order to improve its security and to reduce the total number of sites requiring protection.

- Department of Energy cooperates with the State Department in supporting an International Atomic Energy Agency effort to convert former Soviet research reactors to run on low-enriched uranium instead of highly enriched uranium – thereby reducing the quantity of weapons material located outside Russia.

- Department of Energy is also cooperating with Russia to implement a September 2000 agreement to eliminate 34 metric tons apiece of weapons plutonium.

- Several agencies are responsible for overseeing a private entity's execution of the US-Russian agreement to purchase low-enriched uranium derived from 500 metric tons of uranium coming out of Russian weapons.

- Cooperative Threat Reduction is also leading an effort to halt the production of more than a ton of new weapons-grade plutonium each year at three nuclear reactors in Russia.

- Various export control and border patrol efforts are carried out by the Departments of Energy, Commerce, Treasury, Defense, and State to prevent smuggling of weapons and related materials.

- Cooperative Threat Reduction has assisted Russia and others to secure biological weapons ingredients, especially the "libraries" which contain samples of bioweapons created during the Soviet era.

- Cooperative Threat Reduction also funds security upgrades for chemical weapons storage facilities.

Infrastructure: Part of the Cold War "hangover" Russia struggles with today is a massively outsized weapons of mass destruction infrastructure. For example, Russia has four facilities which assemble and disassemble nuclear weapons; the U.S. has a single such plant. Nuclear arms reductions will result in military bases closures. The covert Soviet bioweapons program was scattered throughout its legitimate biotechnology research system, involving hundreds of labs and institutes, and surge production facilities with huge capacities. These facilities need to be eliminated or converted to peaceful civilian use in order to prevent the recreation of these fearsome production systems.

- Cooperative Threat Reduction– particularly in Ukraine, Kazakhstan, and Belarus – has torn down nuclear-related infrastructure such as warhead storage bunkers, launch pads for mobile missiles, and security perimeters to ensure such sites cannot become quickly reactivated.

- Cooperative Threat Reduction has funded defense conversion efforts designed to transform WMD-related companies to peaceful activities.

- Department of Energy's Nuclear Cities Initiative is designed to help Russia shut down its unneeded nuclear weapons manufacturing and maintenance facilities by developing alternative employment opportunities for laid-off nuclear weapons experts. The Nuclear Cities Initiative also includes plans to convert buildings formerly used to manufacture warheads into commercial production centers.

- Cooperative Threat Reduction has destroyed a giant anthrax production plant in Kazakhstan, and has helped Uzbekistan eliminate a chemical weapons production facility left on its territory.

Know-how: Along with the overgrown infrastructure are tens of thousands of people who know how to make or manage mass-destruction weapons but are unable to feed their families. As their labs, institutes and plants lose government funding and ultimately are

closed, they may be tempted to share their knowledge with terrorist groups and hostile states who seek such weapons.

- US participation in the International Science and Technology Center, funded by the State Department, creates opportunities for peaceful research and development activities. This helps prevent weapons experts from leaving their home country to assist in the weapons programs of other nations.

- Departments of Defense, Energy, State, Health and Human Services, and Agriculture combine funding to engage Russian and other bioscientists in peaceful, civilian collaborations with Western experts and businesses.

- Department of Energy's Initiatives for Proliferation Prevention supports joint ventures with Western firms to create civilian jobs for weapons workers based on technology developed in Russian weapons institutes.

- Cooperative Threat Reduction has supported retraining of military officers to facilitate retirements and nuclear base closures. Export control efforts, supported by multiple U.S. Government agencies, have attempted to prevent the spread of weapons information and dual-use technologies, whether illicitly or inadvertently.

These initiatives describe a wide-ranging agenda. Dismantling weapons, securing material, eliminating infrastructure, and directing know-how to peaceful pursuits – all of these play an essential role in fighting the spread of weapons of mass destruction. We've taken important steps. But to protect the security of the American people, we need giant strides.

US Government organization

As this brief description indicates, as many as a dozen U.S. Government agencies are involved in these activities. Prior to 1996, these efforts were funded primarily by the Department of Defense's Cooperative Threat Reduction budget, with transfers to other agencies working on these programs, moderated through an interagency budget allocation process led by the National Security Council. These inter-agency transfers drew opposition from the Pentagon's Congressional oversight committees, and CTR program managers in the Defense Department were held accountable inappropriately for expenditures and program outcomes managed by other agencies. In 1996, these concerns were resolved by the determination that the Departments of Defense, Energy and State would each request their own budgets for the programs they implemented. As a result, Congressional oversight was spread out among many different committees; there was no one committee in the Congress charged with oversight of everything. Programmatic trade-offs became muted once they ceased competing within the same line-item.

As these programs have grown and multiplied, funding transfers between agencies have in some cases continued. One reason is the lack of willingness both by agencies and their oversight committees to appropriate agency funds for activities seen as outside an

agency's traditional mission. The Agriculture Department is a case in point. Veterinary medicine and crop disease expertise is central to the engagement of Russian bioscientists, who developed means to cripple enemy agriculture through biological weapons. The Agriculture Department has not traditionally supported a national security mission so directly, and has no financial resources to do so. The Agriculture oversight committees have not been prepared to provide such funding. As a result, participation of Agriculture experts and use of the agency's facilities to support nonproliferation cooperation with Russia and other countries are funded by the Departments of State and Defense.

This programmatic complexity certainly increases the management burden both with the Executive branch and on Capitol Hill. It would be hard to argue that this management burden has been effectively carried in either branch. Where it has worked well, it has been a consequence of personalities, committees or commissions that are not an enduring feature of the organizational plans – either within the U.S. government, or in relations between the U.S. and the states of the former Soviet Union.

Earlier approaches at coordinating nonproliferation programs

In 1994, the National Security Council created a special position, reporting simultaneously to the Senior Director for Nonproliferation and the Senior Director for Russia and Eurasia, to manage the working-level interagency response to nuclear smuggling, then much in the news. The dual nature of this position gave the occupant access to two Senior Directors, who often convened joint meetings of senior officials to review agency programs to combat proliferation in former Soviet states. Only rarely did the NSC direct agencies in program planning or execution, but it provided an authoritative venue for programmatic deconfliction, and documentation and enforcement of collective decisions. Over time, however, based in part on personalities and interests, this position lost its connection to the Russia/Eurasia Directorate, and subsequent occupants gained other priorities, diluting their ability to become involved in the increasingly large and complex set of cooperative programs. Senior-level meetings to discuss programmatic priorities became increasingly rare.

At the same time, a special Ambassadorial position was created within the State Department to coordinate all assistance to the former Soviet republics—from democracy and economic reform to security and nonproliferation. This mechanism provided a useful centralized clearinghouse of information both among agencies and for outside parties, but only rarely became involved in shaping agency programs and had little or no impact on agency budgetary positions or program implementation. One particularly useful role of this office, however, has been the coordination of an Administration-wide response to Congressional committee interests, particularly where non-traditional agency partners have become engaged in national security activities.

Also early in the Administration, Presidents Clinton and Yeltsin agreed to form the U.S.-Russia Binational Commission, to be chaired by Vice President Gore and Prime Minister Viktor Chernomyrdin. The semi-annual meetings of the commission became action-forcing events – giving agency officials the sense of urgency they needed to coordinate

their efforts and make advances, because they knew they would be giving a progress report every six months that would be reviewed at the highest levels, and – to be credible -- would have to be corroborated by reports on the Russian side. The end of the Commission eliminated a very valuable tool of coordination – one that created frequent opportunities for interagency interaction on cooperative programs, and exposed senior officials to the diversity of activities underway across agencies.

Despite its rhetorical recognition of the importance of these programs, the Bush Administration has restructured the NSC in ways that may actually weaken — not strengthen – ccoordination, management and attention given to threat reduction programs. The directorate previously responsible for nonproliferation was expanded to include missile defense and homeland security, and the office previously responsible for Russia and other new independent states was merged into the European directorate. These changes have increased the challenge of gaining senior-level attention, as presidential priorities and national emergencies absorb existing staff, resources and time. Recent additions to the White House counter-terrorism team do not change the fact that no one at a sufficiently senior level concentrates exclusively on these important issues.

Obstacles to effectiveness

By and large, these programs have been effective in improving our security, but they have not increased their impact or scope as much as the threats would warrant or their proponents have hoped. There are several important reasons.

Leadership: In the beginning days of these programs, the early tasks were easy to identify: denuclearize Ukraine, Kazakhstan and Belarus. Officials at the highest levels of government shared this priority, and held their staffs accountable for delivering on these goals using all resources available, including the tools in the newly created Nunn-Lugar Act. Once that goal was achieved, high-level attention from the White House diminished. Fortunately, several cabinet officials maintained a high-level of personal interest in these programs – including Secretary of Defense William Perry, Secretary of Energy Hazel O'Leary, and Secretary of Energy Bill Richardson, who made these issues a priority and convened the prestigious Baker-Cutler panel, which made important bipartisan recommendations for expanding these programs. When I ran the CTR Program at the Pentagon, we briefed Bill Perry monthly. This routine encouraged U.S. to press ahead with these programs, so we could deliver evidence of new achievements at each monthly briefing. Perry's interest also protected the CTR Program in the budget debate both within the Pentagon, and between the Pentagon and Capitol Hill. The leadership of cabinet secretaries is important, but even in the best of circumstances, it cannot take the place of a high-level White House official, who can provide strategic vision, coordinate the work of different agencies, and use the power of the President to support the programs.

Funding: When high-level attention drops, funding increases are nearly impossible, even if they are necessary. As U.S. and Russian counterparts built relationships, opportunities emerged for cooperation in new areas. Unfortunately, without senior-level

pressure to make the most of such opportunities, program managers tended to see such opportunities as unwelcome competition for existing programs. Until the FY02 budget submission, total USG spending on cooperative nonproliferation programs rose steadily, but not at a rate commensurate with either the threat or the opportunities to expand areas of cooperation.

Interagency coordination: The lack of an agreed, integrated government-wide strategy for reducing proliferation threats – one that sets priorities and defines agency roles – has kept these programs from making even greater contributions to national security. Without a clear message about the goals and accomplishments of these programs, policymakers and the U.S. public remain largely ignorant of their impact. Even where policymakers are aware of these successes, they tend to see such efforts as "soft" foreign aid, and not part of a national security agenda. Without an overarching vision and a high-level champion, it is impossible to make the response match the threat. The lack of coordination is seen more in missed opportunities or unmet threats rather than in programmatic duplication. Finally, at the implementation level, programmatic stovepipes among and within agencies limit the chance to create economies of scale and to transfer "lessons learned," thereby decreasing overall efficiency.

Congressional oversight: The leadership of Congress is essential in establishing a strategic vision, allocating resources, and holding agencies accountable for results. Unfortunately, there were cases where committees prescribed not only what was to be done, but also spelled out – to a very high degree of detail – how it was to be done. This led to multiple reporting requirements and tangled – sometimes conflicting – conditions on how the program was to be run.

This type of Congressional oversight has hindered nonproliferation efforts almost as much as inadequate funding. During my tenure in the CTR Program, straightforward Administration budget requests would emerge from committee overgrown with kudzu-like restrictions and reporting requirements. At one point, CTR was responsible for generating more than twenty reports to Congress in a single year, many of which governed the program's ability to access funds already appropriated.

Even now, CTR Program implementers experience a year's delay between appropriation and availability of funds for obligation. These Congressionally required delays in spending then become arguments in subsequent years for reducing funding levels. Congressional disillusionment with certain sub-elements of a program's approach has resulted in a gradual erosion of authorities, thereby eliminating tools that had been key to some of the programs' successes.

Increasing levels of specificity in allocations within programs rob agencies of the flexibility they need to respond to new threats and opportunities. Contradictory guidance can paralyze programs, as in a DOE program in which the appropriations bill simultaneously specified that 70% of the budget be spent in Russia while mandating new oversight requirements, which could only be undertaken by U.S. personnel, whose pay is 20 times more than their Russian counterparts. Normal competitive politics between

House and Senate, authorizers and appropriators, and Foreign Relations and Armed Services can result in half-a-loaf compromises that complicate or disrupt program implementation.

Coordination with recipients: International activities require the participation of the recipients. Several trends have converged to complicate relationships with recipient nations. Project areas have moved from very specific and measurable (e.g., remove all 1,400 strategic nuclear weapons from Kazakhstan) to diffuse (e.g., prevent Russian bioscientists from aiding proliferators). Projects with clear prior commitment (e.g., eliminate Russian nuclear weapons to achieve START I levels) have been joined by projects with only grudging acceptance (e.g., permanently dispose of 34 tons of weapons plutonium). Projects with built-in reciprocity (e.g., bilateral verification of START eliminations) have led to projects with unilateral inspection rights (e.g., U.S. monitoring of the Mayak Fissile Material Storage Facility).

National attitudes towards the U.S. on the part of the recipients have swung from euphoric openness to annoyance to fatigue to suspicion. Security officials have reasserted themselves both in the U.S. (after the Los Alamos spy imbroglio) and in Russia (after the election of an ex-KGB president). Ever-increasing U.S. demands for accountability and access to sensitive facilities reinforce suspicions of Russian security officials, and the cancellation of site visits slows down programs. Congressional limitations on U.S. support to Russia's top priorities (retiring officer housing, elimination of general purpose submarines, conversion of military cities and populations) make it harder to achieve U.S. priorities, which the Russians do not take as seriously (fissile material control and disposition, closure of biological weapons institutes). Efforts to condition nonproliferation cooperation on changing undesirable Russian behavior (e.g., Iranian nuclear cooperation) are ineffective, because many Russians would prefer that these programs, and the burden of U.S. cooperation, simply go away. Yet, terminating these programs would be devastating to our national security.

Recommendations

Today's heightened awareness of the threat posed by nuclear, biological and chemical weapons makes consideration of the organization and coordination of our nonproliferation programs essential and timely. At the same time, re-organizing these programs, no matter how wisely, will not by itself make a significant improvement in program effectiveness. Several commissions, including the Baker-Cutler Commission, the Deutch Commission, and the Hart-Rudman Commission all recommended the creation of a high-level White House position dedicated solely to nonproliferation programs. Administration responses to such directives have typically been limited to renaming existing officials or committees, leaving the *status quo* essentially unchanged. Without senior-level commitment within the White House to improving and maintaining a high-quality interagency coordination process, the actions of Congress will not have the hoped-for effect.

In light of the recommendations of these prestigious panels, I am not about to win an award for original thinking. I recommend the creation of a Deputy National Security Advisor, committed explicitly and exclusively to reducing the threats we face from weapons of mass destruction. High-level attention to nonproliferation programs within the White House is the single most effective step we can take to make our programs match the growing threat of nuclear, biological and chemical weapons. Better interagency coordination, improved funding, more flexibility will follow from this appointment, and won't happen without it.

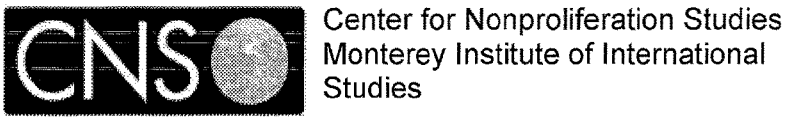
This new Deputy National Security Advisor must have, and must be seen to have, the personal confidence of both the National Security Advisor and the President. He or she would convene regular and substantive "principals meetings" to ensure all agencies are acting cooperatively toward a common purpose. He or she would develop a unified presentation of agency budgets for nonproliferation programs to allow both the President and Congress to see clearly what is being done and to understand the justification for each operating entity's role and function. Such a high-level official assigned to this issue would be able to command more attention to these issues in recipient countries.

This new Deputy National Security Advisor would speak for the President and National Security Advisor to all relevant Congressional committees and panels. He or she would be the ultimate authority and bear the highest responsibility for the state of our nonproliferation efforts. This would ensure consistency and authority in statements of Administration positions and broader coordination and vision across program areas.

Congress should also explore how it might more effectively exercise its oversight of these important responsibilities. A unified budget presentation, a more effective and transparent coordination of Executive branch functions, a high-level White House authority who can speak for all programs, should win greater confidence from both houses and both parties, and encourage the Congress to authorize and appropriate monies in larger packages allowing much greater programming authority and flexibility.

Ten years ago, a group of bipartisan Senators convinced their colleagues to allocate $400 million to help secure the nuclear arsenal of the Soviet Union. This expenditure was not embraced by everyone. Some argued that the prospect of these weapons falling into the wrong hands was far off and remote. The threat today is neither far off nor remote. It can be seen by the untrained eye; and so combating it is no longer a matter of vision; it is a matter of common sense and self-defense. Our nonproliferation programs today need to be clearly defined, well coordinated, better funded, and led at the highest levels.

In whatever manner Congress and the Executive decide to organize our programs – and there are many effective ways to do so – they must have high-level Presidential attention. Any organizational structure with high-level attention will be better than the best organizational structure with low-level attention. Thank you very much.



Testimony

of

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U.S. Senate Committee on Governmental Affairs

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Testimony of Leonard S. Spector
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Thank you for this opportunity to testify before the Subcommittee on improving the effectiveness of U.S. nonproliferation programs in the successor states of the former Soviet Union. I am currently Deputy Director of the Center for Nonproliferation Studies at the Monterey Institute of International Studies, based at the Center's Washington, D.C., office. The Center is the nation's largest organization for research and training on the subject of nonproliferation. Prior to joining the Center, I served during the second Clinton Administration as Deputy Assistant Secretary of Energy for Arms Control and Nonproliferation.

It is a particular honor for me to appear here today because, earlier in my career, I served as Chief Counsel of this Subcommittee, and I am familiar with its many important contributions to curbing the spread of weapons of mass destruction (WMD).

My remarks today are based on my own scholarship and experience, as well as upon those of a number of colleagues at the Monterey Institute Center for Nonproliferation Studies who have worked for many years on these questions, including the Center's director, Dr. William Potter.

The Subcommittee has requested that I begin my remarks with a review of U.S. nonproliferation programs in the New Independent States (NIS) and that I highlight the challenges that they are currently encountering. To help the Subcommittee understand these issues I have prepared a table consolidating this information with respect to the major U.S. programs in this field. (Attachment 1.) In the interest of time, however, I will speak today only about the most significant issues that must be addressed to reduce the threats posed by the Soviet WMD legacy.

I. Importance for U.S. Counter-Terrorism Policy

The fundamental goal of the majority of these programs – in particular, those programs aimed at eliminating or securing fissile material and at employing Soviet WMD scientists – is to prevent terrorist organizations or states of proliferation concern from obtaining WMD materials or expertise. As such, these programs are an integral and highly important component of U.S. counter-terrorism efforts. Osama bin Laden, is known to be seeking weapons of mass destruction, and, of course, recently claimed to possess chemical and nuclear weapons. (Most observers disbelieve the latter claim.) Bin Laden is also known to have extensive links, through the al Qaeda network, in the former Soviet Union.

It is worth recalling the scale of the Soviet WMD legacy. The Department of Energy estimates that Russia possesses 603 tons of weapons-usable fissile materials (plutonium

or highly enriched uranium) outside of nuclear weapons, enough for 41,000 new nuclear armaments.[1] To provide a benchmark, North Korea's nuclear potential, considered a serious U.S. national security threat, is based on its apparent possession of enough plutonium for one or two nuclear devices – less than .005 percent of the Russian stockpile I described above. One shudders to imagine the mischief that Osama bin Laden might cause if he were he to obtain a comparable amount of nuclear weapons material. Russia also possesses a vast arsenal of chemical weapons, currently awaiting destruction, as well as the ability to manufacture the world's most potent biological weapons. The bulk of these various WMD materials are not subject to adequate security measures.

Despite new evidence of terrorist interest in acquiring and using WMD, the Bush administration has not acted to accelerate efforts to improve security over WMD materials and expertise in the successor states of the former Soviet Union. Indeed, nearly ten months after taking office – and after a complete budget cycle – the administration is still "reviewing" U.S. nonproliferation programs in Russia, apparently unable to decide whether and/or how to pursue a number of these critically important initiatives. Inexplicably, the one point it apparently *has* decided is that the programs do not need additional funding and that, accordingly, no monies from the $40 billion anti-terrorism package will be used for this purpose.[2]

II. Securing WMD Materials and Tactical Nuclear Weapons in the NIS[3]

Russia possesses the world's largest stocks of weapons of mass destruction and WMD materials. This inventory includes hundreds of tons of nuclear weapons-usable fissile material, thousands of tactical nuclear weapons, 32,000 tons of weaponized chemical weapon nerve agents, and unknown quantities of the world's most potent biological weapon (BW) agents. Nuclear weapon materials and BW agents are also located in other Soviet successor states. In addition, Russia and other NIS countries are home to WMD experts, numbering in the tens of thousands. This part of my testimony will concentrate on three areas: securing fissile material; addressing the dangers posed by tactical nuclear weapons; and reducing the threat posed by the Soviet BW legacy.

Fissile Materials Tactical Nuclear Weapons. The U.S. Department of Energy has an active and highly successful cooperative program with Russia to improve the security at Russian nuclear sites, known as the **Material Protection, Control, and Accounting (MPC&A) Program.** To date, however, facilities housing less than one third of Russian nuclear weapons material has received "rapid security upgrades," such as bricking up windows, installing security cameras and alarms, and hardening guard posts -- the first major step toward enhanced protection under the MPC&A program. Rapid security upgrades will not be completed on all 603 tons of fissile material until 2007, and

[1] Department of Energy, Material Protection, Control, and Accounting Program *Strategic Plan – 2001* (Washington, D.C.: U.S. Department of Energy, July 2001).
[2] "Interview with Ambassador Robert Joseph," *The Nonproliferation Review* (Winter 2001), p. 3, http://www.cns.miis.edu/pubs/npr/vol08/83/jos83.htm
[3] U.S. programs to secure WMD *expertise* in the NIS appear to be working smoothly and will not be addressed in this portion of my remarks. However, these programs would benefit from improved strategic planning and coordination, as discussed below.

"comprehensive upgrades" are not scheduled to be completed on all of this material until 2011.

Surprisingly, the Bush administration's FY 2002 budget *reduced* funding for this program from FY 2001 levels. Although two weeks ago Congress increased support for this effort above the administration's request ($143 million to $173 million), the events of September 11 call for additional funding. Virtually every outside group that has reviewed the program has called for still higher funding levels,[4] and based on my knowledge of the needs of the program at the close of the Clinton administration, I believe it could be significantly accelerated if additional monies were made available. Because detailed information about the implementation of this program is difficult for outsiders to obtain, ***Congress should quickly review how to speed up the Material Protection, Control, and Accounting Program and should provide significant additional monies targeted at those activities that promise high impact in the near term.*** Given the increasing threat of WMD terrorism, waiting until 2007 for the first level of improved security at Russian nuclear sites is simply too long.

One mechanism for rapidly improving security over tons of weapons material would be to open and begin loading the **Mayak Fissile Material Storage Facility.** The facility, built by the U.S. Department of Defense at a major Russian nuclear site in the Ural Mountains, is intended to store 25 tons of weapons plutonium. The facility is virtually complete, but a dispute continues between Moscow and Washington over the transparency measures that will be used to help provide assurance to the United States that the material housed in the facility is, indeed, weapons quality plutonium from the Russian stockpile. Russia has agreed that material stored at the site will be subject to U.S. and International Atomic Energy Agency (IAEA) monitoring, but wants to avoid disclosing certain classified attributes of the material. Technical specialists in both countries have worked out a solution to this problem, but U.S. and Russian diplomats remain unable to finalize an agreement on this issue.

Six tons of weapons material could be secured in this plutonium "Fort Knox" during 2002 if the transparency logjam could be broken. ***Congress should press the administration to take advantage of newly improved relations with Russia to move the Mayak Fissile Material Storage Program forward.***

The most effective way to improve security over nuclear materials is to eliminate them, altogether. The most successful U.S. program in this regard is the **Highly Enriched Uranium (HEU) Purchase Agreement,** which each year physically transforms 30 tons of weapons-usable uranium into non-weapons usable nuclear power plant fuel, blending the highly enriched material with slightly enriched uranium. The effort is known

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[4] See, for example, Kenneth N. Luongo, *Options for Increased U.S.-Russian Nuclear Nonproliferation Cooperation and Projected Costs*, (Washington, D.C.: Russian-American Nuclear Security Advisory Council, October 2001); Howard Baker and Lloyd Cutler, *A Report Card on the Department of Energy's Nonproliferation Programs with Russia* (Washington, D.C.: Secretary of Energy Advisory Board, January 10, 2001); Matthew Bunn, *The Next Wave: Urgently Needed New Steps to Control Warheads and Fissile Material*, (Washington, D.C.: Carnegie Endowment for International Peace and the Harvard University Managing the Atom Project, April 2000).

informally as the "Megatons to Megawatts" program. To date, it has rendered harmless more than 110 tons of Russian HEU – enough, in principle, for 4,000 nuclear weapons. This is a number greater than the number of weapons usually estimated to be in the combined arsenals of all of today's nuclear powers, apart from the United States and Russia.

The intellectual father of the HEU Purchase Agreement, Dr. Thomas Neff of MIT, believes that with a bit of ingenuity it would be possible at relatively modest cost to double the rate of down-blending, without flooding the market with excess uranium. He estimates that this might cost $150 million per year, but the bulk of this outlay would be recouped when the uranium was ultimately sold commercially.[5] The Bush administration is reviewing whether to adopt this option, but it is likely to have been in office for a full year before it reaches a decision on this critical issue. This is far too long to delay moving ahead with this important initiative. ***Congress should require that the President to report – <u>before Congress adjourns later this fall</u> – on the status of this effort to accelerate the HEU Purchase Agreement and to provide clear recommendations as to how it can be expanded.***

The DOE **Plutonium Disposition Program** is a second program for eliminating fissile material, in this case plutonium. The program will render 34 metric tons of Russian weapons-grade plutonium effectively unusable for nuclear weapons. It will combine the plutonium with depleted uranium to make "mixed oxide" (MOX) fuel or use in eight Russian nuclear power plants. As a result, beginning in 2008, the plutonium will be transformed, at a rate of two metric tons per year, into highly radioactive spent fuel, many hazardous processing steps away from nuclear arms. As a show of U.S. commitment to the program, Congress has appropriated $200 million to be held available to support this effort.

Unfortunately, this program is at risk of losing its way as the result of Bush administration indecisiveness. Because the elimination of plutonium is so complex and costly, this initiative requires the participation of other G-8 members, in particular France, Germany, and Japan. It had been hoped that at the Genoa Summit last July these states would announce a joint international financing plan for the program. But uncertainties regarding Bush administration support for the initiative, resulted in a collapse of U.S. diplomatic efforts to achieve this goal. Although the Bush administration ultimately supported continued funding for the program, at a reduced level, the loss of momentum with other states has set the program back at least a year. Moreover, it has been rumored that the administration may yet abandon the effort and rather than eliminate this material – enough in each country for more than 4,000 nuclear weapons – it will rely on secure long-term storage with the hope of eliminating the material in advanced nuclear reactors that may be decades away from actual operation. *Congress should press the administration to move ahead aggressively with this important program.*

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[5] I am not addressing the DOE Plutonium Disposition Program today because it will not begin to reduce the danger from Russian weapons material until late in this decade.

Two programs to end the production of *additional* fissile material in Russia are also losing momentum. The **Plutonium Production Reactor Shut-Down Agreement** (PPRA) would halt the production of 1.2 tons of new weapons plutonium annually – material for which Russia has no anticipated use. This number sounds small, but it represents annual production that is roughly 100 times North Korea's current plutonium stocks. Moreover, at a time when we are working so hard to secure fissile material in Russia, it hardly makes sense to add to the problem, especially when Russia has no need for the material and, under the PPRA, is placing it under U.S. monitoring to ensure it is not used for nuclear weapons.

Late in the Clinton administration, a solid plan was developed with Russia to shut down the three reactors involved and to provide an alternative mechanism for generating the heat and electricity they produce by refurbishing existing fossil-fuel-burning plants at one reactor site and building a new fossil-fuel-burning plant at the other. New political appointees at the Department of Defense, however, are apparently questioning the utility of this program, and Congress has balked at spending Department of Defense funds for an energy program, notwithstanding its national security objective. Thus the program's future is uncertain. Meanwhile, Russia's stocks of unwanted weapons plutonium are increasing – adding to the security threat they pose. ***Congress needs to press the administration to move forward aggressively with the Plutonium Production Reactor Shut-Down Agreement, which is already several years behind schedule.***

A second program to halt new production of fissile material, the **Civil Plutonium Initiative**, sought to halt the separation of 1.5 tons of plutonium annually from spent fuel originating in Russian civilian nuclear power plants. The initiative proposed assisting Russia to build a storage facility for the spent fuel, as an alternative to processing it to separate its plutonium. Russia will have no use for separated plutonium for the foreseeable future, since all Russian reactors that can burn plutonium in the form of mixed oxide fuel will be used to burn weapons plutonium, under the Plutonium Disposition program. The Civil Plutonium Initiative became stalled when negotiations on a larger set of U.S. initiatives of which it was part foundered over the issue of sensitive Russian nuclear exports to Iran. Initial studies regarding the option of civilian nuclear power plant spent fuel storage were launched, however.

The Bush administration apparently did not seek funding in its FY 2002 budget to continue this effort, which it is currently reviewing as part of its overall appraisal of U.S. nonproliferation programs in the NIS. Carry-over funds from FY 2001 would permit key studies to be continued that are essential for the program to proceed, however. Meanwhile, Russia's stocks of this dangerous material, now amounting to more than 30 tons, continue to grow. ***Congress needs to press the administration to aggressively pursue this important effort to halt the production of civil plutonium in Russia.***

Congress should also monitor an important new initiative closely related to these fissile material initiatives, the DOE **Research Reactor Fuel Return Program.** This program seeks to return to Russia of small, but proliferation-relevant stocks of fresh, weapons-usable, highly enriched uranium research reactor fuel scattered at roughly a dozen sites in

the former Soviet Union and Eastern Europe. In some cases, the quantities present would be sufficient for the fabrication of a nuclear device. The most disturbing cases involve the presence of significant quantities of fresh HEU fuel at the Vinca reactor, in Serbia; the Sosny reactor, in Belarus; and the Kharkiv reactor, in Ukraine.

These facilities are sometimes "orphans" within their respective countries, receiving little or no financial support and, in many cases, no longer operating their reactors. Few have any use for the fresh HEU fuel they hold or for the spent fuel from past operations. Some of this spent fuel is so old that it is no longer "self-protecting" (highly radioactive) and thus poses a potential security risk. Although the MPC&A program has completed physical security upgrades at the facilities in question within the Soviet successor states and although most of the facilities in Eastern Europe are also well protected, security at a number of sites is still wanting. In these circumstances, the wisest course would be to bring this material back to Russia promptly, where it could be processed and its HEU blended down to innocuous levels. ***The Research Reactor Fuel Return Program is moving forward, but Congress needs to encourage and sustain this effort.***

Tactical nuclear weapons. I also want to call the Subcommittee's attention to the threat posed by the thousands of tactical nuclear weapons held by Russia. By definition, these weapons are portable, be they artillery shells, short-range missile warheads, bombs for short-range fighter-bombers, nuclear landmines, nuclear torpedoes, or similar systems. Many older models of these weapons, moreover, are said not to have permissive action links (PALs) to prevent their unauthorized use.[6] This would make them particularly attractive targets for terrorists. Indeed, we have all heard rumors – which to my knowledge are unfounded – about so-called "suitcase" bombs falling into the hands of terrorists.

The United States is apparently assisting Russia to secure many of its tactical nuclear weapons. The MPC&A program, mentioned earlier, is helping the Russian Navy to secure its non-deployed nuclear weapons, and undoubtedly, these includes tactical units. Similarly, Department of Defense assistance to Russia to strengthen security for nuclear warhead transportation and storage has enhanced security for some tactical nuclear weapons held by other military services, in addition to the Navy. Nonetheless, the most effective means for securing tactical nuclear weapons is to eliminate them.

Today, the United States and Russia have no formal agreements limiting deployments of tactical nuclear weapons or providing for their elimination. Rather, the two sides are implementing the 1991-1992 Presidential Nuclear Initiatives, declarations in which the United States and Russia agreed to significantly reduce deployments of tactical nuclear systems. Unfortunately, the declarations were completely voluntary and contained no

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[6] **William C. Potter and Nikolai Sokov, "Tactical Nuclear Weapons: The Nature of the Problem," A Center for Nonproliferation Studies Web Report http://www.cns.miis.edu/iiop/cnsdata?Action=1&Concept=0&Mime=1&collection=CNS+Web+Site&Key=pubs%2Freports%2Ftnw%5Fnat%2Ehtm&QueryText=%3CAND%3E%28%3Cthesaurus%3Esokov%2C%3Cthesaurus%3E+potter%2C%3Cthesaurus%3E+unidir%2C%3Cthesaurus%3E+tactical%2C%3Cthesaurus%3E+nuclear%29**

transparency or verification mechanisms through which each country could provide reassurance that it was implementing its declaration as announced.

Although like the United States, Russia is thought to be dismantling large numbers of nuclear warheads, many of which would come from tactical systems, Russia is nonetheless thought to possess many more tactical nuclear weapons than the United States.[7] Moreover, in the past decade, Russia has renounced the Soviet policy against the first use of nuclear weapons and has declared that it will rely more heavily on nuclear weapons for its defense than in the past.

In these circumstances, an agreement with Russia limiting deployments of tactical nuclear weapons and providing for the dismantling of stored weapons is urgently needed. At a minimum Moscow and Washington should agree on mutual transparency measures and data exchanges to confirm each side's compliance with the 1991-1992 Presidential Nuclear Initiatives, to provide guidance on the number of tactical nuclear weapons each side currently possesses, and to offer reassurance on the number of tactical weapons that each side has dismantled to date. ***Congress should forcefully press the administration to seek negotiations with Russia on an agreement to address tactical nuclear weapon elimination and transparency.***

Biological weapons. Let me now turn briefly to the terrorist threat posed by biological weapons in the former Soviet Union. In addressing this subject, Mr. Chairman, I want to express my appreciation to my colleague, Dr. Sonia Benouagrham, who recently joined our Washington, D.C., staff after serving in our office in Almaty, Kazakhstan, for two years.

As you know, between 1972 and 1992, the Soviet Union engaged in the world's most advanced and most extensive biological weapons program. This program represented a gross violation of the Soviet Union's obligations under the 1972 Biological Weapons Convention (BWC). Former Russian President Boris Yeltsin declared in 1992 that he had terminated the program, but many questions remain.

Through a well-coordinated interagency program to create non-defense employment opportunities for former Soviet BW scientists, the Clinton administration successfully engaged a number of former Soviet BW sites in Russia, Kazakhstan, and Uzbekistan. These were facilities that were outside of the Soviet Ministry of Defense but which, despite their civilian trappings, engaged in the development and production of offensive biological weapons or in defensive research closely linked with the Soviet BW program. Through the U.S. programs, several of these institutes have been converted to non-weapons work, including the State Research Center for Applied Microbiology, in Obolensk, Russia, and *Biomedpreparat*, in Stepnogorsk, Kazakhstan.

The United States remains concerned, however, that former BW facilities in Russia that were under the Soviet Ministry of Defense "may support a future mobilization capability for the production of biological agents and delivery systems;" that, "work outside the

[7] Joseph interview, see note 3.

scope of legitimate biological defense activity may be occurring now" at such facilities; and that, according to unconfirmed reports, Russia may be engaged in "some ongoing offensive biological warfare activities."[8]

At the very least, we must be concerned that stocks of some the world's most advanced and deadly BW agents, custom-designed by Soviet scientists before 1992, remain in storage at some of these sites. Unfortunately, as was the case with former Soviet nuclear sites, security practices and technology at former Soviet BW sites urgently need modernization.

There is reason for particular concern about security at facilities possessing such agents in Kazakhstan and Uzbekistan. Although these institutes are now considered to be engaged exclusively in legitimate research and vaccine production, they are believed to retain stocks of bio-warfare agents that were deliberately chosen for their virulence (either to serve as biological weapons or as the basis for vaccine development). These Central Asian states, which have been crossroads of illicit trafficking for centuries, possess only rudimentary export control systems and share virtually open borders with states that neighbor Iran and Afghanistan. They also confront active terrorists groups on their territory, some associated with the Taliban. Given the extremely meager – and often long delayed – salaries of scientists at the bio-medical research institutes, the danger of bio-warfare agents being stolen and smuggled out a Kazakh or Uzbek biological research is very real.

The Department of Defense Cooperative Threat Reduction Program has launched an effort to upgrade security at these sites, but much work remains to be done. Given the new urgency of the U.S.-led war on terrorism, ***Congress should press the Bush administration to greatly accelerate work on security upgrades at these biological research institutes.***

In Russia, because of the lack of a Cooperative Threat Reduction implementing agreement covering BW security, the United States cannot work directly with Russian institutes and governmental organizations to improve security and bio-safety at former BW sites. Rather, funding must go through the multinational International Science and Technology Center (ISTC), a cumbersome process that is delaying progress. The failure to conclude a bilateral Cooperative Threat Reduction agreement, in turn, is due largely to the fact that the facilities in question fall under several Russian organizations (including the Ministries of Agriculture, Defense, Health, and Science, and the *Biopreparat* agency) and none has offered to serve as executive agent under the agreement.[9] Access issues are also reportedly a problem, since bilateral agreements for security upgrades usually require U.S. access to the site where upgrades are being installed, but the Ministries of

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[8] Office of the Secretary of Defense, *Proliferation: Threat and Response*, (Washington, D.C.: U.S. Department of Defense, January 2001), p. 57

[9] The challenge of implementing agreements covering a single subject area involving multiple parties on the Russian side has been addressed successfully in other contexts, usually by drafting an agreement with one of the Russian organizations at issue, but specifying in the agreement that other agencies may also serve as executive agent for elements of the agreement involving those agencies, respectively.

Defense and Science are said to be reluctant to allow U.S. personnel at the former BW sites under their respective jurisdiction.

As I noted earlier in discussing the Mayak Fissile Material Storage Facility transparency agreement, it is possible that improving ties with Russia will permit progress on this pending CTR agreement. *Congress should press the administration to take advantage of this new opportunity to move this agreement forward.*

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In sum, urgent steps are needed to advance crucial programs for securing and eliminating WMD materials and tactical nuclear weapons, in the former Soviet Union. Because of the Bush administration's lukewarm support for many of these efforts, Congress must continue to take the lead, as it has in the appropriations process, and prod the administration to move these programs forward.

III. Strategic Planning and Coordination

As illustrated in the table provided as Attachment 1, there are roughly a dozen major U.S. nonproliferation programs in Russia covering very diverse areas, with a total annual budget of close to $2 billion. The programs are implemented by three separate departments of the U.S. government, two multinational science centers, and the private United States Enrichment Corporation. Unfortunately, strategic planning and coordination among the programs is woefully lacking, making it difficult to exploit synergies among the programs, to harmonize potential conflicts, and make thoughtful investment trade-offs. I know this from experience – and I also know how difficult it is for line managers to take time from their daily responsibilities to engage in effective planning and coordination with their equally busy counterparts. Moreover, no individual agency can hope to convene all the players that are needed to make planning and coordination effective. That is why a planning process needs to be mandated from outside the individual agencies involved.

Earlier this year, I wrote at some length about this gap. I have attached a copy of that article, which appeared in *Arms Control Today* and which I have appended to my testimony.

In the piece, I noted that better planning and coordination were particularly needed to harmonize U.S. programs to secure and eliminate fissile material; to integrate U.S. job creation programs; and to avoid conflicts between these two clusters of activities. By way of example, I pointed out that the DOE MPC&A program treats Russia's inventory of fissile material as essentially unchanging, at 603 tons, when in reality, the inventory is highly dynamic. It will grow because of new Russian plutonium production and nuclear weapon dismantlement, but it will ultimately shrink by a greater amount because of such programs as the HEU Purchase Agreement. This shrinkage (below the current estimate of 603 tons) could advance the date by which the MPC&A Program might complete its work. Similarly, job creation in the municipalities where the Nuclear Cities Initiative is

working will be affected not only by that program, but also by the impact of many other U.S. activities at these sites, including the shut-down of a plutonium production reactor at one of the relevant nuclear cities (which will increase the demand for new jobs) and the planned construction of a major plant at the same location, as part of the DOE Plutonium Disposition Program (which will provide new jobs).

At present, however, there is no government-wide assessment of fissile material inventory trends in Russia or of the employment impacts, positive and negative, of all U.S. programs at specific locations.

In my article, I made a series of recommendations to remedy this deficit in planning and coordination. Interestingly, I proposed the very approach contained in the Nonproliferation Assistance Coordination Act – the formation of an NSC-led interagency committee to implement strategic planning and coordination functions. In his recent interview with the *Nonproliferation Review*, the scholarly journal of the Center for Nonproliferation Studies, Ambassador Robert Joseph, NSC Senior Director for Proliferation Strategies, Counterproliferation, and Homeland Defense, announced that the Bush administration had also decided upon this strategy for better integrating U.S. nonproliferation programs in the NIS.[10]

If the administration implements this initiative, this would appear to render the Nonproliferation Assistance Coordination Act moot. However, to ensure that the planning process actually improves coordination among the agencies and programs involved, I would propose that the Subcommittee use its oversight authority to request that the Bush administration prepare a small number of baseline studies that will be critically important to any improved planning and coordination process.

First, the Subcommittee should request that the Bush administration develop an *inventory* of the most obvious cross-program relationships among U.S. nonproliferation programs in the NIS and of proposed actions for exploiting synergies and harmonizing potential conflicts in these cases.

Second, the Subcommittee should request a *year-by-year projection of the inventory of Russian fissile material not in weapons* and an analysis that plots against this inventory the predicted accomplishments of the MPC&A and Mayak Fissile Material Storage Facility programs in enhancing the security of the material remaining in that inventory. In essence, this will permit U.S. decision makers to predict when all material at risk will be either secured or eliminated.

Third, the Subcommittee should request a *year-by-year projection of the employment impact of all U.S. nonproliferation programs at key Russian nuclear sites, including the locations that are the subject of the Nuclear Cities Initiative.*

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[10] Joseph interview, see note 3.

IV. Harmonizing Public and Private Activities

From the beginning of U.S. nonproliferation activities in Russia, private organizations have played a highly important role is framing, evaluating, and supporting these programs. Indeed, the very concept of Cooperative Threat Reduction was developed by a group of scholars at Harvard. Similarly, the participation of private industry has been an integral part of the Initiatives for Proliferation Prevention and Nuclear Cities Initiative programs since their inception, and today, the monetary value of private sector contributions to individual projects in these programs surpasses that of the U.S. government.

The Center for Nonproliferation Studies at the Monterey Institute of International Studies has played a multifaceted role with respect to these programs. The Center has undertaken several widely recognized evaluations of these activities and has published extensive data on U.S. nonproliferation programs in the NIS and their accomplishments.[11] It has also identified numerous specific areas requiring greater U.S. government attention and has worked to shift existing programmatic priorities to address these needs. In addition, the Center has facilitated U.S. nonproliferation activities in the NIS through extensive training and community building in those countries in order to develop a cadre of knowledgeable and committed partners for U.S. nonproliferation initiatives.

We believe the public-private partnership in this sphere is robust and mutually beneficial, and we have every hope that this relationship will continue.

Thank you, Mr. Chairman, for permitting me to present these thoughts on the important subject before the Subcommittee.

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[11] **John M.** Shields and William C. Potter, eds., *Dismantling the Cold War: U.S. and NIS Perspectives on the Nunn-Lugar Cooperative Threat Reduction Program* (Cambridge, Mass.: The MIT Press, 1997), Jon Brook Wolfsthal, Cristina-Astrid Chuen, and Emily Ewell Daughtry, eds., *Nuclear Status Report: Nuclear Weapons, Fissile Material, and Export Controls in the Former Soviet Union* (Washington D.C.: Carnegie Endowment for International Peace and Center for Nonproliferation Studies, June 2001), http://www.cns.miis.edu/pubs/print/pdfs/nsr/status.pdf

Attachment 1: U.S. Nonproliferation Programs in the Former Soviet Union

Program	Goals	Accomplishments	Challenges/Recommendations
Weapon Security & Elimination			
Strategic Offensive Arms Elimination (DoD)*	Accelerate implementation of START I Treaty by underwriting the elimination of Soviet-era nuclear systems and providing related technical support	All n-weapons removed from Belarus, Kazakhstan, Ukraine; >6000 n-weapons deactivated; > 400 ICBMs destroyed; 83 long-range bombers destroyed; 367 ICBM silos destroyed; 184 ballistic missile submarines destroyed; 184 submarine-launched ballistic missiles destroyed	Program running smoothly; management of spent fuel from dismantled submarines and related transparency issues may pose obstacles
Tactical Nuclear Weapons			No arrangements to account for or to eliminate tactical nuclear weapons or to confirm implementation of 1991-1992 Presidential Nuclear Initiatives, reducing deployments
Chemical weapons (CW) destruction (DoD)*	Assist Russia destroy CW stocks in compliance with Chemical Weapons Convention (CWC)	Some progress towards construction of key CW destruction facility in Shchuch'ye	Much delay because of disputes over choice of CW destruction technology, Russian financial contributions, and environmental issues; Russia now seeking extension of CWC deadlines; program regained momentum during 2001
Fissile Material Security			
Material Protection, Control, and Accounting (MPC&A) Program (DOE)	Assist Russia improve security for 603 tons of n-weapons material at 53 sites and for 1000s of naval n-weapons	All n-weapons material secured in non-Russian NIS states; rapid security upgrades completed on 190 tons of material (including comprehensive upgrades on 90 tons of material); 1000s of n-weapons secured	Rapid upgrades on all 603 tons not to be completed until 2007; comprehensive upgrades not to be completed until 2011; access limited at many sensitive Russian sites; program not effectively integrated with other U.S. fissile material protection/elimination programs
Mayak Fissile Material Storage Facility (DoD)* (DoD)	Construct secure facility for 50 tons of Russian weapons plutonium	Facility nearing completion. Loading to begin in 2002	Transparency arrangements, essential before loading can begin, remain under negotiation
Second Line of Defense (DOE, DoD)*	Reduce risk of nuclear smuggling by improving border security	Nearly a dozen border points secured in Russia; tens of border points secured in other NIS states	Russia program slowed by inadequate funding; issue addressed in FY 2002 appropriations
Aktau-BN-350 Breeder Reactor Project*	Secure 3 tons of high-quality Pu in spent fuel	MPC&A upgrades complete; fuel canned with "hot" fuel	Discussions continuing on site for long-term storage of spent fuel
Fissile Material Elimination			
High Enriched Uranium (HEU) Purchase Agreement – "Megatons to Megawatts" program (U.S. Enrichment Corporation)	Purchase 500 tons of weapons grade uranium over 20 years for $12bn, blended-down to non-weapons usable nuclear power plant fuel	To date, 113 tons of HEU blended down to fuel-grade and purchased by United States Enrichment Corporation (USEC) for sale to nuclear power plant operators.	Elimination of HEU will take 20 years; purchase price disputes and questions over long-term profitability of USEC creating uncertainties

Program	Goals	Accomplishments	Challenges/Recommendations
Plutonium (Pu) Disposition (DOE)	Eliminate 34 tons of Russian weapons Pu by irradiating material as mixed oxide fuel in Russian nuclear power plants	Agreement establishing U.S.-Russian program signed; extensive cost estimates complete. $200M appropriated toward future work. — Parallel program launched to eliminate 34 tons of U.S. Pu	Bush administration support for program uncertain, review continuing; program requires significant financial participation by other G-8 members; delay caused by Bush review has caused loss of momentum, especially in obtaining G-8 support
Pu Production Reactor Shut-Down Agreement (DoD)	End annual production of 1.8 tons (total) of weapons plutonium at three remaining Russian production reactors, while providing alternatives	Agreements signed, cost estimates, planning complete to replace reactors with refurbished or new fossil fuel plants	Extensive delays because of failure of initial effort to convert cores of reactors as means for ending Pu production; new U.S.-Russia agreement on fossil option offers path forward; but support of Bush administration and Congress is uncertain
Civil Plutonium Initiative (DOE)	Effort during Clinton administration to persuade Russia to halt separation of 1.5 t/yr of plutonium from civilian nuclear power plant fuel	Clinton administration proposed construction of spent fuel storage facility for civilian spent fuel.	Program stalled over linkages to Russian nuclear exports to Iran; studies continuing. No new funds in FY 2002. Bush administration reviewing program; support uncertain
Employment Of WMD Experts			
Initiatives for Proliferation Prevention (DOE)*	Employ NIS WMD scientists in high-tech projects leading to self-sustaining businesses with U.S. industrial partners	More than 10,000 NIS scientists employed over 5 years; investment by U.S. business greater than U.S. government outlays; new privately financed $52M venture capital fund	Commercialization of projects in Russia inherently difficult; years required to develop current, successful approach; program now has significant momentum and strong interest of U.S. private industry, as well as Bush administration and Congressional support
Nuclear Cities Initiative (DOE)*	Accelerate the planned down-sizing of Russia's nuclear weapon complex, concentrating on three n-cities and two n-weapon assembly plants	Open computing centers established in two cities; int'l development centers established in two cities; 10+ commercial projects initiated; footprint of Avangard plant reduced to create low-security zone for commercial projects; EBRD small loan program established	Congressional and Bush administration skepticism created funding uncertainty for FY2002, but final FY2002 appropriation will permit program to accelerate; initial Russian hesitancy to participate now overcome
Int'l Science and Technology Center (Moscow), Science and Technology Center—Ukraine (Kiev) (DOS)	Provide high-tech employment opportunities for former Soviet WMD scientists	30,000 scientists assisted through hundreds of R & D projects	Program operating smoothly; recent increases in funding
Employment of biological weapon (BW) scientists; conversion of BW facilities (DOE, DOS, DoD)*	Reduce threat of leakage of BW expertise by employing Soviet BW scientists in non-weapons work; re-configure BW facilities to non-weapons work	For facilities not under Russian military control, much progress. Many scientists engaged in U.S.- or multilaterally sponsored projects; key facilities in Russia, Kazakhstan, Uzbekistan now focused solely on non-military activities	Concerns remain regarding offensive military activity at BW facilities that remain under control of Russian military; added transparency urgently needed. Action needed to ensure security and/or elimination of working stocks of BW agents.

- *Not discussed in detail in accompanying testimony*

Arms Control Today

June 2001

Back to Normal

Missing the Forest for the Trees:
U.S. Non-Proliferation Programs in Russia
Leonard S. Spector

Despite early indications that the Bush administration's budget would deal a severe blow to nuclear threat reduction efforts in Russia, it now appears that most, if not all, U.S. non-proliferation programs in Russia will continue apace.

In its recently adopted budget resolution for fiscal year 2002, for example, Congress strongly urged the Bush administration to restore its initial cuts to programs run by the Department of Energy (DOE). Although some DOE programs need significant increases to meet their objectives in the coming year, as a first step, this congressional marker augurs well. U.S. non-proliferation programs in Russia operated by the departments of State and Defense, meanwhile, weathered the first round of Bush administration budget assessments and, for the moment, appear to be in reasonably good shape. As the new administration's National Security Council completes its formal review of these activities, reports suggest that slowly but surely the enormous value of these programs to U.S. national security is being recognized.

Still, along the way, the new team in Washington seems to have missed a unique opportunity to make the programs run better, cheaper, and smarter—supposedly the touchstone of the corporate-style Republican worldview. The problem has been the tendency to look at these programs one by one rather than together. The United States needs a strategic approach that allows cross-program synergies, impacts, and investment opportunities to be recognized and addressed. Administered by three different departments and a major publicly held corporation, the various non-proliferation program in Russia often work without knowledge of what the others are doing and sometimes work at cross-purposes. Examples of missed opportunities and, sometimes, perverse consequences are all too frequent, making it essential that these programs be made to function together more effectively.

Implementation of a comprehensive strategic planning process was the lead recommendation of a recent blue-ribbon study and has long been urged by other observers, but it appears that the Bush administration is uninterested in this essential management tool.[1] There are a number of simple steps the administration should take and a number of simple tools it can use to increase greatly the return on the U.S. investment in securing Russia's nuclear arsenal.

The Zheleznogorsk Conundrum

A telling example of unrecognized synergies and impacts that cut across multiple U.S. non-proliferation programs in Russia is the situation in the closed nuclear city of Zheleznogorsk, located in Siberia. Here, in 1998, city fathers advised DOE officials from the Nuclear Cities Initiative (NCI)—a program intended to accelerate the closure of Russian nuclear weapons facilities by providing non-defense jobs for displaced workers—that some 8,000 new jobs were urgently needed to employ nuclear workers who were about to lose their positions.

Why are the jobs needed? Because another U.S. program, known as the Plutonium Production Reactor Shutdown Program (formerly the "Core Conversion Program"), is seeking to end Zheleznogorsk's annual production of 50 bombs' worth of weapons-grade plutonium. This important Department of Defense (DOD) Cooperative Threat Recuction program has been working to close the city's plutonium production reactor and plutonium separation plant, the municipality's principal source of employment and revenue. Fortunately, the reactor in question is not to be shut down until an alternative source for the heat and electricity it produces can be brought online, probably a fossil-

fuel-burning plant, and that is not scheduled to happen until 2006—a point the city fathers failed to note, but one that makes the challenge of finding employment for the displaced works more manageable.

As it looked ahead, the NCI team then realized that a third U.S. program—the DOE Plutonium Disposition Program—was planning to build a major plutonium fuel fabrication plant at Zheleznogorsk. The Plutonium Disposition Program will render 34 metric tons of Russian weapons-grade plutonium effectively unusable for nuclear weapons. It will combine the plutonium with depleted uranium to make "mixed oxide" (MOX) fuel for use in eight Russian nuclear power plants. As a result, the plutonium will be transformed, at a rate of two metric tons per year, into highly radioactive spent fuel, many hazardous processing steps away from nuclear arms.

As currently envisioned, the plant producing MOX powder would be built in Ozersk, a major nuclear processing center in the Urals, and the MOX fuel rods would be manufactured at a new plant in Zheleznogorsk. Construction at the latter site would start in 2004 or 2005, and the first fuel rods would be introduced into Russian reactors in 2007. Thereafter, the Zheleznogorsk MOX fuel fabrication plant would remain in operation for many years. Thus, because of the requirements of the Plutonium Disposition Program, there would be a sizable construction project at the site and, by 2006 or 2007, a significant number of high-technology jobs for plutonium workers displaced by the termination of new plutonium production. If one takes into account the retirement of older workers, a fair start will have been made toward meeting the city's looming employment challenge.

It looks to be a seamless web, woven by a team of ace Clinton administration policymakers. In fact, the apparent integration of job loss and job creation through these programs at Zheleznogorsk was completely unplanned and based on coincidence and blind luck. The U.S.-Russian agreement on ending plutonium production originally specified that plutonium production at Zheleznogorsk was to end in 2000, and when it was signed, there was no Nuclear Cities Initiative to address the needs of displaced workers. Equally ironic is the fact that when the Nuclear Cities Initiative selected its first three target cities, Zheleznogorsk was included in large part because its future looked bleak; NCI personnel never consulted their counterparts in the Plutonium Disposition Program about the possibility of building a major new facility there, nor was the NCI team consulted when the Plutonium Disposition officials were reviewing Zheleznogorsk and alternative sites. Indeed, there was apparently not a single meeting at which the job impacts of the three U.S. programs operating in that city were examined in an attempt to align them.

There is more to the story, however, because the Plutonium Disposition Program appears to be working at cross purposes in Zheleznogorsk with another DOE initiative, the Material Protection, Control, and Accounting (MPC&A) program. The MPC&A program has the goal of enhancing the security of Russia's hundreds of metric tons of nuclear weapons material, and among its subsidiary activities is a far-sighted program to consolidate nuclear materials at as few sites in Russia as possible. Unfortunately, as noted above, the Plutonium Disposition Program appears to be moving in precisely the opposite direction with its plan to site the MOX powder plant and MOX fuel fabrication plant at two sites some 1,500 miles apart, rather than to co-locate them.

Because of the relative ease of processing unirradiated MOX into pure plutonium for weapons, MOX powder and fuel have been subject to the most stringent "Category I" security standards in the U.S. civilian nuclear industry and are similarly treated under International Atomic Energy Agency (IAEA) security guidelines. The United States has required other countries to adopt equally strict standards when processing or using MOX produced with plutonium created in U.S.-exported reactors or obtained from U.S.-origin fuel.[2]

In effect, siting the Zheleznogorsk MOX fuel fabrication plant 1,500 miles from the MOX powder plant in Ozersk will lead to unnecessarily transporting a weapon's worth of plutonium three-quarters of a million miles a year for 17 years—the equivalent of 30 trips around the Earth—albeit under presumably strict security arrangements.[3] Once again, not a single meeting was held within the executive branch to permit the proponents of alternative siting options to wrestle with this problem.[4]

And, so, the unplanned confluence of four U.S. programs in Zheleznogorsk leaves a conundrum: should the United States take advantage of a fortuitous proposal to build the MOX plant there and create needed jobs to keep nuclear workers from selling their skills to third parties, while increasing security risks over nuclear material; or should the United States build the plant in Ozersk to reduce security risks over materials, while leaving displaced Zheleznogorsk workers with no ready

employment alternatives?

Fissile Material and Fuzzy Math

The lack of cross-program strategic planning with respect to U.S. initiatives to eliminate and secure fissile materials can be observed in other programs as well. For example, it appears that the MPC&A program is not taking account of the positive impact on its mission of U.S. programs for eliminating or halting the production of Russian fissile material and of the construction of the high-security Mayak Fissile Material Storage Facility (FMSF) at Ozersk.

U.S. programs for eliminating or halting the production of fissile materials include the Highly Enriched Uranium (HEU) Purchase Agreement, the Plutonium Disposition Program, and the Plutonium Production Reactor Shutdown Program.

Under the HEU Purchase Agreement, over the course of 20 years, Russia is to blend down 500 metric tons of weapons-quality highly enriched uranium into low-enriched uranium, which is suitable for use as nuclear power plant fuel but no longer usable for nuclear weapons. The blended-down material is to be purchased by the now-privatized United States Enrichment Corporation for some $10 billion. To date, the HEU Purchase Agreement has resulted in the blending down of 113 metric tons of Russian HEU, and for each of the next 13 years, an additional 30 metric tons will be transformed into reactor fuel, reducing Russia's total inventory of HEU accordingly.

In addition, beginning in 2007, over a period of 17 years, the Plutonium Disposition Program, as noted earlier, will render 34 metric tons of Russian weapons-grade plutonium highly difficult to use for nuclear arms (and no longer in need of special physical security arrangements), a disposition rate of two metric tons per year.

As also referred to earlier, under the Plutonium Production Reactor Shutdown Program, Russia will end the production of weapons plutonium by 2006, as the United States (assuming congressional approval) underwrites the refurbishment and construction of fossil fuel plants to provide an alternative source of heat and electricity now provided by Russia's three plutonium production reactors (two of which are in Seversk and one of which is in Zheleznogorsk). This will end the addition of 1.2 metric tons of weapons plutonium to the Russian fissile material inventory annually.

The MPC&A program itself will also eliminate material through its Materials Consolidation Program, which seeks to remove smaller quantities of HEU from various sites in Russia, bring it to one or two processing points, and blend it into low-enriched uranium. In this case, rather than being sold commercially, the material remains in Russia for use at Russian facilities. The MPC&A program hopes use this approach to eliminate 13-27 metric tons of HEU by 2011 and therefore to end the need for security measures at the sites from which the material is removed.

Finally, the Mayak FMSF will sequester 50 metric tons of Russia weapons plutonium in a virtual plutonium Fort Knox. The material is to be loaded into the facility, which is being built by the Cooperative Threat Reduction program, between 2002 and 2008.

Obviously, the processing and transportation of the material at issue in these programs will lead to certain new MPC&A requirements, but there can be no question that over time the programs will help end the production of new Russian fissile material and will take material of concern to the MPC&A program out of circulation and off the MPC&A inventory of material at risk. At the same time, new weapons dismantlements will add new fissile material of concern. The key point is that the inventory of Russian fissile outside of weapons is dynamic, and many of the trends in that inventory can be predicted.

Judging from information the MPC&A program provided to the General Accounting Office (GAO), however, the program is not taking this dynamism into account in plotting its future. The data supplied to GAO state that the MPC&A program will help secure 603 metric tons of Russian fissile material—and assume that this amount will remain constant until the program completes its task in 2011.[5]

The MPC&A program did not make public the assumptions behind these numbers, which, it should be noted, were accepted by GAO. But most observers believe that the 603 metric tons includes significant quantities of material from previously dismantled nuclear weapons or from Russian stocks

of material prepared for use in weapons—i.e., material that will be eligible for the HEU Purchase Agreement, the Plutonium Disposition Program, Material Consolidation, or the Mayak Fissile Material Storage Facility.

If this is true, it would mean that, by 2011, 300 metric tons of the 603 metric tons of concern to the MPC&A program could have been eliminated under the HEU Purchase Agreement, 50 metric tons of plutonium could have been secured in the Mayak Fissile Material Storage Facility, 13-27 tons could have been down-blended under the Material Consolidation Program, and eight metric tons of plutonium could have been rendered safe under the Plutonium Disposition Program.

Of course, certain additions to inventory would also occur, and not every ton of material eliminated automatically reduces the burden on the MPC&A program because a vault containing one metric ton of HEU may require virtually the same level of security as a vault holding 20 tons.

At a minimum, however, one can be confident that if the spectrum of cross-program impacts on Russian fissile materials described here were taken into account, the total material remaining at the end of the period would not be the same as it is today, and, quite possibly, the demands on the MPC&A program would have been significantly reduced.

More Like This

The cases noted above are illustrative of a far broader problem. Other examples of issues affecting multiple U.S. non-proliferation programs in Russia include the question of how IAEA inspections will follow Russian nuclear materials from the Mayak FMSF into the Plutonium Disposition Program; the prospects for utilizing additional storage capacity at the Mayak FMSF to secure Russian HEU and, possibly, additional plutonium; and opportunities to accelerate the down-blending of HEU under the HEU Purchase Agreement or to enlarge the scope of that agreement to eliminate additional HEU. Moreover, a strategic planning process covering all of the U.S. non-proliferation programs in Russia could

- allocate financial and diplomatic resources for maximum efficiency;
- permit tracking of programmatic milestones so as to allow the administration to accelerate one program if a related effort faltered; and
- identify unmet fissile material security threats, where new U.S. initiatives may be needed (for example, to curb Russia's continued separation of 1-2 metric tons of plutonium from nuclear power plant fuel each year, a matter that was not addressed until late in the second Clinton administration).

Why were these and other interagency issues not raised during the Clinton administration? The core reason was that each program faced so many challenges of its own that managers' time and energy were devoted to addressing the obstacles immediately in front of them. These challenges included pressing for sufficient budgets, addressing congressional concerns, and—most difficult—finding satisfactory approaches to meeting Russian requirements. This is not a throw-away point. The programs at issue often involved massive budgets; entailed highly complex activities at numerous sites in Russia; required maintaining complicated relationships with U.S. contractors; and, most demanding, sought to build novel relationships with the Russian Ministry of Atomic Energy that involved its most sensitive activities.

With these preoccupations, it is not surprising that mission-focused program managers often resisted the idea of incorporating additional dimensions—read, "additional headaches"—into their decision-making. Respect for colleagues' hard work and concern that, if one intruded on another's program, the favor might be returned also instilled caution. Diverse chains of command within and among U.S. agencies exacerbated the problem because of the difficulty of challenging a decision already tacitly or formally endorsed by a high-ranking official in a different chain.

Generally speaking, at the level where the various programs were understood in detail, authority was lacking to integrate them more effectively. At the same time, those possessing the necessary authority to improve program coordination, such as the staff members at the National Security Council and the Office of Management and Budget, lacked the detailed knowledge of the programs required to appreciate the need for such efforts and the opportunities they could have provided.

For its part, the interagency process, which convened principally to focus on the issues of the moment (in particular, coordination of the diplomatic initiatives), needed to keep the various programs moving forward. Periodic high-level meetings between Vice President Al Gore and his Russian counterparts through the U.S.-Russia Bilateral Commission fell prey to the same

exigencies. Finally, the U.S. coordinator for Russia/NIS assistance at the Department of State, although compiling useful cross-program information, lacked the authority over other agencies necessary to advance strategic planning.

Although these trends prevented broad strategic planning of the type urged here, important coordination did take place on individual issues. One example was the creation of a joint DOD-DOE budget and strategy for developing technologies to address complex transparency issues affecting the Mayak Fissile Material Storage Facility, the Plutonium Production Reactor Agreement, and other programs. In another instance, the Cooperative Threat Reduction program, in order to maintain an accelerated schedule for the dismantlement of Russian strategic submarines, sought the concurrence of other U.S. agencies for the reprocessing of the submarines' spent fuel. To help work the issue, DOE undertook a rapid study of the question, which became the basis for a consensus in support of the Pentagon initiative. Similarly, the departments of Defense and Energy collaborated closely on work with the Russian navy, with whom both had important programs, to avoid unintended impacts on each other's efforts.

Launching More Effective Planning

To exploit the opportunities that a better government-wide planning process would provide, the Bush administration needs to create a forum for identifying and working on issues that affect multiple U.S. non-proliferation programs in Russia. A number of outside specialists and panels have called for the creation of a senior coordinator or "czar" for these activities, to be situated in the National Security Council (NSC) with direct access to the president. The Clinton administration resisted this option, however, and the Bush administration's reorganization of the NSC has focused on other priorities.[6]

Appointing a powerful figure in the White House to set government-wide goals and priorities, coordinate the myriad programs at issue, drive agencies to meet objectives, and provide political clout to overcome obstacles may well be the ideal solution. More modest alternatives, however, implemented through an assistant-secretary-level working group coordinated by NSC Senior Director for Proliferation Strategy, Counterproliferation, and Homeland Defense Robert Joseph could achieve much and could be implemented far more easily, without the upheaval of realigning responsibilities within the executive branch.

The broad strategic goals for U.S. non-proliferation in Russia will be set shortly as the Bush team completes its program reviews, and these objectives will have the imprimatur of the president in the form of a presidential decision document. In all likelihood, these goals will look much like those of the Clinton administration: securing and eliminating fissile materials, irreversibly removing such materials from military use, creating non-defense employment opportunities for Russian weapons of mass destruction scientists, and facilitating the downsizing of the Russian nuclear weapons complex. Implementation then becomes the key issue.

The approach suggested here to improve program implementation is to build up gradually to better overall strategic planning through a series of manifestly useful, easy-to-implement, and relatively uncontroversial steps that examine cross-program interactions. Once cross-program issues or opportunities have been identified at the level of an interagency working group, they tend to be addressed. The critical first step is recognizing such linkages and their potential importance. If this is done, it is not unreasonable to hope that attentiveness to such issues will gradually be infused into program management.

The process could begin with tasking the planning group to prepare a number of studies to establish baselines for further action. A logical starting point would be to develop an inventory of the most obvious cross-program relationships, an integrated calendar of the coming year's anticipated activities with clear milestones (to be gradually expanded into two- and three-year plans), and a prioritized list of expected requirements for high-level diplomatic intervention to support specific program objectives.

With these tools, coupled with presidential articulation of overall program goals, important building blocks for more intensive strategic planning would be in hand. An agreed inventory of cross-program interactions would naturally lead to the establishment of subgroups to exploit or resolve such linkages; agreed program milestones projected into the coming year could be expected to help shape future budgeting decisions; and the very development of a list of prioritized diplomatic

interventions would itself constitute a small-scale strategic planning effort.

Early attention should also be given to the preparation of a year-by-year projection of job requirements in a number of key Russian nuclear cities and a comparison of these requirements to the job creation impacts of all current and planned U.S. program activities at these sites, including programs whose principal goal is not job creation per se. By delineating where Russian nuclear complex downsizing was expected to have the greatest impact, U.S. policy-makers could focus job creation efforts on locations where the need was most urgent.

Also needed without delay is a year-by-year projection of the inventory of Russian fissile material not in weapons and an analysis that plots against this inventory the predicted accomplishments of the MPC&A and Mayak Fissile Material Storage Facility programs in enhancing the security of the remaining material. The author prepared such an analysis in the form of a spreadsheet, based largely on the assumptions outlined above along with several other projections, and then charted the combined impact of U.S. fissile material elimination and security programs.[7]

The results—shown in the chart below for illustrative purposes only—suggest that the MPC&A program might achieve its overall goal earlier than predicted because of reductions in the inventory at risk that are achieved by other U.S. programs.[8] Although much more work would be needed before such data would be sufficiently accurate to underpin administration policy-making, the overall approach is useful and rather straightforward. It appears, however, that no similar spreadsheet or chart has ever been produced within the executive branch.

Understanding Investment Costs

A planning process of this type would also permit development of interprogram cost analyses. These could play a crucial role in future investment decisions for U.S. non-proliferation programs in Russia, but they have rarely been used in the past.

For example, Russia might be willing to store additional fissile material in the Mayak Fissile Material Storage Facility, but presumably it would cost money to prepare the material and transport it to the site. If Russia asked the Cooperative Threat Reduction program to pay these costs, the Pentagon might be unwilling, perceiving the expenses as new costs that would detract from other programs. However, if one takes into account the impact that storing more material at Mayak would have on other programs, the investment might actually be far smaller than it initially seemed and could perhaps represent a net savings to the U.S. government as a whole. This would be the case, for example, if the material in question had yet to be covered by the MPC&A program. Because the material protected in Mayak would not have to be secured by MPC&A, the MPC&A program would avoid costs and save money.

A similar approach could be used as the Pentagon considers the possible completion of the second wing of the Mayak FMSF, which would allow much more weapons-usable material to be stored there and reduce the burdens on the MPC&A program. In all likelihood, the avoided-cost savings to the MPC&A program would not come close to fully offsetting the price of the new wing, but they might measurably reduce the overall outlay for the facility.

The DOE Plutonium Disposition Program used this approach in analyzing the domestic component of its activities. It recognized that by disposing of plutonium currently stored at the Rocky Flats plant near Denver, it would save some $350 million annually in storage costs, eventually recouping the expense of disposition. This "avoided cost" approach, however, has not been applied to U.S. non-proliferation investments in Russia.

Cross-program investment analyses could prove important in assessing choices concerning the elimination of Russian fissile materials. Current U.S. plans are to eliminate 30 metric tons per year of Russian HEU under the HEU Purchase Agreement through 2013 and to eliminate two metric tons of plutonium from 2007 through 2024 under the Plutonium Disposition Program. Given the complexity of the latter program, it is not unlikely that it will fall behind schedule. The United States could still meet its overall fissile material elimination goals, however, if in each year that the Plutonium Disposition Program were delayed beyond 2007, the United States arranged for the down-blending of an equivalent amount of HEU (6.25 metric tons) in addition to the 500 metric tons already covered

by the HEU Purchase Agreement.9 Because blending down additional HEU would cost much less than eliminating a weapon-equivalent of plutonium under the Plutonium Disposition Program, the comparative budgetary impact of the HEU contingency plan would not be severe. For relatively little additional money, the United States could eliminate the same amount of weapons-equivalent fissile material annually even if the Plutonium Disposition Program were delayed.
Despite the obvious utility of such comparisons, U.S. officials overseeing non-proliferation efforts in Russia have rarely used cross-program investment analyses of the type described in these examples. Such analyses need to be made an integral part of the interagency planning process proposed here.

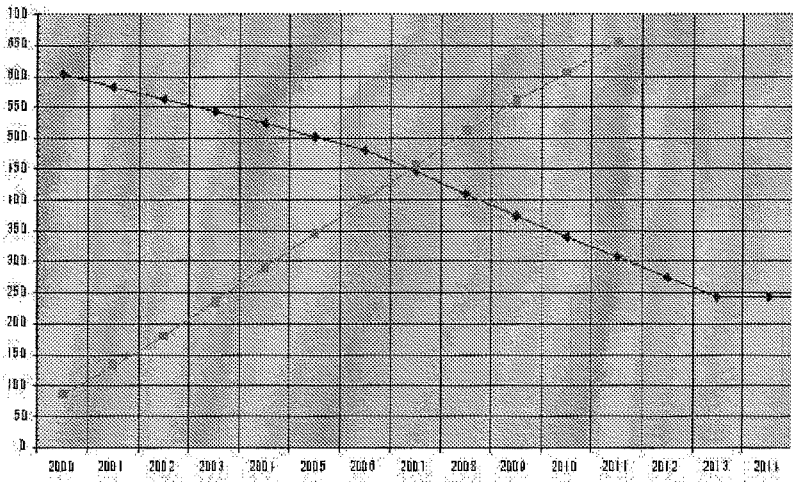
Conclusions

U.S. non-proliferation programs in Russia have been marked by innovation, dynamism, and considerable success. Nonetheless, because these efforts have been implemented by three separate U.S. government departments and a sizable publicly held corporation and because each program has been closely focused on achieving its objectives in the face of numerous obstacles, coordination among the programs has suffered, and numerous opportunities to enhance the combined impact of these activities have been missed.

An important step toward rectifying this situation would be the establishment of an NSC-led interagency strategic planning group, which could use a series of studies and periodic reports as a basis for improved coordination. Actions as simple as preparing an integrated annual calendar of milestones for all major programs and tracking them over the course of the year or establishing a comprehensive year-by-year projection of the inventory of Russian fissile materials covered by various U.S. programs would be significant steps forward. The process would help prioritize diplomatic initiatives, enhance efficient use of budgetary resources, and identify potential conflicts and synergies among the U.S. efforts. As the new Bush team completes its reviews of U.S. non-proliferation programs in Russia, this is one new initiative that would be widely applauded.

Progress in Eliminating and Securing Russian Fissile Material

Metric Tons of Fissile Material per Year



KEY

Blue Line
Purple Line

Inventory of highly enriched uranium and plutonium not in weapons and still of conern.

Highly enriched uranium and plutonium secured by the MPC&A program and in the Mayak Storage facility.

NOTES

I am indebted to Matthew Bunn, assistant director of the Science, Technology, and Public Policy Program at Harvard University's Kennedy School of Government, for his valuable comments on an early draft of this article.

1. See Secretary of Energy Advisory Board, A Report Card on the Department of Energy's Nonproliferation Programs with Russia, January 10, 2001, p. 2; Matthew Bunn, The Next Wave: Urgently Needed Steps to Control Warheads and Fissile Material, Belfer Center for International Affairs and Carnegie Endowment for International Peace, April 2000, p. 118-120; John P. Holdren, "Reducing the Threat of Nuclear Theft in the Former Soviet Union," Arms Control Today, March 1996, p. 20.

2. The MPC&A program has applied less stringent standards to similar materials in Russia—the same standards as those used at DOE facilities in the United States—but the involvement of other countries in funding the Plutonium Disposition Program will undoubtedly lead to MOX powders and fuel being subject to the more rigorous international rules.

3. Two tons of MOX powder—containing enough plutonium for 250 weapons, using the IAEA standard of eight kilograms per weapon—would be shipped from Ozersk to Zheleznogorsk for fabrication into fuel rods, and the rods would then be shipped back through Ozersk, a total distance of about 3,000 miles, en route to the reactors that will use them in western Russia. (The transportation link to the reactors would be unavoidable even if the two MOX plants were co-located in Ozersk; at issue is the added transportation required by siting the fuel fabrication plant at Zheleznogorsk.)

4. This point was confirmed by a former senior official in the Plutonium Disposition Program in a conversation in April 2001. A similar problem of potentially avoidable long-distance transportation of fissile material can be seen in the chain of Russian facilities processing HEU under the HEU Purchase Agreement. See General Accounting Office, Nuclear Nonproliferation: Status of Transparency Measures for U.S. Purchase of Russian Highly Enriched Uranium, September 1999, Figure 2 and Appendix I. Unfortunately, it does not appear that Russia has obtained the assistance of the MPC&A program in enhancing security over these transit links.

5. General Accounting Office, Nuclear Nonproliferation: Security of Russia's Nuclear Material Improving; More Enhancements Needed, February 2001.

6. See references in note 1. In fact, in 1996 Congress adopted legislation to establish a national coordinator for non-proliferation matters, whose responsibilities would have included coordinating U.S. non-proliferation programs in Russia. National Defense Authorization Act for Fiscal Year 1997 (P.L. 104-221) Title XIV, Subtitle D.

7. The spreadsheet examines the total Russian inventory of HEU and plutonium not in weapons and the accomplishments of U.S. programs to secure the material remaining in this inventory so as to identify the date when all material remaining in the inventory will be secured through the MPC&A program and in the Mayak FMSF. Based on the February 2001 GAO report on the MPC&A program, the spreadsheet assumes that the total beginning inventory in 2001 is 603 metric tons, that 86 metric tons of this total has received comprehensive security upgrades under the MPC&A program, and that the remaining 517 metric tons will be secured by 2011. This implies that the program secures material at a rate of 47 metric tons per year. The Mayak FMSF is assumed to receive 50 tons of plutonium between 2002 and 2008.

Increases to the inventory of material occur because of (1) new weapon dismantlements (assumed, as a placeholder, to add 10 metric tons per year to the inventory of material not in weapons, for six years); (2) new production of weapons plutonium; and (3) new production of civil plutonium. (The last two categories taper off as relevant U.S. programs to end plutonium production take effect.) Decreases to the inventory occur because of (1) the HEU Purchase Agreement; (2) the MPC&A Materials Consolidation program; and (3) beginning in 2007, the Plutonium Disposition Program.

8. To be sure, "tons of material secured" is not the only valid metric for assessing program accomplishments; the proportion of buildings containing fissile material that have been secured compared to the number needing such upgrades might be better. However, tons of material secured is a standard used by the MPC&A program itself, and an integrated approach to assessing progress in this sphere would be a useful starting point for looking at progress building by building, which presumably will also be affected by the accomplishments of other programs.

9. Two metric tons of plutonium would be sufficient material for 250 weapons (at eight kilograms per weapon). Since 25 kilograms of HEU are needed for a weapon, 250 times this amount, or 6.25 metric tons would be the equivalent of the two metric tons of plutonium.

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Combating Proliferation of Weapons of
Mass Destruction with Nonproliferation Programs:
Non-Proliferation Assistance Coordination Act of 2001

Testimony of Vann H. Van Diepen
Acting Deputy Assistant Secretary of State
Before the
Subcommittee on International Security, Proliferation & Federal Services
Senate Committee on Governmental Affairs

Chairman Akaka, Senator Cochran, Members of the Committee:

I am very pleased to be here in response to your invitation to Under Secretary Bolton to discuss nonproliferation assistance programs and coordination. I agree with the points made by participants in the November 14 hearings you hosted about the urgency and complexity of the environment in which we operate. While the Cold War weapons legacy still must be addressed, these threats are not new to us. The Cold War has been over for more than a decade and we have moved beyond "post Cold War" to new relationships and strategic frameworks with Russia and other countries in the region.

The proliferation of nuclear, chemical, and biological weapons and the missiles capable of delivering them, is now a central security threat facing the United States, our allies, and our friends. Where once we faced thousands of nuclear weapons under centralized command of a great rival power, September 11 and the biological attacks since have shown how much more diverse and less predictable the threat has become. In this new world, it is not just the Soviet legacy that demands our attention, but many avenues from

which rogue countries and terrorists and their supporters may choose when seeking to advance their attack capabilities.

The programs that we use to counter this threat originated in 1992 under the first Bush Administration. They have served us well. The programs and the agencies that manage them have also responded and evolved as they gained experience and as circumstances changed. The hallmark of something that was well crafted is that it can be adapted without losing its essential characteristics. I believe that our nonproliferation programs meet that test.

I would like to address each of the five questions you posed:

State Department Nonproliferation Programs

The State Department has direct responsibility for several nonproliferation programs directed at or relevant to the countries of the former Soviet Union. More broadly, we provide foreign policy guidance and diplomatic support for the programs of other agencies, and participate actively in the review, approval, coordination, and implementation of other programs concerning nonproliferation and former Soviet weapons of mass destruction or advanced conventional weapons materials, facilities, technologies, or expertise.

Weapons Materials and Technologies

When the Soviet Union collapsed, the absence of any system of controls over the export of technology and materials needed in WMD and missile programs posed an immediate threat. The new countries lacked laws, expertise, and technical resources to implement controls. At first our export control assistance program concentrated on establishing and improving export control systems in the new independent states of the former Soviet Union that inherited nuclear weapons related facilities and materials, and in eastern Europe. The early focus of the program was to establish basic legal and regulatory frameworks and licensing and enforcement processes in countries that supply key technologies.

As funding increased and the program matured, the focus has expanded to working with the neighbors of potential supply countries as well as with key transshipment states -- countries through which WMD materials and technologies are likely to transit, while continuing to support the development of more robust systems in the supplier states, including providing advanced imaging and detection equipment. This program has grown from less than $5 million per year in the mid-1990s to the President's request for $39 million for this fiscal year ($17 million from NADR; $22 million from FREEDOM Support Act/NIS account).

The State Department chairs an inter-agency working group on export control assistance, which directs and coordinates the work of the various U.S. agencies that implement these

programs in over 25 countries worldwide. These efforts are also coordinated with the international narcotics and law enforcement programs which also provide assistance to customs and border guard agencies of other countries.

Weapons Expertise

Among our earliest concerns was addressing the threat posed by the thousands of Soviet weapons scientists who no longer would be supported after the Soviet Union's demise. With continued economic flux in Russia and elsewhere in the region and aggressive pursuit of this expertise by countries like Iran, this effort continues to be a high priority. The international science and technology centers began their work in Moscow in 1994, and in Kiev in 1995. The original focus of these centers was to stem the threat of "brain drain" of underemployed and unemployed weapons scientists and engineers to WMD programs in other countries.

As the science center programs matured, the focus has shifted to emphasize redirecting scientists toward sustainable careers in peaceful, transparent, civilian endeavors in their home countries, be these commercial ventures or continuing scientific contributions to areas of international and global interest. The program started with Russia and Ukraine and now embraces communities in nations of particular interest to the United States' war in Afghanistan: Uzbekistan, Kazakhstan, the Kyrgyz Republic, Armenia, and Georgia. Other key regional states -- Tajikistan, Azerbaijan, and Moldova -- are in the process of joining one of the science centers. Belarus also participates in the program, but currently receives no U.S. assistance.

For the past four years, the State Department has been an active participant in the USG interagency effort to redirect former Soviet biological weapons scientists. Through this program, the U.S. has been given increased access and transparency at a number of the key civilian facilities in the former BW program. In addition to providing incentives for these individuals to refrain from cooperation with terrorist groups or states harboring them, our redirection efforts also pay additional dividends by focusing these scientists' considerable expertise on areas of critical public health needs, such as HIV/AIDS, multi-drug resistant tuberculosis, and a number of plant and animal diseases. The solid collaborative research basis that we have developed through this effort will be a springboard for expanded work that will respond to the Bush-Putin initiative to counter bioterrorism.

Utility Infielder

The Nonproliferation & Disarmament Fund – created to permit a rapid response to unanticipated requirements or opportunities – is a flexible, responsive nonproliferation tool. The NDF undertakes a broad spectrum of special tasks to assist U.S. nonproliferation efforts in this region and around the world. For example, the NDF played a key role in Project Sapphire in 1994, during which we removed more than 600 kilograms of highly enriched uranium from Kazakhstan to ensure that this material was properly protected and properly disposed of.

Of particular relevance to the request of this committee is NDF's work on Tracker – a stand-alone software package that permits a country to use modern computer tools to track export licensing and enforcement matters from application throughout the process, among central government agencies, and with the export control personnel at ports and border posts. This system is now deployed in 8 countries, with further applications in process.

In addition to our budgetary and oversight responsibility for the programs above, State leads the diplomatic efforts for a number of nonproliferation programs, some of which are funded by other agencies. These include the Plutonium Disposition Agreement signed last year, the 1997 Plutonium Production Reactor Agreement, U.S. support of the IAEA in safeguarding nuclear materials worldwide, and coordinating efforts to prevent nuclear smuggling.

Another priority is making sure that our friends and allies are shouldering their fair share of the burden for these nonproliferation efforts. The State Department plays a leading role in identifying needs and encouraging assistance from other countries for a variety of nonproliferation efforts. It is important to build a community committed to paying more than lip service and we are not shy about letting our allies know when we think they should be providing more resources.

Funding and Coordination

On your question concerning how these programs are funded and how they are coordinated, the Department of State leadership takes its responsibility for nonproliferation programs very seriously and works hard to make sure that those programs continue to enjoy strong support both within the Executive Branch and with Congress.

All U.S. policy, implementation, and oversight of nonproliferation assistance to the states of the former Soviet Union is coordinated at senior levels by the Proliferation Strategy Policy Coordinating Committee. This Committee, or PCC, is chaired by a National Security Council senior director and includes assistant secretary level representatives from State, Defense, Energy, and other concerned agencies, including the State Department's Coordinator for U.S. Assistance to Europe and Eurasia.

This NSC-led Committee works to ensure that individual assistance programs are coordinated within and across agencies, and that they serve Administration nonproliferation and threat reduction priorities as effectively as possible. The Committee has also been charged to develop a strategic plan to guide near- and farther-term nonproliferation and threat reduction cooperation with Russia and Eurasia.

In addition, there are standing working level groups responsible for day-to-day coordination of the export control, science and technology centers and biotechnology redirection programs. These working groups not only ensure close policy coordination

among the programs, they also ensure effective integration so that the programs compliment, not compete, with each other in addressing U.S. nonproliferation objectives. The work of these groups feeds directly into the senior level committee.

This structure works well and substantially addresses what is proposed in the Nonproliferation Assistance Coordination Act of 2001. As noted in several of the statements from your November 14 hearing, despite the number and complexity of nonproliferation assistance programs, effective implementation and senior level coordination already exist.

All State Department nonproliferation programs are funded out of Foreign Operations appropriations. In past years many of these programs were funded in whole or part from the FREEDOM Support Act account. With Congress' help, we are consolidating program funding in the Nonproliferation, Anti-terrorism, Demining, and Related Programs (NADR) account, and our intent is to complete that process with fiscal year 03 appropriations. This will provide for more integrated financial and policy oversight.

Future Plans

As you know, President Bush directed that a rigorous review be conducted of all U.S. nonproliferation and threat reduction assistance to Russia and the countries of the former Soviet Union. That review is now in its final stages.

Without prejudging the White House's final decision, we expect State Department's nonproliferation assistance programs will continue to play a critical role in combating the proliferation of WMD. In the post September 11 world, we believe that stemming the flow of weapons of mass destruction materials, technologies and expertise worldwide has to be among our highest national priorities and our programs must address that challenge. We also must remain flexible and look at how the programs we have developed and the lessons we have learned can be applied to new opportunities and situations.

Coordination with Private Sector & Non-Governmental Efforts

The private sector and non-governmental organizations (NGOs) play several important roles. First, in our efforts to redirect former weapons scientists to peaceful civilian scientific and commercial research, it has long been part of our strategy to engage the private sector. It was never our intent to support these scientists indefinitely, and U.S. industry can be a key partner in helping scientists and their institutes make a permanent transition to peaceful pursuits. The science and technology centers' industry partners program now attracts over $20 million annually in corporate funding. Industry partners take advantage of the science centers' administrative and oversight mechanisms, and tax and customs exemptions, to fund applied research using the talents of the former weapon scientists and the company's R&D funds.

This arrangement is a win-win situation. The U.S. industry partner develops technology at costs lower than possible in the West and the former weapon scientists gain industry partners and an avenue to commercialize and profit from the results of their efforts.

Partnerships with industry allow the U.S. government to leverage its funds with the industry partner funds to achieve U.S. nonproliferation objectives; and recipient countries like Russia ultimately receive economic benefit from the industry-scientist partnership.

Also, when we deal in the world of export controls, we are looking at buyers and sellers. U.S. companies have a great deal of experience in implementing export control regulations internally, know the ins and outs of licensing systems, and have a great deal of knowledge to share with countries and companies that are new to this world. U.S. companies play an important role in our effort to inform and educate.

A number of think tanks and private foundations actively support nonproliferation dialogue and projects. During the past year, a new opportunity for public-private nonproliferation partnership emerged with the establishment of Ted Turner's Nuclear Threat Initiative (NTI). This is still a new organization, but NTI's management and board of directors, which includes several members of Congress, have consulted actively with the Administration on their program and have made a commitment to coordinate their activities with us. We do not believe that NTI should replace appropriate government nonproliferation functions, but we are open to exploring appropriate ways that our activities can work synergistically.

Non-Proliferation Assistance Coordination Act of 2001

I think it is clear from what I have said about the nature of our interagency coordination process that the Bush Administration fully shares the objectives that led Senator Hagel

and the other sponsors of S. 673 to offer this legislation. I believe that this hearing and a close examination of how we are coordinating policy and implementation of these programs today will provide clear evidence that we already are doing what Congress would have us do in this regard. S. 673 is not needed, as the Bush Administration has already acted and taken the kinds of steps this legislation calls for. Furthermore, such legislation could intrude on the President's prerogatives and responsibilities.

We look forward to working with you and other committees, and to keeping you fully informed on how we conduct these programs of U.S. nonproliferation assistance to the states of the former Soviet Union, how we work with other concerned governments to increase their contributions and ensure that our respective assistance is complementary and not duplicative, and how we seek to work with private sector donors of assistance in these areas.

Testimony of Deputy Assistant Secretary of Defense
Marshall Billingslea
Before the Senate Governmental Affairs Subcommittee on International Security, Proliferation, and Federal Services
November 29, 2001

DEPARTMENT OF DEFENSE NONPROLIFERATION PROGRAMS AND ESTABLISHMENT OF AN INTERAGENCY COORDINATING COMMITTEE

Mr. Chairman, I am pleased to appear before your Committee today to discuss nonproliferation assistance programs to the republics of the former Soviet Union, and the need for careful interagency coordination of these projects. A key objective of this hearing, as I understand it, is to obtain Administration views on S. 673. I therefore will address this legislation first, and then will turn to a brief discussion of the Department of Defense's Cooperative Threat Reduction Program and our views on proliferation issues generally.

Overview of S. 673

The Department of Defense has reviewed S. 673, legislation to establish an interagency committee within the executive branch to review and coordinate U.S. proliferation prevention efforts in the independent states of the former Soviet Union. We agree that interagency coordination of nonproliferation programs is crucial, but the Department of Defense believes that the Bush Administration is already doing precisely that.

We believe a legally-mandated interagency committee could complicate the interagency coordinating process currently managed by the National Security Council (NSC). Since, proliferation prevention efforts are inextricably linked to the national security of the United

States and its allies, the NSC is the logical and correct executive branch organization to review and coordinate U.S. proliferation prevention. We must be careful not to preclude delegation of authority below the Assistant Secretary level since this would be inconsistent with the way the Executive Branch does business. A great deal of coordination, and policy work, is done at successive levels beginning with action officers, and progressing through Office Directors and Deputy Assistant Secretaries.

The Soviet Nuclear Threat Reduction Act of 1991 (i.e., the Nunn-Lugar Act) charged DoD with establishing a program to assist the Soviet Union and any successor states to destroy, safeguard and prevent the proliferation of weapons of mass destruction (WMD). The Department established the Cooperative Threat Reduction program within the Office of the Secretary of Defense to ensure program decision-makers directly coordinated with the National Security Council and other executive branch departments to accomplish these objectives. The strategy that the executive branch is pursuing is straightforward. First and foremost, we seek to destroy weapons of mass destruction and their means of delivery, if possible at their existing location. If it is not possible to destroy such weapons, then we will seek to consolidate and secure them. Further, we seek to prevent weapons of mass destruction, materials, and knowledge from leaving the former Soviet Union.

In 1996, the executive branch reexamined proliferation assistance to the former Soviet Union and transferred some program areas from DoD to the Departments of State and Energy. Subsequently, the Defense Department has worked closely with the NSC and those departments to ensure continued effective execution of these programs. We also work closely with other

agencies to ensure no duplication of effort. Finally, we take great care to ensure that U.S. assistance to the former Soviet republics cannot be diverted, cannot contribute to offensive weapons programs or proliferation, or subsidize or otherwise offset other military activities.

There are a variety of mechanisms by which the relative departments and agencies coordinate their activities. The Office of the Secretary of Defense and the National Security Council's Office of Proliferation Strategy, Counterproliferation, and Homeland Defense interact on a daily basis. More formally, we coordinate positions through a Sub-Policy Coordinating Committee, the Policy Coordinating Committee (PCC), the Deputies Committee, and the Principals Committee. These committees meet routinely and discuss ways to enhance the performance of U.S. nonproliferation assistance to the former Soviet Union. Additionally, the Departments of Defense, State, and Energy frequently meet at the working level to coordinate our efforts to enhance the security of nuclear weapons and nuclear material in Russia and the other newly independent states.

A good example of this coordination is found in DoD's efforts to prevent the proliferation of biological weapons. The Department of Defense is part of an interagency group that reviews all biological weapons proliferation prevention projects proposed through the International Science and Technology Center (ISTC). Based on those reviews, approved projects are matched to various Departments' areas of expertise and authority. For our part, DoD is most concerned with the threat posed by dangerous pathogens – particularly infectious diseases such as smallpox. Over the years, we have found that Russian scientists frequently have unique, valuable insights into the pathogenesis of various biological agents. The Department of Defense engages in

targeted bio-defense research projects with Russia in these areas, as agreed to in the interagency process. These projects are developed to cooperatively exploit knowledge to enhance U.S. detection of, protection from, and treatment of these deadly substances. I will return to the matter of biological weapons in a moment, but I use it here to illustrate that we have a good process in place that is working.

Ted Turner's decision to establish the non-governmental Nuclear Threat Initiative (NTI) program presents a new opportunity and challenge for the U.S. government. The executive branch regularly coordinates with Initiative staff to encourage NTI to focus on synergistic projects consistent with U.S. government proliferation prevention objectives and strategy. We also need to work with NTI to ensure that no projects are concluded with entities of proliferation concern, and to ensure that assistance does not wind up inadvertently subsidizing weapons programs. DoD staff has met with NTI staff and with Senator Nunn on several occasions, and there have been – of course – numerous phone calls to coordinate efforts.

Aside from NTI, DoD also contracts with U.S. commercial firms to implement CTR projects. We also review potential foreign contractors and subcontractors who are proposed by U.S. firms to ensure their compliance with U.S. Government proliferation prevention guidelines. DoD, of course, reserves the right to approve all of its project subcontractors.

Current DoD Proliferation Prevention Program Areas in the Former Soviet Union

The Cooperative Threat Reduction program is an important part of our national security strategy. We are privileged to have enjoyed sustained Congressional support, and a robust

funding profile, since inception of this program. The President's FY 2002 budget request included $403 million for the DoD/CTR program, virtually the same amount budgeted by the previous administration. We appreciate the House Appropriations Committee's full funding for the program, and are hopeful that the Senate Appropriations Committee will be equally supportive. The funds we have asked for will be used in a variety of program areas, discussed below.

Nuclear Weapons and Delivery Systems

The Strategic Offensive Arms Elimination program area is reducing Russia's strategic offensive arms by destroying strategic WMD delivery systems. The Defense Department provides equipment and services to destroy or dismantle Intercontinental Ballistic Missiles (ICBMs), their silos, road/rail mobile launchers, Sea-Launched Ballistic Missiles (SLBMs), SLBM launchers, and associated strategic submarines, strategic bombers, and weapons of mass destruction infrastructure. In FY 2001, DoD eliminated four SSBNs, 80 SLBM launchers, 99 SLBMs, 25 SS-18 launchers and 29 ICBMs in Russia.

The Weapons Transportation Security program with Russia assists in the movement and consolidation of nuclear weapons from Russia's Ministry of Defense (MOD) operational sites to Ministry of Atomic Energy (MinAtom) nuclear weapons dismantlement facilities. DoD also is providing assistance to the Russian Ministry of Defense to bolster its ability to respond to, and mitigate the effects of, a nuclear weapons accident or attempted theft. In FY 2001, DoD funded 53 train shipments designed to carry nuclear warheads to dismantlement sites. We funded the maintenance of 79 railcars, and contracted for specialized emergency response vehicles and

equipment to be given to the MoD. We are looking at additional measures to facilitate transportation of warheads to destruction sites, since this is obviously in our national security interest. But this program is an excellent example of how the Department of Defense must tread a fine line, since these railcars also could be used to service Russia's active nuclear arsenal. We think we have struck a good balance, by working with the Russian bureaucracy to keep aging railcars in service, and by funding specific shipments of weapons to the dismantlement sites.

We continue to be concerned with the potential for theft or diversion of Russian nuclear weapons. Therefore DoD has developed the Nuclear Weapons Storage Security program to make physical security upgrades to key sites, and install inventory control systems and practices to account for those nuclear weapons in the custody of the Russian Ministry of Defense. During FY 2001, DoD completed testing and finalized selection of an approved suite of equipment to be installed at weapons storage sites. We shipped six sets of Quick Fix fences and sensors to weapons storage sites in northern Russia, funded and verified MOD installation of 19 fence and sensor sets at other storage sites, contracted for additional guard equipment, training and facilities, and delivered certified computers for implementation of an automated warhead inventory control system. We think that the installation of physical security measures – preferably those which can be provided and utilized without extensive training of guard forces – is a good interim solution pending eventual dismantlement of nuclear weapons stocks, and we may look to do more of this kind of work.

Now, it is important to clarify that DoD is not involved in the actual dismantlement of Russian nuclear weapons. However, DoD is constructing a Fissile Material Storage Facility that

will provide centralized, safe, secure, and ecologically sound storage of up to 50 metric tons of weapons-grade plutonium and 200 metric tons of highly enriched uranium (HEU) removed from nuclear weapons. The physical construction of the storage facility and support structures is 80 percent complete. Equipping the facility is 60 percent complete.

The total cost of the Fissile Material Storage Facility at Mayak will be less than $370 million. I note this because the CTR program has been able to come in under the Congressional cap on this program by $40 million. We anticipate completing the facility next year, and will begin to load it with fissile material produced by the warhead dismantlement process. We will need to install a monitoring system that will provide confidence to the U.S. Government that the stored plutonium and HEU is, indeed, from nuclear weapons, that it is safe and secure.

We also need to be sure that this material is not recycled into the Russian nuclear weapons program. But, because we need to get physical safeguards on this material as quickly as possible, certification of the facility for loading will not be delayed by the design, development, fabrication, installation and certification of the monitoring system. I do caution that the system needed to monitor the plutonium and highly enriched uranium (HEU) to be stored in the facility will cost over $35 million. For its part, Russia has indicated that it does not need, or want, U.S. government assistance in preparing the plutonium and HEU from dismantled weapons for storage.

We remain concerned that Russia continues to produce weapons grade plutonium in three nuclear reactors. Admittedly, this material is contained in fuel assemblies and poses less of a

direct proliferation risk than the raw metal pits and scraps at numerous other Russian sites -- since a significant reprocessing effort would be required of the former, whereas the latter may be immediately useable in a nuclear device. But since we are trying to reduce Russia's existing inventory of this material, continued production new plutonium is a problem. DoD, with assistance from the Energy Department's national laboratories, is assessing various alternatives to address this concern. In FY 2001, DoD completed studies on various alternative energy sources to these reactors. The best approach to achieving shutdown of these reactors, which we all agree is an important objective, is still under review by the Administration.

Turning to Ukraine, I am pleased to report that the Strategic Nuclear Arms Elimination program area has eliminated all of the START-accountable nuclear delivery system launchers and is dismantling WMD delivery systems and infrastructure. This effort includes destroying SS-24 missiles, Tu-22M bombers, and Kh-22 nuclear capable air-to-surface missiles. In FY 2001, DoD removed 11 SS-24 missiles from silos and eliminated the 11 silos; disassembled 26 SS-24 missiles; eliminated 6 non-deployed SS-19s; and eliminated 21 bombers and 326 air-launched cruise missiles.

Similarly, we have completely eliminated all weapons of mass destruction from Kazakhstan. The WMD Infrastructure Elimination program is consolidating and securing fissile and radioactive material. It is destroying equipment and facilities that were used to support the deployment and operation of Soviet WMD, including liquid missile propellant and a chemical weapons production facility. In FY 2001, using CTR funding, the National Nuclear Center of

Kazakhstan inventoried radiological sources and designed packaging for the transport of the sources to secure storage facilities.

Biological Weapons

Increased cooperation with the biological weapons designers and engineers in the former Soviet Union has enabled us to identify many research institutes that house dangerous pathogens and production-capable facilities. The Biological Weapons Proliferation Prevention (BWPP) program area is consolidating and securing or eliminating dangerous pathogen collections, dismantling former Soviet BW research and production facilities, and, as described earlier, targeting research to enhance US bio-defense capabilities against dangerous pathogens. Right now, we are working with Russia, Kazakhstan and Uzbekistan. In the future, we hope to expand our efforts to Ukraine and Georgia. In FY 2001, DoD continued six ongoing pathogen security enhancement projects and initiated efforts at six additional sites; continued 6 ongoing collaborative research projects and initiated seven new projects; continued dismantlement of the former BW production facility at Stepnogorsk, Kazakhstan; began development of dismantlement efforts at four Russian institutes; and completed an assessment of the former BW test facility at Vozrozhdeniye island for future dismantlement and pathogen elimination efforts.

In our view, the Biological Weapons Proliferation Prevention (BWPP) aspect of the CTR program is of exceptional, and increasing, importance. We also attach great importance to comparable programs maintained by other agencies, such as the State Department's ISTC program. We have two objectives for the BWPP: the consolidation and elimination of pathogenic stocks (to prevent them from falling into the wrong hands); and collaborative

research and development with foreign scientists who can assist the U.S. in better protecting the American people, and the global community, from these diseases. In this vein, the Department of Defense believes the Joint Statement on Bioterrorism between Presidents Bush and Putin creates an important opportunity for closer collaboration.

Chemical Weapons

We are no less concerned with the threat of chemical weapons proliferation. We are troubled by inadequate security and safety measures currently being maintained on stocks of chemical agent. The Chemical Weapons (CW) Destruction program in Russia is demilitarizing two former CW production facilities, and enhancing security at two nerve agent storage facilities (Kizner and Shchuch'ye). We are interested in expanding our physical security program to other chemical agent storage sites – particularly those where weaponized agent is vulnerable to theft. To do this, however, we are going to need the cooperation of the Russian government, which must identify for us all of their stockpile locations, and permit the necessary access to do site surveys and to install security measures. We also are interested in assisting with continuing destruction of CW production facilities in Russia, and are urging full and complete declaration of these sites as required under the Chemical Weapons Convention (CWC). In terms of chemical agent destruction, the Administration is actively reviewing how best both Russia and the United States can meet their respective CWC-mandated destruction obligations.

In Uzbekistan, DoD is dismantling the former Soviet chemical weapons research, development, and testing facility at Nukus. In FY 2001, this project dismantled, decontaminated

and removed all pilot plant reactors, vessels and piping along with lab equipment, filtration systems and ducting.

The Future of the Cooperative Threat Reduction Program

In summary, DoD believes that the CTR program has played a crucial role in the U.S. government's proliferation prevention strategy. Belarus, Kazakhstan and Ukraine acceded to the Nuclear Nonproliferation Treaty in 1994 based on promises of United States assistance to rid their countries of their nuclear weapons. The DoD portion of the CTR program had rid these countries of nuclear weapons by 1996. In total, the DoD CTR program has helped deactivate 5,708 nuclear warheads and eliminate 774 ballistic missile launchers, 88 heavy bombers, 21 ballistic missile submarines and 701 ballistic missiles. It is less easy to quantify the contribution made in the chemical or biological fields, but we are making progress on putting better safeguards on existing stockpiles, and are beginning an important, collaborative research program with Russia that could yield important dividends to our bio-defense programs.

The Congress, the Executive Branch, and the American people can and should be proud of the Cooperative Threat Reduction program's accomplishments to date. Coming so quickly on the heels of the Cold War, the degree of U.S. cooperation with the republics of the former Soviet Union was unprecedented. In many ways it reflects the importance that the United States, Russia, and all of the newly independent states placed on reducing the new challenges to international security caused by the chaotic and sudden breakup of the Soviet Union.

Testimony of Ken Baker
Principal Assistant Deputy Administrator for
Defense Nuclear Nonproliferation
National Nuclear Security Administration
Committee on Governmental Affairs
Subcommittee on International Security,
Proliferation, and Federal Services
November 29, 2001

Introduction

Mr. Chairman, members of the Subcommittee, thank you for the opportunity to be here today to talk about the Department of Energy's nuclear non-proliferation programs.

You've asked me to address some very specific concerns and I look forward to doing just that. Before I do, however, I would like to make a few general comments. First, I want to thank this Committee and indeed, all members of the Senate for their strong interest in and support for our programs. Congress' demonstrated commitment to our mission has sent a strong signal that the mission is critical and enduring, and has helped us to plan effectively for our future.

Second, I want to note that in the aftermath of the September 11 attacks against our country, the work of the National Nuclear Security Administration, within the Department of Energy, has taken on a higher visibility and even greater importance. Almost a year ago, in its January, 2001 report, the bipartisan Baker-Cutler task force concluded that "the most urgent unmet national security threat to the United States today is the danger that weapons of mass destruction or weapons-usable material in Russia could be stolen and sold to terrorists or hostile nation states, and used against American citizens at home." We now know that this threat has become "a little more clear, a little more present, and much more dangerous and real." We have all seen reports that Osama Bin Laden has tried to acquire weapons of mass destruction, and that he has called the attainment of such weapons a "religious duty." That's the face of the threat confronting us today. Let me assure you, all of us in the National Nuclear Security Administration (NNSA) are committed to supporting with all our resources this country's efforts to eliminate that threat.

Third, I would like to discuss some steps we're already taking, consistent with the objectives of the proposed legislation. We share your twin objectives, as described in the draft legislation, of improving coordination of cooperation programs with the Former Soviet Union among U.S. agencies, and ensuring that U.S. public and private efforts are mutually supportive and not in conflict. These are worthwhile objectives and NNSA is committed to making sure they continue to be realized.

We too want to ensure that interagency coordination is as good as it can be, and to develop effective public-private partnerships. We have already been successful at the

latter objective, for example, in the context of our Initiatives for Proliferation Program, which I'll discuss momentarily.

Non-proliferation programs in the former Soviet Union

As we formulate and implement our nonproliferation programs with Russia, we understand the threat of unsecured nuclear material and technology, as well as the threat of adverse migration of weapons experts with knowledge of weapons of mass destruction. To address these concerns, our programs seek to reduce the potential for diversion of Russian nuclear materials, technologies, and expertise. We want to make sure, moreover, that downsizing of the Russian nuclear complex is irreversible. To accomplish these objectives, we work closely with our colleagues throughout Government, most specifically in the Departments of Defense and State, and in the intelligence community.

Even before September 11, reducing the potential for diversion of Russian nuclear warheads and materials has been a critical priority for the United States. It's essential that such warheads and materials be kept out of the hands of the so-called "rogue" states, as well as terrorist organizations. We're attacking the problem on many fronts:

-- Since 1993, we have been working with Russia to improve security at 95 nuclear storage sites, both civilian and military.

-- We've completed rapid security upgrades for thousands of Russian Navy warheads and improved the security for approximately 220 metric tons of Highly Enriched Uranium (HEU) and plutonium in Russia and other newly independent states—enough material for roughly 20,000 nuclear devices.

-- In a program we implement jointly with our colleagues in the Department of Defense, Russia and the United States exchange unclassified information to increase the safety and security of nuclear warheads and fissile material. Russia and the United States recently agreed to expand our cooperation in this area significantly.

We're also taking a number of steps to help train Russian experts to take responsibility for long-term security at sensitive sites, consolidating Russian materials into fewer buildings at fewer sites, and converting tons of materials to forms less attractive to terrorists. We're also finding ways to work with Russia to help it dispose of its own surplus materials.

-- We're also working with our counterparts to improve Russia's export control system, from the enforcement level with Customs, to the industry level with internal compliance training, and at the regulatory and legal level of the ministries involved.

Last year, Russia and the United States agreed to dispose of 68 Metric Tons (MT) of surplus weapon-grade plutonium - 34 MT in each country. At the same time, the Administration is examining alternatives to reduce the cost of this program and

make it more sustainable in Russia. We expect to have a final decision in about two months.

We're continuing to work with Russia to convert HEU from its military stockpile into a non-weapons-usable form of LEU for commercial reactor fuel. The 1993 U.S.-Russia HEU Purchase Agreement, which provides for Russian HEU to be downblended and used to fuel reactors here in the U.S., remains an extremely impressive nonproliferation achievement. More than 135 metric tons of HEU - enough to make roughly 5,400 nuclear devices – has been removed from Russia's military program.

We're also working with Russia to improve its ability to detect and interdict nuclear materials at border checkpoints and airports. Some borders are thousands of miles long and some are with countries whose policies keep us up late at night. We've got to shore up our efforts as quickly as possible.

Enhancing Irreversibility of Nuclear Downsizing – and Establishing Commercial Partnerships

As I mentioned, the U.S. wants to ensure the irreversibility of steps taken to downsize Russia's nuclear weapons complex. We're trying to reduce the risk that Russia's highly trained nuclear scientists and engineers, many of whom are underemployed, will be tempted to sell their nuclear expertise to the highest bidder. To do this we are taking steps to help Russia transform its closed nuclear cities by developing civilian employment opportunities for displaced workers. These objectives are pursued principally through our Russian Transition Assistance efforts, which encompass the Initiatives for Proliferation Prevention (IPP) program and the Nuclear Cities Initiative (NCI). However, it should be noted that these are not the only programs that provide employment opportunities for Russian nuclear experts; for example, our Lab-to-Lab program, which operates under the Warhead Safety and Security Exchange, has provided roughly 1,000 jobs for Russian nuclear experts as well.

IPP provides a useful example of how our programs work together with those of the State Department to achieve complementary objectives. State's programs help to secure jobs in the basic sciences and in exploring potential commercial applications of basic technologies. We have subsequently reviewed the list of the Department of State's International Science and Technology Center (ISTC) projects, and a few have been incorporated into IPP commercialization efforts after the basic research and development work was completed by ISTC. We work closely with State by pursuing programs that focus on the commercialization of Russian technologies, in partnership with U.S. industry.

Current programs, and in particular IPP, effectively demonstrate how the United States can also establish private/public partnerships in pursuing its nonproliferation objectives. With the technical support of our national laboratories, and in cooperation with the U.S. Industry Coalition (USIC) and its more than one hundred private commercial partners, IPP has developed partnerships with former weapons scientists and

technicians at over one hundred and sixty institutes in the Former Soviet Union (FSU). In short, IPP helps to commercialize technology for the benefit of U.S. industry and simultaneously provides gainful employment for Russian weapons experts. Many of those efforts are enjoying success, as measured by the tens of millions of dollars in private investment capital some of these IPP projects are generating, in addition to U.S. taxpayer funds.

While IPP had only $24.5 million to invest in projects during the past fiscal year, it also required its commercial partners at least to match IPP's investment in each project. This matching funds requirement assisted IPP and its Russian partners in the identification of technologies that offer the greatest commercial promise by requiring U.S. industry to make a financial commitment into the development of the technology at the project's initiation. During the past year, NNSA oversaw the successful commercialization of eight projects. We believe that the formula we have developed for converting former weapons scientists to commercial enterprises has proven to be very successful. Equity sources are already stepping forward to commit more than $50 million for the successful commercialization of approximately twenty additional projects for the next fiscal year.

There are many examples of success to highlight – I'll name just a few. Through this program, we have successfully commercialized several energy related technologies, including a borehole radar intended to enhance coal and oil recovery. Credit Swiss First Boston estimates that this bore hole technology could result in revenues exceeding $2 billion during the next ten years.

We've also seen the successful commercialization of a wheelchair seat cushion that can prevent pressure ulcers responsible for causing tens of thousands of deaths in the U.S. every year, costing Medicare more than $3 billion in annual treatment costs.

NCI's first major commercial effort facilitates the production of kidney dialysis equipment by a joint venture established between Fresenius Medical Care of Lexington, Massachusetts, and the Avangard nuclear weapons assembly plant, located in the closed city of Sarov, Russia.

A year ago, virtually no Westerners had ever been allowed to set foot in Avangard. Now they are part of a joint venture that will use resources, buildings and personnel that previously produced nuclear weapons to manufacture life-saving medical devices. This is truly beating swords into plowshares – almost in a literal sense.

I believe that the experience we've gained in implementing these programs provides many lessons to help realize the draft Bill's objective of ensuring effective public-private partnerships and improved coordination between existing programs.

Looking Ahead

The events of September 11 have drawn greater attention to the importance of our nonproliferation work. Much of what we do is already aimed at ensuring that dangerous materials and technology, as well as highly specialized expertise, do not fall into the hands of terrorists or rogue states. Thus, while we consider new avenues for our work, we are also accelerating ongoing efforts.

We are accelerating our MPC&A work already underway with Russia's Ministry of Atomic Affairs, and its Ministry of Defense. We are taking advantage of the recently signed DOE-MinAtom access agreement and focus on sites holding large quantities of fissile material. We are also accelerating our cooperation with MinAtom on protective force training for these and other sensitive facilities, and working with the Russian Navy to complete security upgrades for approximately 4,000 nuclear weapons. Concurrent with these and other efforts, we are expanding our Second Line of Defense program to increase by the end of this fiscal year the number of such sites operating on the Russian border from four to at least twelve.

We want to improve safety at numerous reactors in Russia that now operate at levels below minimum acceptable international standards for reactor safety. And it is vital to improve the physical security of nuclear power plants throughout the former Soviet Union.

We will continue to take steps that would prevent the adverse migration of WMD expertise; and we must look internationally as well. While today's hearing has focused on Russia, our programs address regional threats worldwide and these are of no less importance, especially in the Middle East and South Asia.

I want, finally, to touch on the need to give greater support to our critical research and development efforts. We're already making major, significant contributions, as this country thinks through its emerging requirements. We are working closely with other government agencies, including the Center for Disease Control and the Federal Bureau of Investigation, on biological and chemical agent detection. We're also working with the FBI, Customs, Coast Guard, and the Navy on nuclear smuggling and terrorism, in addition to assisting local responders to understand and respond to the terrorist threat.

In short, we are looking ahead to how we can enhance U.S. national security through the development of technologies that help to detect nuclear, chemical, and biological proliferation and terrorism and to monitor nuclear explosions.

Would establishing an interagency committee make these programs and efforts more effective?

We believe that the draft legislation is unnecessary. We do take seriously, and share, its objectives, and the Executive Branch has taken steps to meet them.

With regard to improving interagency coordination, there is already a structure in place. The NSC's Proliferation Strategy Policy Coordinating Committee (PCC), chaired

by Dr. Robert Joseph, Special Assistant to the President, provides a vehicle for interagency cooperation as it coordinates and provides oversight over nonproliferation assistance programs to Russia and the other states of the former Soviet Union. The Committee functions at the Assistant Secretary level, thus ensuring that confirmed officers are involved in the coordination process. This is a useful mechanism for coordination, the benefits of which are already being felt.

As you may know, the Administration is completing a comprehensive review of all U.S. non-proliferation programs in Russia. I applaud this review, which I see as a viable roadmap to guide program conception and implementation over the next few years.

But it's also my view that one way to improve communication and coordination is to make sure you have people in place that are committed to doing a better job at communicating and coordinating. The NNSA is committed to that and I have no reason to think that my colleagues at other agencies believe differently.

With regard to assuring effective private/public partnerships, I've discussed our approach at length. Suffice it to say that we believe that the Russian Transition Assistance model provides a useful approach to establishing such relationships.

Conclusion

Mr. Chairman, thank you for the opportunity to appear today. I look forward to taking any questions you may have.

Testimony of
Matthew S. Borman
Deputy Assistant Secretary of Commerce
for Export Administration
Before the
Subcommittee on International Security, Proliferation,
and Federal Services
Committee on Governmental Affairs
United States Senate
November 29, 2001

Chairman Akaka and Members of the Subcommittee:

Thank you for the opportunity to testify at this hearing. For several years, the Department of Commerce (Commerce) has played a significant role in the U.S. government' s international nonproliferation programs in the independent states of the former Soviet Union (FSU) and elsewhere. My testimony will give an overview of Commerce's role and then address the specific questions in Chairman Akaka's invitation letter.

Overview of the Commerce's Role in the U.S. Government's Nonproliferation Programs in the FSU

Since the end of the Soviet Union, Commerce has participated in the U.S. government's nonproliferation programs in the FSU countries. Commerce's role in these programs has been to work closely with the Departments of State, Defense, and Energy and the Customs Service of the Department of the Treasury to design and implement programs to enhance, and in some cases establish, export control systems in these states. The Bureau of Export Administration (BXA) and the Office of Chief Counsel for Export Administration are the units responsible for Commerce's work in this export control cooperation program. Commerce strongly believes that bilateral and multilateral export control cooperation is an important part of the U.S. government's effort to stem the proliferation of weapons of mass destruction and conventional arms. Experience has shown that export controls are most effective when producing, consuming and transit countries all cooperate and maintain similar export controls.

The overarching objective of the U.S. export control cooperation program is to assist countries in: 1) controlling the export, reexport, and transit of all items on the lists of the four multilateral export control regimes (the Wassenaar Arrangement, the Nuclear Suppliers Group, the Australia Group, and the Missile Technology Control Regime); 2) implementing catch-all controls to ensure less significant items do not support weapons of mass destruction programs; and 3) controlling activities, such as brokering and financing, that would contribute to the proliferation of weapons of mass destruction and conventional arms. This is the goal not only for the FSU countries, but for all countries with which the United States has export control cooperation programs, including the Central European and Baltic countries, transit countries and others.

Commerce's export control cooperation efforts consist primarily of bilateral technical

workshops on specific export control issues, multilateral conferences, and seminars targeted specifically at key exporting companies in certain FSU countries. The technical workshops are designed to assist countries in developing and enhancing the elements essential for an effective export control system. These workshops cover legal authorities, control lists, licensing procedures, enforcement, and industry outreach. The multilateral conferences are designed to encourage neighboring countries to cooperate with each other on export controls. The seminars are targeted at foreign exporting companies, train them to establish internal control programs, and provide them a software tool to assist them, so the companies can comply with their own government's export control requirements. Over the past several years, Commerce has conducted over 200 workshops and seminars with personnel of virtually all of the FSU countries.

Commerce's efforts have made a significant contribution to the major strides taken by a number of the FSU and other countries in establishing effective national export control systems. Notable accomplishments in the FSU countries include:

- Five of the 12 FSU countries have enacted comprehensive export control laws and many of the remaining countries are likely to do so within the next year.

- Most of the countries of Central Asia and the Caucasus are working on a regional transit agreement to facilitate legitimate trade in the region, but enhance the ability to control items destined for use in weapons of mass destruction programs.

- In 2000, Kazakhstan became the first FSU country to promulgate a national control list using the U.S. and European Union structure and nomenclature. Kazakhstan's control list includes all the items controlled by the Nuclear Suppliers Group, the Australia Group, the Wassenaar Arrangement, and the Missile Technology Control Regime. Use of this control list will facilitate trade and increase the effectiveness of controls. Most of the Central Asian and Caucasus countries have announced their intention to adopt this control list.

- Commerce enforcement officials have received leads on possible violations of U.S. export control laws from contacts developed through the export control cooperation program.

- To date, over 900 defense enterprises and other exporters in Russia and Ukraine have participated in training and have received software to enable them to establish their own internal control programs. Internal control programs help ensure that these enterprises comply with their countries' export control systems.

- Software to train foreign export control licensing officers has been developed and distributed to nine FSU countries.

In addition, BXA's enforcement arm now has an export control attache posted in the U.S. Embassy in Moscow. This attache works cooperatively with Russian officials in implementing enforcement procedures designed to halt the diversion of U.S. and Russian strategic items to countries of concern. The attache is also responsible for confirming the reliability of Russian end-users for products exported from the United States for internal Russian consumption.

Thus, the export control cooperation program plays an important role in the U.S. government's overall nonproliferation efforts.

Prepared Statement by Elisa D. Harris
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Before the Senate Governmental Affairs Committee
Subcommittee on International Security, Proliferation and Federal Services
February 12, 2002

I would like to thank the Subcommittee for inviting me to testify this morning about one of the most important security threats to the United States in the post-Cold War period – the proliferation of chemical and biological weapons to national and sub-national i.e., terrorists, groups. In my testimony, I will address three issues: the nature of the chemical and biological weapons (CBW) threat to the United States; the impact of the Biological and Toxin Weapons Convention (BWC) and the Chemical Weapons Convention (CWC) on this threat; and measures for enhancing the ability of these multilateral treaties to prevent the acquisition of chemical and biological weapons by both national and sub-national groups.

The Chemical and Biological Weapons Proliferation Threat

Prior to September 11 and the subsequent anthrax attacks, the threat of national and terrorist acquisition of chemical and biological weapons often were seen as separate problems, requiring separate solutions. Now, however, we must recognize, that these two proliferation problems are closely linked, in that assistance from national programs is likely to be critical to terrorist efforts to acquire and use chemical or biological weapons successfully.

According to U.S. government officials, about a dozen countries are believed to have chemical weapons programs and at least thirteen are said to be pursuing biological weapons. These national chemical and biological weapons programs pose a *direct threat* to U.S. military forces and to our friends and allies in the two regions where most of this proliferation has occurred – Northeast Asia and the Middle East. They also pose an *indirect threat*, because of their potential to serve as a source of chemical and biological weapons expertise or materials to other national or terrorist programs.

In recent days, both President Bush and Secretary of Defense Rumsfeld have called attention to the nexus between proliferation and terrorism, warning that countries that seek weapons of mass destruction and support international terrorism may well assist terrorist networks in obtaining chemical, biological or nuclear weapons. This emphasis is on the mark. And it is borne out by the recent anthrax attacks here in the U.S., in which 5 people were killed and a dozen injured following exposure to highly virulent, weapons-grade anthrax. Although the perpetrator of these attacks has not yet been apprehended, the anthrax itself almost certainly originated in the U.S. biological defense program.

As the GAO concluded in 1999, without assistance from a national program, terrorists would have to overcome significant technical and operational hurdles to successfully

weaponize and deliver chemical or biological weapons, especially on a large scale. This was demonstrated by the Aum Shinrikyo's efforts to use chemical and biological weapons in the early 1990s. Despite $1 billion in assets and access to university-trained scientists, the Aum's attempt at mass terror had only limited success — only 12 people were killed and 1,000 injured in April 1995 when the doomsday cult released sarin gas on the Tokyo subway at the height of the morning rush hour. The Aum's earlier attempts to use biological agents, including anthrax and botulinum toxin, failed to produce even a single casualty in nine separate attacks.

Absent assistance from a national chemical or biological weapons program, most terrorists are likely to continue to rely upon lower-tech approaches, involving industrial chemicals or common poisons. According to a CIA report to Congress at the end of January: "terrorist groups are most interested in chemicals such as cyanide salts to contaminate food and water supplies or to assassinate individuals. Terrorist groups also have expressed interest in many other toxic industrial chemicals...and traditional chemical agents, including chlorine and phosgene," which are widely used in industry. There is less interest in biological materials, the report said, except for "small-scale poisonings or assassinations." The most well known example of this low-tech approach to CBW terrorism occurred in 1984, when the Rajneeshee cult contaminated salad bars in Oregon with salmonella in an attempt to influence the outcome of a local election. No one died, although 750 people became ill.

One cannot, of course, rule out the possibility that terrorists will acquire chemical or biological weapons on their own. CIA Director Tenet warned last week that al-Qa'ida was working to acquire some of the most dangerous chemical agents and toxins. He also stated that documents recovered from al-Qa'ida facilities in Afghanistan show that Usama bin Ladin was pursuing a sophisticated biological weapons research program. Without further information, it is impossible to know how advanced these efforts really were. To date, at least the three most significant terrorist incidents involving chemical or biological weapons – the recent anthrax attacks, the Aum Shinrikyo CBW attacks, and the Rajneeshee salmonella attack – all suggest that assistance from national programs is likely to be crucial to terrorists efforts to acquire and use chemical or biological weapons.

The Impact of Arms Control Treaties

Given the dangers posed by national chemical and biological weapons programs, both as a threat in and of themselves and as a source of expertise and equipment for terrorist seeking to acquire such weapons, it is worth examining the impact of the Biological and Toxin Weapons Convention and the Chemical Weapons Convention on these national programs. Until now, the record has been mixed.

The Biological and Toxin Weapons Convention: When the BWC was concluded in 1972, it was widely viewed as a milestone in the history of arms control, because it was the first international treaty to outlaw an entire category of weapons of mass destruction. However, the Convention contained no provisions for enforcing compliance with its obligations. At the time, little was known about the biological weapons programs of

other countries, including the Soviet Union, which was characterized in a November 1969 report to the National Security Council as having an interest in various potential biological warfare agents and "all the necessary means for developing an offensive capability."

Based on defector and other information, we now know that the Soviet Union breached the BWC from the outset, launching a massive effort in the early 1970s to supplement its existing work on biological weapons at military facilities with R&D at civilian facilities under the management of an organization known as Biopreparat. Three other countries — North Korea, Egypt, and probably Israel — also had biological weapons programs at the time the BWC was concluded. Iraq began its biological weapons program in the mid-1970s and South Africa in 1981. By the late 1980s, China, Iran, Syria, Libya, and Taiwan had been publicly identified by the U.S. as also having biological weapons programs. Except for Israel, all were either signatories or Parties to the BWC.

Because of concerns about noncompliance, and the failure of politically-binding information exchanges to reverse the deterioration in confidence in the Convention, BWC Parties decided in 1994 to create an Ad Hoc Group to develop new measures, including a legally binding protocol, to strengthen the Convention. In April 2001, following six years of multilateral negotiations, a draft protocol was put forward by the Chairman of the Ad Hoc Group. This text contained a number of critical elements:

- mandatory declarations of facilities and activities that could most easily be misused to develop biological weapons;
- consultation procedures to clarify questions that might arise from these declarations, including the possibility of on-site visits;
- randomly selected transparency visits to promote accurate declarations; and,
- challenge investigations to pursue concerns that a country is developing, producing or using biological weapons.

Throughout the negotiations, the Clinton Administration recognized that a BWC protocol would not solve the biological weapons problem. It would, however, establish legally binding procedures for pursuing evidence that others were developing or producing biological weapons, something we lack today. It would also provide new data that would enhance the ability of the U.S. to detect and respond to foreign biological weapons programs. Drawing from the procedures developed to protect sensitive information under the Chemical Weapons Convention, the Administration worked to ensure that the protocol could achieve these objectives without jeopardizing U.S. military or commercial interests.

The Bush Administration, however, had a very different position. In July, the Administration announced its opposition not only to the compromise text but also to any subsequent protocol effort, arguing that such an approach was both too weak and too strong – too weak to catch cheaters; too strong to avoid putting at risk U.S. biological defense or trade secrets. At the five-year review conference for the BWC in November, the U.S. emphasized the importance of developing more effective measures to deal with

noncompliance, but the proposals it put forward focused largely on voluntary, national efforts. On the last day of the conference, the U.S. stunned and angered its allies by trying to force through a decision to disband the Ad Hoc Group and terminate its mandate. Desperate to avoid a complete collapse of this meeting aimed at bolstering the BWC, Parties agreed to suspend work until November 2002, having done nothing about the noncompliance problem.

The Chemical Weapons Convention: Like the BWC, the CWC was considered another landmark treaty when it was concluded in 1993, because it required not only the elimination of all stocks of chemical weapons but also international monitoring of both government and commercial facilities to verify that Parties were complying with their obligations. The CWC has been in force for less than five years, and is thus still a very young treaty regime. Nevertheless, progress has been made under the treaty toward reducing the threat from national chemical weapons programs.

During the CWC ratification debate in the U.S. in 1997, U.S. officials stated that about two dozen countries were trying to acquire chemical weapons. In January 2001, the Defense Department reported that about a dozen countries were pursuing chemical weapons programs. Ten of the countries previously identified by the U.S. as proliferation concerns -- Russia, China, Iran, Libya, Ethiopia, South Korea, India, Pakistan, Sudan and Vietnam -- have become Parties to the CWC. Of these, two countries that had not acknowledged possessing chemical weapons, South Korea and India, have now declared chemical weapons stockpiles. Eleven countries, including Russia, China, Iran, South Korea, and India, have also declared current or past chemical weapons production facilities.

In terms of actual destruction activity, some 6,400 metric tons of chemical agent have been eliminated under international verification since the CWC entered into force. All 61 declared chemical weapons production facilities have also been inactivated, 36 of which either have been destroyed or converted to permitted peaceful activities. Finally, over 1,100 inspections have been undertaken at about 500 sites in 49 countries of both military and industrial facilities covered by the Convention.

Numbers, of course, only tell part of the story. The CWC also faces important challenges. First, several key countries, especially in Northeast Asia and the Middle East, remain outside the treaty. Of these, North Korea, Iraq, Syria, Egypt, and Israel are of particular concern, given the likelihood that they retain chemical weapons programs. Second, questions remain about whether some Parties have made incomplete declarations or are continuing offensive activities. Russia, Iran, China, India, Pakistan and Sudan have been mentioned specifically by the U.S. as having not divulged the full extent of their chemical weapons programs. Third, although all four declared possessors are moving forward with their destruction efforts, both Russia and the United States have informed the CWC treaty organization -- the OPCW -- that they will be unable to meet the April 2007 deadline for destroying their chemical weapons stockpiles. Finally, the OPCW is in the second year of a financial crisis, resulting in serious cutbacks in verification activities. During 2001, only 67% of the planned inspections were carried out; further cuts in

inspections are expected in 2002. All of these issues – universality, noncompliance, CW destruction, and the budget -- must be addressed.

Policy Recommendations

Clearly, both the BWC and the CWC have the potential to make a much greater contribution to international efforts to prevent the proliferation of chemical and biological weapons to national and sub-national groups. Steps can and should be taken to enhance the effectiveness of and reinforce the prohibitions in each of these treaties.

With respect to the BWC, we should:

Resume multilateral discussions on measures to strengthen the BWC: The Bush Administration's determination to kill both the BWC Protocol and the Ad Hoc Group last December blocked agreement on a process whereby the Administration's own BWC proposals could be considered by the international community. The U.S. should abandon its opposition to multilateral discussions and agree at the November 2002 meeting on a process that will allow both the U.S. and other proposals for strengthening the BWC to be explored.

Expand the UN Secretary General's authority to investigate illicit BW activity: In 1982 and again in 1987, the UN General Assembly gave the Secretary General the authority to investigate allegations that chemical or biological weapons had been used. Pending international agreement on legally-binding enforcement measures for the BWC, the U.S. should support efforts to expand the Secretary General's authority to include allegations of the development, production or possession of biological weapons.

Strengthen controls over dangerous pathogens: The FBI's investigation of the anthrax attacks has revealed serious gaps in the controls over pathogens that could be used for biological weapons purposes. The U.S. should take the lead in securing tighter international controls on culture collections and other repositories of biological materials. We should also work with other countries to strengthen oversight of laboratories to prevent deliberate or inadvertent misapplications of biotechnology for destructive purposes.

Enhance oversight of the U.S. biological defense program: Revelations that the U.S. has produced weapons-grade anthrax and replicated a Soviet-era biological bomblet as part of its biological defense program have raised questions both here and abroad about the nature and scope of U.S. activities in this area. Until now, there has been no comprehensive review of these secret U.S biological defense activities, individually or in combination. The U.S. Congress should hold oversight hearings on the biological defense program to ensure that its scientific, legal and foreign policy impact are consistent with U.S. nonproliferation interests.

With respect to the CWC, we should:

Make adherence to the CWC an explicit foreign policy goal: Libya's recent decision to join the CWC demonstrates that even in a complicated region such as the Middle East, there are opportunities for expanding membership in the treaty. It is not unimaginable that North Korea might agree to abandon its chemical weapons program and join the CWC as part of a broader security arrangement on the Korean peninsula. The U.S. should ensure that CWC adherence is a prominent issue in its foreign policy toward the remaining holdout countries.

Use challenge inspections to pursue noncompliance concerns: In the initial years after entry into force of the CWC, the U.S. used the treaty's consultation provisions to try to resolve questions and concerns about a number of other Parties' declarations. Last month, Under Secretary of State Bolton described challenge inspections as a "flexible and indispensable tool" that can be instrumental in achieving the treaty's goals. The U.S. should be prepared to use challenge inspections to address serious compliance concerns, especially in countries where consultations were unsuccessful or not appropriate.

Devote the resources necessary to meet the treaty's destruction deadlines: By the end of last year, both Russia and the U.S. had submitted documentation to the OPCW concerning their inability to meet the April 2007 deadline for destroying their chemical weapons. The U.S. should ensure that its technology and funding decisions allow it to complete destruction operations safely, and in time to meet the 20012 CWC extension deadline. The U.S. should also take the lead in creating an international consortium to assist Russia in meeting its CWC destruction obligations.

Rectify the OPCW's budget problems: Partly because of the zero growth budget imposed on the OPCW over the past five years, the OPCW has begun another year millions of dollars short of what is required to carry out its implementation responsibilities. The U.S. should work with the OPCW and other Parties to ensure that there are sufficient funds to carry out all planned verification activities.

Finally, we can further strengthen the BWC and the CWC by making it an international crime for individuals to develop, possess or use chemical or biological weapons. Both treaties impose legally-binding obligations on governments, but not on individuals, not to engage in prohibited activities. The U.S. should support the negotiation of a treaty like that proposed by the Harvard-Sussex Program that would make it a crime under international law for individuals to acquire or use chemical or biological weapons or to knowingly assist others in doing so.

This concludes my prepared statement.

Prepared Statement
Before the Senate Committee on Governmental Affairs
Subcommittee on International Security, Proliferation, and Federal Services
12 February 2002

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In the aftermath of last fall's multiple terrorist attacks, much focus has been placed on taking the most immediate steps needed to protect this nation's safety and security in an era where terrorists seek to inflict widespread and indiscriminate harm on US citizens and interests. Emphasis has rightly been placed on strengthening intelligence capabilities so that future terrorist plots can be thwarted as well as on better training and equipping of the nation's emergency responders to contend with all manner of terrorist-caused calamities. Initiatives to stiffen airline and border security have also come to the fore in the past few months, among other proposals and programs.

Adjusting policies and programs to address the threat of terrorism is not easy. I would like to thank this committee for convening a hearing that looks beyond the obvious, a hearing that examines the utility of international treaties in helping to assure this nation's well being. Some tend to dismiss treaties out of habit or lack of understanding of the role they can and should play in an overall strategy for reducing security threats to this country. Critics deride accords that ban categories of weapons as weak tools that governments can break with impunity. Yet, arms control critics would hardly advocate that US laws against murder be scrapped, even if those laws are broken with disturbing frequency. Rather, they would call for better enforcement of those laws. As lawmakers, you can appreciate that even a good law is only as effective as its enforcement. Member governments are the custodians of international arms control treaties. The United States, arguably the world's most powerful nation and always self-described as a champion of nonproliferation, has a special responsibility to lead efforts to enforce these treaties.

One of the frequent refrains of the past few months has been how easy it is for terrorists to acquire and use chemical and biological weapons. This misleading claim has led many to believe that mass casualty unconventional terrorist attacks are imminent, if not inevitable. While it is true that technical advances have made some aspects of chemical and biological weapons proliferation easier, there are many technical obstacles to the acquisition of a mass casualty capability with these types of weapons. A case in point is Aum Shinrikyo, the Japanese cult that released the nerve agent sarin in the Tokyo subway system on 20 March 1995. Aum Shinrikyo's sizeable corps of scientists figured out how to make small quantities of several chemical agents, as one might expect given how long both the formulas and the ingredients for such agents have been readily available. However, what stymied Aum Shinrikyo was the cult's inability to "scale up" its production of agent from a small quantity to the large amounts needed to inflict massive casualties. Aum's chemical weaponeers were unable to do this despite the

advantages of a $10 million state-of-the-art production facility, considerable scientific expertise, and years to work out the kinks in their program. As for Aum's biowarfare program, the cult's scientists never managed to get their hands on virulent biowarfare strains, and their efforts to disperse their concoctions were complete and total flops.

Perhaps for this reason, Aum Shinrikyo turned to the former Soviet chemical and biological institutes for assistance. Fortunately, the former Soviet weaponeers declined to help the cult with its chemical and biological weapons programs. Given Aum Shinrikyo's considerable resources, it stands to reason that sub-national actors will be seriously challenged in any attempt to build from scratch a mass casualty unconventional weapons capability. This statement is not intended as a guarantee that terrorists cannot overcome the technical hurdles involved. Aum Shinrikyo, the individual(s) behind the anthrax letters sent to Capitol Hill and several media outlets, and other groups have indeed made noteworthy progress. Rather, my point is that terrorists are likely to encounter technical hurdles that trip them up if their intent is to cause mass casualties with these weapons. Therefore, terrorists could well seek out help from governments, which have such vast resources they can become truly proficient in chemical and biological weaponry. Accordingly, one key to keeping unconventional weapons out of the hands of terrorists is to tackle the proliferation problem at the nation-state level.

The committee has posed several questions that I will address in the passages that follow. First, I will discuss the differences between chemical and biological weapons proliferation and why the former category of weapons is somewhat easier to monitor than the latter. Then, I will discuss the impact that the Chemical Weapons Convention (CWC) and the Biological and Toxin Weapons Convention (BWC) can have on governments and sub-national actors. I will close my testimony with thoughts on the verification and enforcement of treaties and on the steps that the US government should take to enhance the utility of international treaties in the war against terrorism.

Distinguishing Features of Chemical and Biological Weapons Proliferation

Although chemical and biological weapons are often lumped into one category, they are distinct in several important ways. Chemical agents consist of man-made substances, namely the component chemicals known as precursors. The penultimate precursors for poison gas are often chemicals that are processed many steps beyond the basic chemical weapons building blocks of phosphorous, sulfur, and fluorine. Many precursor chemicals can have widespread and legitimate commercial uses. For example, thiodiglycol, a precursor for mustard gas, is used to make ballpoint pen ink. The quantities of precursor chemicals poured into the reactor equate roughly to the amount of agent that will result. In other words, three tons of precursor "X" mixed with one ton of precursor "Z" and one ton of precursor "Y" will make five tons of poison gas.

In contrast, biological agents originate in nature. Anthrax, for example, is a disease of herbivores including cattle, sheep, and goats. Many strains of anthrax exist, as is the case for *Clostridium botulinum*, the causative agent of botulinum toxin. To make the most effective biowarfare agent, one must know which strains are most deadly to man or to the crop or type of livestock that is the intended target. In the case of *Clostridium botulinum*, there are over 675 variants. Biowarfare agents are made by injecting a virulent seed

culture into the appropriate growth media. With the appropriate growth media (e.g., peptone, glucose, casein, augmented animal feeds), the seed culture cells replicate into a much larger amount of the biowarfare agent. Depending upon whether the agent is to be dispersed in a wet slurry or dry formulation, the quantity of resulting agent will vary.

These fundamental differences between the way that chemical and biological agents are produced explain why the proliferation of biological agents is more difficult to track than the proliferation of chemical weapons. With considerable effort, the quantities of precursor chemicals being produced and traded can be monitored and inspections can ascertain whether facilities are using them to make commercial products. The production and sale of growth media and whether a particular pharmaceutical or biotechnology company is purchasing growth media appropriate for its product line(s) can also be watched. The monumental stumbling block in trying to hinder the spread of biological weapons is that an aspiring proliferator can acquire the seeds of destruction from a vast array of natural sources. Moreover, it would be extremely difficult, it not impossible, to catch smuggling of lethal seed cultures from country to country or from a government weapons program to terrorist groups. Lethal seed cultures can be found in an offensive bioweapons program, in biowarfare defense facilities, and in some five hundred registered culture collections in fifty-nine nations that serve as huge repositories of strains to support legitimate scientific research. Only a tiny drop of a virulent seed culture is needed to jumpstart the fermentation of a biowarfare agent.

Of course, equipment is needed to produce chemical and biological weapons. Since the reactors and fermenters required for the task are employed to make everything from textile dyes, disinfectants, and toiletries to medications, yogurt, and beer, a proliferator can find these items for sale in the marketplace. Therefore, inspectors trying to identify illegal weapons production would have to look for telltale signs that a supposedly commercial plant was making chemical or biological agents on the sly. For example, use of Hastelloy reactors and glass-lined pipes would automatically catch the attention of chemical weapons inspectors if the plant were not making pesticides or another type of product that required corrosion-resistant equipment. An inspector looking to distinguish a genuine pharmaceutical plant from a covert biowarfare site might be tipped off by inappropriate levels of biosafety, an unusual set-up of production equipment or waste treatment facilities, or lack of post-production procedures suited for the product(s) purportedly being made at the site, among other factors.

Manufacturers of reactors, fermenters, and other equipment needed for weapons programs (e.g., filling equipment, large capacity freeze dryers and aerosol inhalation chambers) can be identified. For the purposes of hindering proliferation, sales of such equipment tracked. However, these efforts would not be definitive since equipment can be resold or manufactured in a hidden plant with the appropriate machine tools and craftsmen. Nonetheless, the Australia Group—an export control cooperative among the countries home to the major equipment, chemical, and growth media manufacturers—includes on its control lists a lengthy roster of items that could be used in chemical or biological weapons production.

The Australia Group had its origins in the mid-1980s, when supplier nations jointly recognized the need to harmonize export controls and share intelligence data on proliferation activities in order to cut off the supply of precursor chemicals to Iraq and Iran. Iraq not only used poison gas against Iranian troops during several battles in the Iran-Iraq War, Iraq also gassed its own Kurdish civilians in an infamous attack on the town of Halabja in mid-March 1988. Over the years, the Australia Group, which currently has 34 member states, expanded its control lists to include fifty-four precursor chemicals and numerous chemical and biological equipment items. On its core and warning lists, the Australia Group controls over one hundred human, plant, and animal viruses, bacteria, rickettsiae, toxins, fungi, and genetically modified microorganisms. Outside of classified reports, there is no way to know for certain how effective the Australia Group's export controls have been in frustrating the efforts of governments to acquire a chemical or a biological warfare capability. Arguably, any mechanism that makes the proliferation of weapons of mass destruction more expensive or cumbersome is well worthwhile.

Threat Reduction Via International Treaties

Of course, arms control treaties such as the BWC and the CWC apply first and foremost to nation states. According to the 2001 Nuclear Posture Review, some sixteen countries were thought to be harboring offensive chemical weapons programs and thirteen believed to possess biological weapons capabilities. For the foreseeable future, such government-run weapons programs are likely to present the most serious unconventional weapons threats to this nation. If the complete panoply of tools that these treaties embody (e.g., inspection, multilateral export controls) is utilized fully, effectively, and with determination, nations can be compelled, one by one, to abandon these weapons programs.

Moreover, it is important for the US government to push for full and effective implementation of these treaties because they can apply to sub-national actor security threats in several ways. First, the fewer governments that maintain chemical or biological weapons programs, the fewer places terrorists will have to turn for technical assistance in the form of weapons materials, cookbooks, or human expertise. Second, the CWC requires in Article VII that participating states pass legislation outlawing offensive chemical weapons activities, an approach that Article IV of the BWC permits but does not require. The intent of these domestic laws is to hold individuals, not just governments, accountable for a variety of activities associated with offensive weapons production and use. The CWC approaches its fifth anniversary with 145 ratified members, all now under treaty obligation to have enacted penal laws to prosecute corporations or citizens who break the treaty's prohibitions.

A third important way that arms control treaties can block weapons proliferation is via the incorporation of export controls on proliferation-risk items. The BWC, negotiated in 1972, did not embrace such an approach. Rather, it was the CWC, completed in 1992, that trail-blazed the automatic imposition of export controls. Three years after the CWC was activated in late April 1997, participating states were barred from trading in fourteen so-called Schedule 2 chemicals with countries that had not joined the treaty. Schedule 2

chemicals are immediate weapons precursors that are not as widely used in commercial industry as the chemicals listed on Schedule 3. This fall, at the CWC Conference of States Parties, the CWC's members will weigh the application of automatic trade restrictions on Schedule 3 chemicals. Ideally, the CWC's member states will decide to impose full Schedule 3 export controls on CWC holdout states. US chemical industry experts have told me that should states remain outside a regime that included export controls on Schedule 3 chemicals, their chemical industries, which depend upon international trade, would suffer tremendous hardship. The intention of the CWC's gradually tightening export controls on precursors is to choke government-level weapons programs, thereby diminishing an avenue whereby terrorists might acquire the materials and/or expertise to make poison gas. This approach is quite sound since nations that do join must pass the aforementioned penal legislation and become subject to international inspections.

A final comment on the utility of export controls concerns how the CWC has amplified the concept of multilateral chemical precursor export controls first introduced by the Australia Group. The fifty-four control items on the Australia Group list are individual chemicals, including twenty chemicals that are not on the CWC's lists of chemicals to be monitored. At first glance, the CWC would appear to be a less aggressive export control mechanism, since its three Schedules contain only forty-three items. However, the CWC actually monitors *hundreds* of chemicals because some of the items on its control lists are families of chemicals. Moreover, at present, almost five times the number of Australia Group countries are enforcing export controls via their CWC membership. To make the CWC even more effective at starving illicit chemical weapons programs, this fall the US government should advocate expansion of the treaty's export controls to include Schedule 3 chemicals.

Improving the Track Record of CWC Verification and Enforcement

The two treaties in question—the CWC and the BWC—are in very divergent circumstances when it comes to verification and enforcement. The BWC was negotiated in the early 1970s, when on-site arms control inspections were just a pipe dream. Instead of establishing a permanent inspector corps, the BWC's architects relied on national technical means of verification and provided for the United Nations (UN) Security Council to investigate allegations of cheating. The shortcomings of this approach were two-fold. First, remote reconnaissance methods were ill suited to detect the subtle signs of a covert bioweapons program, which can be masked amidst pharmaceutical and biotechnology facilities. Second, the permanent five members of the Security Council each carry a veto vote, which meant that it would be difficult to get a challenge inspection off the ground. Not surprisingly, this weak verification set-up emboldened cheaters. No BWC inspectors were ever mustered to gather confirmatory evidence of the USSR's biowarfare program. The former Soviet Union redefined the horizons of biological weaponry by putting over 65,000 scientists and technicians to work weaponizing over fifty biological agents, including smallpox, plague, anthrax, and the hemorrhagic fever Marburg. Inspections conducted by the UN Special Commission on Iraq in the aftermath of the Gulf War also revealed that Iraq, a BWC signatory, violated the treaty.

In 1996, the international community inaugurated negotiations to attempt to strengthen the BWC by adding a monitoring protocol. The Bush administration announced last year that it would reject the draft BWC protocol that those negotiations produced, a decision with which I agree. My position on this matter is based upon technical advice from thirty-five experts from the US pharmaceutical and biotechnology industries, research institutes, universities, defense contractors, and veterans of the two US trial BWC inspections. The Stimson Center convened these technical specialists, each a top expert in their respective discipline, to examine the technical feasibility of monitoring the BWC. Their views are presented fully in the May 2001 Stimson Center report entitled *House of Cards: The Pivotal Importance of a Technically Sound BWC Monitoring Protocol.* Briefly, the technical experts believed that the draft BWC protocol contained most of the appropriate monitoring tools, such as visual observation, documentation review, interviews, and sampling and analysis. The experts from industry and academia proposed monitoring strategies that had much in common with what is known in arms control circles as "managed access" inspections, wherein inspectors and host officials work out compromises on the spot to satisfy inspection and host site needs.

On several important inspection parameters, the academic and industry experts differed with the draft BWC protocol's provisions. For example, the industry and academic experts believed that inspections must have sufficient manpower and time to be able to unravel the complexities that would undoubtedly be encountered in the field. The protocol's non-challenge inspection terms would deploy four inspectors for two days. Dr. Steven J. Projan, Director of Antibacterial Research at Wyeth-Ayerst Research, summed up his assessment of the draft BWC protocol's terms with the following words: "Four inspectors in two days couldn't even get through to all of the bathrooms at my facility." All of the experts were unanimous in their view that inspection terms must provide ways to differentiate between the good guys and the bad guys, not leave question marks hanging over all facilities. In the view of the industry and academic experts, such inspection terms were possible, but significant revisions of some of the draft protocol's technical nuts and bolts were in order.

All of the experts that participated in the Stimson Center's brainstorming series advocated additional technical research and field trials. Such BWC monitoring field trials, which are required by public law 106-113, could stimulate technical improvements in a draft protocol and augment political support from governments and the private sector. The Pharmaceutical Research and Manufacturers of America long ago offered expert technical assistance, but there have been no industry field trials of prospective monitoring procedures. Given the importance of crafting sound monitoring procedures for this treaty, it is incumbent upon both US industry and the US government to mount good faith efforts to test fully the assorted permutations of BWC monitoring technologies and strategies. Accordingly, Congress should insist that the Bush administration fulfill the requirements of public law 106-113 and conduct monitoring trials at various sites.

In November 2001, the Bush administration proposed several alternatives to the draft BWC protocol. In all candor, some of the administration's initiatives are puzzling. For instance, the Bush administration proposed putting "investigations" or challenge inspections of suspicious disease outbreaks and/or alleged biowarfare incidents in the

hands of the UN Secretary General. This proposal suffers from the same handicap as the formulation currently in place, namely the possible politicization of a challenge inspection. To have a chance of being effective, challenge inspections must be technical, evidence collection exercises, structured to be as automatic and as distanced as possible from politics. The approach taken by the CWC, lodging inspections with an independent inspector corps, would probably garner more success.

Another baffling Bush administration proposal would have non-challenge "visits," to use the vernacular of BWC protocol negotiations, conducted on a voluntary basis. This concept of voluntary visits, a carryover from the Clinton administration's negotiating strategy, is bewildering. One has to wonder why a BWC violator would ask inspectors into its midst unless it had taken extreme care to clean up any and all evidence of cheating prior to issuing the invitation. Moreover, one could ask what purpose such voluntary visits would serve elsewhere, save to be a nuisance to host facilities. If trial inspections show that meaningful monitoring results can be achieved and the monitoring costs are bearable, then regular or random non-challenge inspections at facilities that have dual-purpose capabilities would be far preferable to this cock-eyed approach.

In addition, the US government suggested that the security of access to pathogenic microorganisms be strengthened, that governments oversee high-risk experiments with pathogens, that professional scientific codes of conduct be established for those working with dangerous pathogens, and that disease surveillance be improved. Furthermore, the US government proposed that BWC members be required to pass legislation criminalizing offensive bioweapons activities. The Bush administration intended for this initiative to close a legal loophole in the BWC so that law enforcement authorities could hold individuals accountable for their actions. While each of these proposals has significant merit, their common downfall is that the US government left it to each of the BWC's 141 members to set its own domestic standard. To wit, country "A" could enact a criminalization law with slap-on-the-wrist penalties and country "B" a stiff penal code. Both nations could thereafter claim they had done their part by the international nonproliferation effort. Adding a strict penalty "floor" to the criminalization proposal would foster a stronger web of domestic laws against offensive biological weapons activities. Likewise, the other US initiatives could benefit from the suggestion of strong standards that make improvements on disease surveillance and the rest of the proposals reasonably uniform, not hit or miss.

Judging by the CWC's original inspection provisions, the chemical weapons ban is in a much better position that its sister accord to enable verification of treaty compliance. The CWC incorporates routine inspections of the full range of industrial and military and sites. Moreover, Article IX of the treaty obligates each state to accept a challenge inspection at any location on its territory if another CWC member suspects that cheating is taking place there. As 2002 began, the CWC's international inspectorate, the Technical Secretariat located in The Hague, the Netherlands, had conducted in excess of 1,000 routine inspections, including over 220 inspections at more than sixty former chemical weapons production facilities in eleven countries. The CWC's inspectors have over 300 inspections of commercial plants under their belts, with nary a complaint from

industry facilities in the United States or elsewhere that these inspections resulted in the compromise of sensitive business data.

By this account, the CWC has enjoyed a relatively strong launch, due largely to how rapidly nations joined the treaty. Upon closer examination, however, it becomes clear that the CWC could be working better. One need only ask a US official or discretely circulate among the cognoscenti in The Hague to hear whispers of incomplete data declarations and other unaddressed compliance problems. Yet, no challenge inspections have been requested to pursue these lingering compliance concerns. The reason for these circumstances lies largely in how the United States has chosen to implement the CWC.

In the spring of 1997 when the Senate gave its advice and consent to ratification and Congress passed the treaty's implementing legislation, S. Exec. Res. 75 and H.R. 4328 were spiked with treaty-weakening exemptions. One would allow the President to refuse a challenge inspection on the grounds that it may threaten US national security. A second exemption specifies that no samples collected during an inspection can leave US territory for analysis. A third measure narrows the number of industry facilities that declare activities involving mixtures or solutions that contain proliferation-risk chemicals. Other nations will not stand by idly and allow the United States to create for itself a less rigorous verification regime. Rather, they will emulate the US policies and block challenge inspections, deny inspectors permission to send chemical samples abroad for detailed analysis at independent laboratories, and decrease considerably the number of industry facilities worldwide that are declared and subsequently opened to routine inspection. I should note that officials from several nations, including Russia and China, have privately told me that their countries would not hesitate to cite the US exemptions to hold inspectors at bay.

As if these circumstances were not bad enough, US escorts have also refused to allow inspectors to use approved inspection equipment (e.g., weighing equipment) during inspections of some military facilities. This poor behavior has been particularly regrettable, because it gives the appearance that the United States has something to hide. To the contrary, President George H.W. Bush and US military leaders have foresworn future use of chemical weapons and a 1985 law requires the Army to destroy the US chemical arsenal. The United States is getting out of the chemical weapons business, meeting the treaty's requirements to eliminate its chemical weapons stockpile. Some damage, however, has already been done. Russia, India, and South Korea are among the countries to mimic poor US behavior in receiving inspections, impinging upon the ability of the CWC's inspectors to do an effective job overseas.

Under Secretary of State for Arms Control and International Security John Bolton has said publicly on several occasions that arms control is all about compliance. In a 24 January 2002 speech in Geneva, Mr. Bolton even warned CWC violators that they would not get away with breaches of treaty obligations. Like previous administrations, the Bush administration expects treaty members to abide by their obligations. However, the Bush administration and Congress need to recognize that unless the United States reverses the challenge inspection and sampling analysis exemptions, it will have deprived the CWC's inspectorate of its two strongest tools to pursue compliance problems. Until US policy makers overturn these exemptions, the Technical Secretariat's inspectors will not really

have a fighting chance to catch violators. Moreover, US rhetoric about unpunished cheating will sound rather empty. The route to collective international action against a treaty violator is through an evidentiary case that the Technical Secretariat's inspectors build, a task that they will be unlikely to accomplish without challenge inspections and sampling analysis in their toolkit.

Of course, challenge inspections and sampling are not guarantees that cheaters will be caught red-handed, although arms control inspectors have on occasion come up with such smoking guns (e.g., North Korea's nuclear facilities, Iraqi weapons of mass destruction programs). At a minimum, inspections reveal more about a suspect site than was previously known, and they also force a cheater to take more elaborate and expensive steps to maintain an illegal weapons capability. Such outcomes would impinge upon proliferators more than a treaty regime where the strongest inspection tools remain unemployed.

Some nations of proliferation concern are still CWC holdouts (e.g., North Korea, Syria, Egypt), but others have already joined or reportedly will soon do so (e.g., Iran, China, Libya). As originally envisioned, the CWC's ever tightening export controls would make holdouts pay a hefty economic price and the challenge inspections and sampling provisions would put inspectors in a strong position to police compliance. If US policy makers want this treaty to be an effective threat reduction mechanism, in 2002 they must push for adding Schedule 3 chemicals to the export control list and restore full powers to the CWC's inspectors by reversing the aforementioned exemptions. Otherwise, the United States will have no one to blame but itself for this treaty's weakened status.

In this day and age, it should be considered foolhardy to neglect of any viable mechanism that can reduce the threat of weapons of mass destruction. Given America's singular status in the international community, custodianship of the CWC and the BWC begins here, in Washington, DC. Therefore, I ask that Congress and the Bush administration waste no time in taking the appropriate steps to see that the CWC is fully and effectively implemented and that all reasonable efforts are made to strengthen the BWC with a full panoply of monitoring tools.

Dr. Jim Walsh, Harvard University
Nuclear Terrorism and the Nuclear Nonproliferation Regime

Testimony by
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before the
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of the
Senate Committee on Governmental Affairs

Multilateral Non-proliferation Regimes, Weapons of Mass Destruction Technologies
and the War on Terrorism.

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Mr. Chairman and members of the subcommittee, thank you for the opportunity to testify today about an issue of singular importance to U.S. national security: the threats posed by weapons of mass destruction and terrorism. My remarks will focus on the problem of nuclear terrorism and the ways in which multilateral regimes can reduce the threat of nuclear terrorism from states and sub-national groups.

I. Overview and Summary

This testimony begins with a brief description of the threat posed by nuclear terrorism and the current inventory of multilateral institutions relating to nuclear security. It then looks at the issue of effectiveness. Are multilateral nuclear institutions effective? A review of the first five decades of the nuclear age suggests that the nonproliferation regime has been a surprisingly powerful tool in preventing nuclear proliferation and enhancing nuclear security.

The testimony then examines how these multilateral tools might fit into a broader strategy against nuclear terrorism. The underlying theme of this strategy is that homeland security begins abroad, that preventing nuclear terrorism requires that nuclear weapons and materials outside of the United States be protected from terrorists.

The remarks conclude with a look at the role of Congress, and steps that might be taken to strengthen nuclear regimes and reduce the threat posed by nuclear terrorism. Three areas of Congressional action are considered: oversight, appropriations, and policy innovation.

II. Threat of Nuclear Terrorism

Few people know more about the dangers of weapons of mass destruction than the members of this subcommittee. Still, it may be worth summarizing the evidence to date.

The historical record suggests that nuclear terrorism has not been a priority for terrorists, who, for a variety of reasons have concentrated on the development and use of conventional explosives. Nevertheless, recent events should remind us that though the risks may be small, the danger is real. Documents and interview data from Afghanistan suggest that al Qaeda has a genuine -- if unsophisticated -- interest in nuclear terrorism. Al Qaeda is not the first terrorist organization to express such an interest, and it is unlikely to be the last.

Recent events have also illustrated in an uncomfortably concrete way a set of nuclear vulnerabilities that, for most analysts and policy makers, were just so many scenarios. The anthrax attacks, for example, highlight the dangers associated with "insider" terrorism. At this point, it matters less whether the anthrax terrorist once worked for the government or a government sanctioned laboratory. What does matter is an insider -- a disgruntled worker, a technician trying to call attention to himself or some cause -- could have the knowledge and access to acquire not only biological materials but nuclear materials as well. That individual might live here in the United States or in Russia, Pakistan, India or even in a non-nuclear weapons state like Japan or Germany.

There have been other disturbing developments as well. Take, for example, the case of the Pakistani nuclear scientists working with the Taliban. It appears that these scientists did not assist any nuclear weapons program in Afghanistan, but again, their actions illustrate a danger many of us had not fully appreciated. If India and Pakistan continue down the path to becoming fully established nuclear weapons states, all sorts of scenarios become possible. Few of them are good, and some will doubtless be unexpected. Who would have believed, for example, that Pakistan might actually consider storing its nuclear assets in Afghanistan -- as press accounts have suggested was the case during the Kargil crisis.

In short, the potential sources of trouble are numerous. There is an excess of both nuclear weapons and nuclear material, either of which, if acquired by terrorists, could be used to do great harm.

III. Nuclear Treaties and Other Multilateral Instruments

The United States and the community of nations have long recognized the dangers posed by nuclear weapons and the need for safe and secure nuclear plants and materials. Over the last half century, a number of multilateral initiatives have been used to reduce nuclear-related threats. Most of these efforts have focused on the problem of nuclear proliferation, but others have sought to increase the safety of nuclear power plants and nuclear commerce.

These multilateral institutions take a variety of forms. Some are treaties like the NPT and the Convention on the Protection of Nuclear Materials. Others are informal multilateral groups like the nuclear suppliers group. Still others -- like UNSCOM, KEDO, and the internationally

sponsored science and technology center in Russia -- have developed as ad hoc responses to particular crises.

Over time, these multilateral instruments have grown in scope and sophistication. IAEA and other international institutions have developed an array of technical and other capabilities that are directly related to the prevention of nuclear terrorism. These capabilities include inspections and safeguards, coordinating intelligence from member states, the development of new technologies and protocols for detecting nuclear diversion, the physical testing and tracking of nuclear materials, peer review and training in nuclear safety and security, and even the removal and management of orphaned nuclear materials and facilities. Recently, for example, the IAEA intervened at the request of Georgia to identify and secure vulnerable nuclear materials.

IV. The Track record of Nuclear Regimes: Are They Effective?

Creating a multilateral institution is one thing; creating an effective multilateral institution is something else all together. Some multilateral institutions have been successes; others have been abject failures. How have multilateral nuclear institutions performed? One can begin by looking at the regime's track record in the field of nuclear nonproliferation. A review of the historical record suggests that this regime has been surprisingly effective.

After 50 years, the most striking feature of the nuclear age is that there are so few nuclear states ? far fewer than predicted by virtually every expert and policy maker. As one observer noted, "almost all the published predictions of the spread of nuclear weapons have been too pessimistic." George H. Quester, "The Statistical "n" of "nth" Nuclear Weapons States," Journal of Conflict Resolution, Vol. 27, No. 1 (March 1983), p. 167. Similarly, Mitchell Reiss notes that nuclear weapons did not prove to be "the irresistible temptation that many feared they would be." Mitchell Reiss, The Future That Never Came, Wilson Quarterly, Vol. 19, No. 2 (Spring 1995), p. 47.

Perhaps the most famous -- or infamous -- prediction about nuclear proliferation was offered President John F. Kennedy. Kennedy warned that in ten years, an additional twenty-one countries might develop nuclear weapons. Public Papers of the President of the United States: John F. Kennedy, 1963 (Washington, D.C.: Government Printing Office, 1964), p. 280 or New York Times, March 23, 1963, p. 1. The President's projection was consistent with classified estimates See, for example, Draft Memorandum for the President from the Secretary of Defense, "The Diffusion of Nuclear Weapons with and without a Test Ban Agreement," February 12, 1963, Table 1 (p. 4); Draft Memorandum for the President from the Secretary of State, "The Diffusion of Nuclear Weapons with and without a Test Ban Agreement," July 27, 1962, Table 1, John F. Kennedy Presidential Library. See also William B. Bader, The United States and the Spread of Nuclear Weapons, pp.11-12. and with published work from universities and think tanks. As one commentator put it, "The belief was common that nuclear spread had proceeded and would continue to proceed about as fast as technology could carry it." Sherman, Nuclear Proliferation The Treaty and After, p. 32. Proliferation, wrote Gallois, was "as irreversible as . . . the generalization of firearms." Pierre Gallois, The Balance of Terror, (Boston: Houghton Mifflin), 1961, p. 229.

An overwhelming majority of nuclear-capable countries have opted to forgo nuclear weapons, and over time, the rate of proliferation has actually declined. After peaking in the 1960s, the number of new nations joining the nuclear club each decade has gone steadily downwards, and several of the nations that built or inherited nuclear arsenals ? South Africa, Ukraine, Belarus, Kazakhstan ? chose to renounce their weapons. "When in history," asked one scholar, have so "many nations had the capability to produce a powerful weapon, and chosen not to exercise it?" Quester, "The Epistemology of Nuclear Proliferation," p. 178. Quester describes the limited spread of nuclear weapons "mysterious." NPT opponents used this history to argue that the treaty would fail. As one critic of the argued.... "The Treaty appears in some ways to be a negation of history. All people with the knowledge and resources they needed have progressed through evolutions and revolutions in industry, transport and weapons; from the manual to the machine, from sailing ships to steamers, from the oxcart to the aeroplane, and from the club to gun and bomb." X. "Australian Doubts on the Treaty." Quadrant 12:53 (May-June 1968), p. 31. Indeed, the absence of widespread proliferation may be the greatest policy success of the 20th century.

A key factor in this success was the establishment of the NPT. Archival documents, interviews with former country leaders, and the general pattern of state behavior suggest that the NPT had a decisive impact on the spread of nuclear weapons.

It should be emphasized that the nuclear nonproliferation regime is not a magic bullet. Several factors in addition to the NPT have contributed to nuclear restraint, and like any policy instrument, the nonproloferation regime suffers from imperfections and trade-offs. The record suggests, however, that without the regime, many of those earlier predictions of widespread proliferation might have come true.

The record of nuclear regimes raises an obvious question. How can the multilateral nuclear regimes be used to help reduce the dangers of nuclear terrorism?

V. Nuclear Regimes and the Fight Against Terrorism

Reducing the threat of terrorism involves a dizzying array of activities. The obvious ones include police work, stanching the flow of terrorist cash, diplomacy, military action, intelligence, and improved homeland security in everything from first responder training to security at seaports.

Making sense of what to do, and how much to do in each area, requires an overall strategy. Such a strategy would likely include one or more of the following principles:

- Defenses against terrorist attacks should include multiple layers.

One way to prevent terrorist attacks is to increase the number of opportunities for a terrorist operation to fail. The greater the number of defenses or obstacles that a terrorist operation must pass, the higher the likelihood the attack will be discovered and fail.

- The US is only as secure as the weakest link in international security.

In general, terrorists operate best when they enjoy a territorial sanctuary from which they can plan, develop, and coordinate operations. As Bin Laden's itinerary over the years suggests, terrorists are most likely to find sanctuary in failed states and countries wracked by civil wars or other separatist conflicts. Similarly, the security of nuclear materials and technology is determined not by the level of security at its most protected facilities but by the level of security at the least protected facilities.

- It is better to prevent terrorists from acquiring weapons of mass destruction than trying to stop them after they have them.

Taken together these principles suggest that in the field of WMD terrorism, homeland security begins abroad. The United States has to improve the level of domestic security, particularly in the areas of aviation and infectious disease, but that will not be enough. We cannot wait for terrorists to acquire nuclear materials and then try to stop them when once they are bound for America on their deadly mission.

Instead the "homeland defense abroad" concept suggests five policy objectives.

1. Prevent and otherwise reduce number of nuclear weapon states.
2. Reduce the number of states with stockpiles of plutonium and highly enriched uranium.
3. Secure all remaining nuclear weapons, materials, and facilities.
4. Increase the number of area and interstate nuclear checkpoints.
5. Develop the capacity to quickly identify and trace nuclear materials.

The first two policy objectives seek to reduce the risk of nuclear terrorism by reducing the potential supply of weapons and materials. The assumption here is that the greater the number of states with nuclear weapons and materials, the greater the opportunity for terrorists to acquire these assets. The third objective focuses on defending nuclear weapons and materials from terrorists, while the fourth objective is intended to increase the chances of apprehending a terrorist who is transporting nuclear supplies, e.g., from an acquisition point back to a home base of operations. The last objective involves situations where diversion has taken place and an agency or government is trying to figure out the source of leakage.

All of these objectives lend themselves to the use of multilateral regimes. These regimes provide a way to build the first line of the defense against nuclear terrorism. Moreover, they do so in a way that is financially and politically prudent. The United States cannot single-handedly improve the security of all the world's nuclear installations. Such a task is neither financially nor politically feasible. Working with other nations through existing multilateral nuclear regimes provides a practical alternative for reducing the threat of nuclear terrorism.

VI. Reducing Nuclear Threats: The Role of Congress

Responding to the threats posed by nuclear weapons and nuclear terrorism is often thought of as an executive function, but history shows that the Congress can make a powerful and creative contribution. Over the course of the nuclear age, Congress has passed a number of initiatives

that have had a dramatic impact on to course of proliferation. The McMahon Act, the Nuclear Nonproliferation Act, and various nonproliferation certification requirements are just a few of the many examples of Congressional leadership.

As we look to the future, there are a number of actions Congress might take to reduce the risk of nuclear terrorism -- actions that either 1) reduce or reverse the spread of nuclear weapons and materials or 2) improve the safety and security of existing nuclear assets here and abroad. These legislative responses generally fall into one of three categories: oversight, appropriations, and policy innovation.

Oversight

Congressional oversight can be a powerful tool for change. Legislative hearings, annual reporting requirements, and appropriations tied to certification can focus the attention of the executive, the bureaucracy, and the public in a way that can produce real policy results. Given the events of the last several months, there are a number of things Congress might do in this area.

First, Congress should insist on access to all available information about nuclear terrorism. Congress cannot fulfill its legislative responsibilities without such information, and yet, much of this information is scattered or being withheld from the public domain. A variety of news organizations, including the Times of London and CNN, have their own cache of documents collected from al Qaeda safe houses and training facilities. Meanwhile, the Department of Defense and various executive agencies have their own sets of documents, as well as the results of prisoner interviews and forensic tests. Most of this information can be made available without endangering sources and methods, and the information that is sensitive can be shared with Congress but safeguarded by traditional practices.

This is a small but critical step in the fight against nuclear terrorism. The history of WMD terrorism suggests that it is self-defeating for the executive to maintain a monopoly over information. Many of the most important nuclear initiatives of recent years had their origins outside of the executive -- in Congress, in university research centers, or with non-governmental organizations. The whole concept of cooperative threat reduction, for example, was developed outside the executive. If Congress or organizations like the Nuclear Threat Initiative are going to pursue new approaches to WMD terrorism, and if scholars are going to provide independent assessments of the dangers and opportunities, then the Congress has to take the lead in seeing that the relevant information is available.

Congress can also request the collection of new information. It can, for example, require that the State Department or the Department of Energy issue an annual report on the status of the nuclear terrorism threat. Such a report could document the current state of nuclear security in the United States and abroad, e.g., the number nuclear facilities, the amount of nuclear materials being stored, the current state of security against terrorism or diversion, the actions being taken to upgrade nuclear security, etc.

Congress can also use its oversight capacity to focus on a particular problem. In the past, Congress has occasionally required that a country's nonproliferation status be certified before it

received American aid. One can imagine similar requirements placed on individual agencies or countries, i.e., the certification that an agency or country is making good faith efforts to reduce the threats of WMD terrorism.

Appropriations

Progress against nuclear terrorism will not be possible without financial resources. Unfortunately, efforts to prevent nuclear terrorism have not been a funding priority. This year, billions of dollars will be devoted to new weapons systems and other activities whose purpose is to respond to a terrorist attack. Only a tiny fraction of this amount will expended on activities that would prevent WMD terrorism from happening in the first place.

Consider, for example, the recent announcement by Secretary Abraham that the US government will donate a little over a million dollars to the IAEA to assist with its work against nuclear terrorism. Compare that figure with the tens of billions of dollars in supplemental appropriations that have been approved in recent months. Much of that supplemental money will be spent on important anti-terrorist programming, but the fact remains, that there is something seriously wrong when out of billions of dollars for terrorism, only a million dollars in new money -- the equivalent of loose change in the Federal budget -- goes to the one agency that has worldwide responsibilities for preventing nuclear terrorism.

One sees a similar dynamic at work regarding cooperative threat reduction. After originally submitting a budget that would have reduced overall funding for cooperative threat reduction programs, the President submitted a revised budget that would modestly increase the funding in this area. While the change is welcome, the scale is all wrong. Effective action against nuclear terrorism requires that the administration follow the recommendations of the blue ribbon commission led by Senator Baker. The Baker-Cutler commission recommended that funding for cooperative threat reduction and nuclear security be tripled over the next several years, and that was before September 11th and the subsequent revelations concerning al Qaeda's interest in nuclear terrorism.

In the past, Congress has used its power over the purse to insure that funds were devoted to the problem of nuclear terrorism, even in the face of executive and bureaucratic indifference. Today, the need for Congressional leadership has never been greater. It will again be up to Congress to insist that there are funds for cooperative threat reduction, for the IAEA, and for other efforts aimed at reducing the threat of nuclear terrorism. With rising deficits and a long list of interests lining up for a share of terrorism-related funds, this will not be easy, but success in the fight against nuclear terrorism depends on continued leadership from Congress. Congress must find a way to not only fund efforts to prevent nuclear terrorism, but fund them at a scale commensurate with the size of the problem.

Policy Innovation

One of the most exciting areas where Congress can contribute to nuclear security is in the field of policy innovation. The outstanding example of this kind of policy entrepeneurship is the aforementioned cooperative threat reduction -- a concept that did not exist a decade ago and would not have taken hold withhold the efforts of Senators Lugar, Nunn, and Domenici.

Today, the challenge is to extend the concept and to pursue new initiatives that will prevent nuclear terrorism. The list of legislative innovations that Congress might consider include the following:

- Internationalizing the concept of threat reduction beyond the former Soviet Union.

This could include 1) developing instrumentalities with the other NPT-designated nuclear weapons states and 2) establishing non-military cooperation with undeclared nuclear weapons states and non-nuclear countries that possess direct use materials.

- Enact improved reporting and regulation of nuclear occupations.

In the United States, airline pilots, aviation personnel, train conductors, and other critical occupations operate under heightened scrutiny. There are special requirements relating to training, substance abuse, internal security, and the like. Workers in these occupations face these additional requirements, because their jobs are directly related to public safety. A similar argument might be made for nuclear engineers and others whose training or access may be critical to the success or failure of nuclear terrorism.

- Developing worldwide civil constituencies for nuclear security.

During the Cold War, the US pursued a variety of initiatives to promote democracy around the world. It set up a special institute to support democratic insitutions abroad, established Radio Free Europe, and funded a variety of programs whose purpose was to develop a constituency for democratic governance. Congress later used this tactic in support of a different objective when it established the US Institute for Peace. For its own part, the executive has established a series of special funds, e.g., the special fund for AIDS in Africa. These same tactics can be applied to the new problem of nuclear security. The Congress could, for example, establish a foundation or institute for the prevention of WMD terrorism. Acting as a private entity, this institute could train and support the development of professional nuclear societies, journalists, locally based environmental groups, and others who could monitor the state of nuclear security and press for improvements in their own countries.

- Establishment legislator-to legislator dialogues.

In the past, Congress has established a series of consultations with legislators from other countries on issues of particular concern. One such dialogue brought together members of the US Senate and members of the Russian Duma to discuss arms control. A similar tactic might be used for the prevention of WMD terrorism. Legislator-to legislator dialogues would provide the US Congress with first hand information about the problem of nuclear security in other countries. More importantly, it would provide a means for building political and financial support for cooperative WMD initiatives.

This list of new initiatives is by no means exhaustive. Instead, it is meant to illustrate how Congress might approach the question of policy innovation. Simply put, it makes sense for Congress to think about the policy instruments it has used in other issue domains, and how they

might be creatively applied to the new context of nuclear terrorism.

VII. Conclusion

Mr. Chairman, and members of the subcommittee, it has been a great honor to speak with you today. In my testimony, I have tried to describe the danger of nuclear terrorism and the current set of multilateral policy instruments that might be brought to bear on the problem. I have suggested that these multilateral regimes have proven to be very effective and that they can be even more effective if considered as part of a broader strategy against nuclear and WMD terrorism. This strategy, premised on the notion that "homeland security begins abroad," seeks to prevent nuclear terrorism at the source, to stop terrorists before they reach our shores. To accomplish that mission will require the active involvement of Congress. The Senate has been a leader on these issues, but it can do even more. Indeed, it must do more.

September 11th was a wake up call. It is history grabbing us by the collar and telling us to act now before it is too late. No institution has shown more vision, steadfastness, or creativity on the problem of WMD terrorism than the United States Senate, but recent events clearly demonstrate that additional action is required. My hope and expectation is that the Senate will respond to this challenge as it has responded to the challenges of the past, and that America will be a stronger and more secure nation as a result.

Thank you.

STATEMENT BY
DENNIS M. GORMLEY
before the
Subcommittee on International Security, Proliferation and Federal Services
of the
U.S. Senate Committee on Governmental Affairs
February 12, 2002

Mr. Chairman, members of the Committee, it is a pleasure to appear before you today to offer my suggestions on ways to enhance multilateral arms-control regimes to cope with the prospect of weapons of mass destruction (WMD) in the hands of both non-state and state actors. You are to be commended for raising this important issue. Using traditional counter-proliferation means, the Department of Defense is doing much—as it indeed should—to address proliferation of WMD and their means of delivery. However, we have fallen short in adapting existing non-proliferation mechanisms to cope with rapid changes in the technologies underlying those items we seek to control.

Let me illustrate my assertion by focusing on the example of the proliferation of land-attack cruise missiles. As a delivery means for WMD, land-attack cruise missiles, compared with ballistic missiles, are more accurate by at least a factor of ten, are at most half the cost, and are substantially more effective in delivering chemical or biological payloads (e.g., they enlarge the lethal area for biological attacks by at least ten times). However, to date, ballistic missiles have dominated the missile-proliferation scene, and only recently has concern grown about the emergence of the cruise-missile threat.

Concern about the spread of land-attack cruise missiles is driven by two realities: first, the quantum leap in dual-use technologies supporting cruise-missile development (including satellite navigation and guidance, high-resolution satellite imagery from commercial vendors, unregulated flight management systems for converting aircraft into unmanned aerial vehicles, and digital mapping technologies for mission planning); and second, the fact that the 33-nation Missile Technology Control Regime (MTCR) is much less effective at controlling the spread of cruise missiles and UAVs than ballistic missiles.

Originated in 1987 by the US and its Group of Seven (G-7) partners, today's 33-nation MTCR is a politically rather than legally binding agreement among member states to restrict the proliferation of rockets, unmanned aerial vehicles and related technologies capable of carrying a payload of at least 500kg for at least 300km. In 1993, the regime's

guidelines were expanded to include missile-delivery systems capable of carrying biological and chemical warheads regardless of payload.

The MTCR is much more effective in controlling ballistic than cruise missiles for several reasons. First, there is a reasonably solid consensus among members for restricting ballistic missiles, while the same does not yet hold for cruise missiles and other UAVs. Second, loopholes in systematic exemptions for all civilian and military aircraft can be used to circumvent many of the regime's restrictions on UAVs. Third, the inherent modularity of cruise missiles makes determining their true range and payload, and trade-offs between the two, difficult (though not impossible). In particular, variations in cruise-missile flight profiles—especially those taking advantage of more fuel-efficient flight at higher altitudes—can lead to substantially longer ranges than manufacturers and exporting countries advertise. Finally, and perhaps more important, the provisions of the MTCR's equipment and technology annex—particularly as it applies to cruise missiles and UAVs—simply have not kept pace with the extraordinarily rapid expansion in commercially available technology facilitated by today's globalized economy. To take the most egregious example: new aerospace companies are now being formed specifically to provide fully integrated flight management systems, along with an array of support services, which can enable the transformation of manned aircraft into entirely autonomous UAVs.

Barring reforms in the way the MTCR currently addresses cruise missile and related technology transfers, a variety of sources will exist to acquire land-attack cruise missiles.

- **Direct purchase from industrial suppliers.** In some ways this avenue is the easiest, and certainly the most worrisome, way to acquire highly sophisticated land-attack cruise missiles from a growing list of industrial-world suppliers, now numbering at least nine. This area is where ground rules for determining the true range and payload of cruise missiles are so essential.
- **Conversion of short-range anti-ship cruise missiles into land-attack ones.** Frequently cited as a major concern because of the huge worldwide inventory of roughly 75,000 anti-ship cruise missiles, this avenue may have much lower potential than first meets the eye. Only a small fraction may have the potential for transformation into land-attack cruise missiles with ranges over 300km.

- **Conversion of unarmed UAVs, target and reconnaissance drones into land-attack cruise missiles.** These are increasingly being used not only in tactical military systems but also in non-military commercial, civic and scientific applications. Of the 40 nations indigenously producing UAVs today, only 22 are members of the MTCR.
- **Conversion of small manned kit airplanes into weapons-carrying, fully autonomous cruise missiles.** There is a dizzying array of kit airplanes in today's marketplace (by one recent count, nearly 100,000 copies of 425 systems produced by worldwide manufacturers). Their average characteristics include a cruising speed of around 75 knots, a range of 500km, a maximum weight of just under 900 pounds, fuel and payload capacity of 450 pounds, a very short takeoff distance averaging 75 meters, and a beginner build time of around 260 hours. The biggest challenge to converting such manned airplanes into autonomous unmanned systems is flight navigation, but, as noted above, there are now available fully autonomous flight management systems designed to convert manned aircraft into UAVs. But what makes this option most attractive are the low cost (perhaps no more than $50,000 for acquisition of the kit airplane, reciprocating engine, and autonomous flight controls) to achieve such a capability, and the difficulty of detecting such slow-flying planes. Sophisticated lookdown radars on today's legacy systems eliminate slow-moving targets on or near the ground to prevent their data processing and display systems from being overtaxed. This means that large numbers of propeller-driven kit airplanes flying at under 80 knots would be ignored as potential targets. Thus, the kit airplane avenue may well represent the "poor man's cruise missile arsenal" of the future.
- **Indigenous cruise-missile development.** Indigenous development is not only the longest route to acquiring militarily significant cruise-missile capabilities, it is also unlikely to lead developing states to true autarky or anything beyond low-tech designs. Foreign assistance is a critical variable affecting the pace and quality of indigenous development.

The consequences of not taking appropriate actions to improve non-proliferation policy in regard to cruise-missile proliferation should not be taken lightly. If the use of large numbers of land-attack cruise missiles becomes a widespread and dominant feature

of military operations in the twenty-first century, or if terrorist groups turn fully to exploiting modified, hard-to-detect kit airplanes, the strategic implications could be profound.

Consider, for a moment, three historical examples of small *manned* aircraft that successfully managed to reach critical political or military targets undetected, or without interference. In 1987, a 19 year-old German boy, Mathias Rust, flew his Cessna aircraft undetected from Hamburg, Germany to the heart of Red Square in Moscow, notwithstanding the Soviet Union's enormous investment in a multi-layered national air defense system. In September 1994, a deranged pilot flew his commandeered Cessna onto the White House grounds, crashing eventually just below the President's bedroom. Although the Cessna was picked up on radar at Washington National Airport, Secret Service agents weren't warned of the aircraft's approach. And most recently, in early January of this year, a 15-year-old student pilot flying a stolen Cessna flew undetected over MacDill Air Force Base before slamming his aircraft into a downtown Tampa, Florida office building. Reportedly, Central Command authorities at MacDill did not learn of the flight until after the plane crashed.

No more prescient an analysis of the implications of such events exists than the one offered by the renowned strategist, Albert Wohlstetter, in a forward to a monograph I co-authored in 1995.* Referring to the 1994 Cessna crash, Wohlstetter observed that:

> One should not draw comfort from a belief that such penetrations require a deranged pilot on a suicide mission. An unmanned air vehicle doesn't need a pilot, deranged or not; and unmanned air vehicles can be cheaper, smaller, stealthier and harder to detect than a manned vehicle—with, perhaps, radar cross-sections two or three orders of magnitude less than that of a Cessna. And they can be extremely precise and effective. They might be launched from concealed land locations at modest distances from their targets; or brought within range and launched from freighters, diesel or nuclear-propelled submarines or other boats so numerous and so varied that they would be hard to distinguish and track. Such "two-stage" delivery of cruise missiles could present a threat here at home as well as threats to our forces or allied forces or civilians abroad. Moreover, they might be part of a serious but isolated terrorist threat, or they might be one important component of a widespread military attack.

* K. Scott McMahon and Dennis M. Gormley, *Controlling the Spread of Land-Attack Cruise Missiles* (American Institute for Strategic Cooperation, Marina del Rey, CA, 1995).

Notably, the January 2002 National Intelligence Estimate on the Ballistic Missile Threat to the United States concludes that if prestige, deterrence, and coercive diplomacy are set aside as primary objectives for acquiring an attack means against the United States, then land-attack cruise missiles and other non-missile means of delivering WMD offer a more attractive alternative than ballistic missiles. Terrorists, of course, prefer anonymity and thus covert rather than overt means of WMD delivery. Considering the enormous benefits accruing to the delivery of biological payloads using unmanned air vehicles, their proven record of going undetected, their extremely lost cost and the minimal technical barriers to transforming manned into unmanned attack means, kit airplanes, other modified UAVs, or ship-launched cruise missiles could become the terrorist's weapon of choice for WMD delivery against the American homeland.

Any effort to construct a homeland defense against cruise missiles emanating from offshore launching sources would depend greatly on acquiring warning-of-attack information with a minimum of false alarms and on exploiting progress made in theater air defenses against cruise missiles. However, any limited homeland defense against offshore cruise missiles is likely to cost tens of billions of dollars.

Significant numbers of land-attack cruise missiles in the hands of state adversaries would have no less profound implications for U.S. interests. The emergence of land-attack cruise missiles to complement ballistic missile strike systems could conceivably bolster an adversary's willingness to oppose U.S.-led interventions in strategically important ways. Adding cruise missiles to the threat picture gives states that wish to deter or affect the outcome of such interventions not just political but also important new military leverage. Not least of the military advantages is the capacity of cruise missiles to enlarge the effective lethal area of chemical and biological attacks greatly compared to ballistic missiles. Moreover, the potentially high accuracy of land-attack cruise missiles means that even conventionally armed systems may be able to achieve significant damage against exposed area targets. Finally, the low cost of cruise missiles, notably modified kit airplanes, makes the cost-per-kill arithmetic of cruise-missile defense stark. Whether a *Patriot* PAC-3 missile costs $5,000,000 or the desired $2,000,000 per copy, the figure compares unfavorably with either a $200,000-per-copy cruise missile or large saturation attacks of $50,000-per-copy modified kit airplanes. Quite simply, because ballistic and cruise missile defenses depend largely on the same high-cost air-defense

interceptors, complementary cruise and ballistic missile attacks, especially saturation ones and those delivering WMD payloads, will present enormous challenges for the defense.

Certainly, these potential proliferation outcomes demand a variety of different non-proliferation and counter-proliferation responses. In virtually every reference to the kinds of new threats facing the Department of Defense, Secretary Rumsfeld includes cruise-missile proliferation high on his list. Non-proliferation policy is the first line of defense. At present, however, it is perhaps the least effective one. Missile non-proliferation policy focuses almost entirely on controlling the spread of ballistic missiles. Take, as just one example, current MTCR efforts to promote an international code of conduct intended to stem the spread of ballistic missiles and related technologies. The draft code makes no mention cruise missiles, despite the fact that the MTCR's guidelines deal equally with ballistic missiles and unmanned aerial vehicles. However noble such a code of conduct might be, the absence of cruise missiles will fortify their second-class status at exactly the wrong time—before such systems have spread widely to affect regional and international security.

To be sure, ballistic missiles receive top priority because they are already widely proliferated, while land-attack cruise missiles have only begun to emerge as a threat. But that is precisely the reason why improved controls on cruise missiles are so critical now. Were the gaping deficiencies in the way current MTCR provisions handle cruise-missile transfers eliminated, the MTCR could conceivably do as well with cruise missiles as it has with controlling the spread of highly sophisticated ballistic missiles. Effective controls on the spread of cruise missiles and related technologies that greatly improve performance would not only make the threat more predictable and slow its emergence, but it would also greatly reduce the cost of missile defenses—against both cruise and ballistic missiles. My message is simple: letting cruise missiles proliferate will ultimately not only present its own set of unique demands, but will make effective ballistic-missile defenses more costly and demanding, too.

To have any positive effect on controlling the spread of land-attack cruise missiles, the MTCR membership should, without delay, strengthen the provisions of the regime in the following areas:

Uniform Standards for Determining Cruise-Missile Range and Payload. If consistent national implementation of MTCR controls is to occur, the most urgent priority is for MTCR members to strengthen ground rules for determining cruise-missile range and payload. As to range, existing rules were written primarily with ballistic missiles in mind. They involve a straightforward calculation of a ballistic missile's maximum range trajectory. Cruise-missile manufacturers frequently expressed a missile's range using low flight profiles. But the truth is that cruise missiles needn't fly their entire distance using such low flight profiles; they can be launched at or reach a range-maximizing altitude and then drop to a terrain-hugging profile when they become more susceptible to detection. There are several other factors that contribute to determining the true range and payload capability of cruise missiles and other UAVs. However complex these factors may appear individually and in combination, they comprise a workable set of inputs for consistent implementation of MTCR controls on cruise missiles and UAVs. The MTCR membership has examined the issue in the past, particularly in the aftermath of the Anglo-French decision to transfer the *Black Shaheen* cruise missile to the UAE. Thus far, however, it has failed to arrive at a consensus on appropriate ground rules. Absent uniform standards, the danger is that Russia and China might decide to take advantage of current confusion to consummate unwanted transfers of similarly sophisticated cruise missiles.

Tighter Controls on Stealthy Cruise Missiles. The application of stealth technology to cruise missiles gives them the same characteristics of ballistic missiles that inspired the MTCR: difficulty of defense, short-warning time and shock effect. Calls for tighter controls on stealthy cruise missiles are longstanding, but the membership has struggled to reach consensus on precisely what level of control to impose. Because of their inherent risk, Category I systems are automatically subject to a strong presumption of denial. The best approach to controlling stealthy cruise missiles would be to subject those missiles with greater than 300km range, which are presently covered by Category II controls, to the same presumption of denial as Category I missiles. Cruise missiles capable of such ranges need not carry 500kg payloads to represent an extremely dangerous proliferation threat. Indeed, they are significantly more effective in delivering small biological and chemical payloads than even Category I ballistic missiles. Coverage should be tightened on such stealthy cruise missiles.

Controls on UAV Flight Management Systems. There are no controls governing the transfer of very light, manned kit aircraft. This is all the more reason for the MTCR membership to consider how to bring commercially available UAV flight-management systems under case-by-case review. The most challenging engineering requirement needed to transform a manned kit airplane into an unmanned cruise missile involves design and integration of a flight-management system for unmanned flight. But even if improved controls on such systems were implemented under the MTCR, they would only apply to foreign exports, not domestic acquisition of such systems. Thus, in any event, the FBI should pay close heed to prospective purchases of such systems by possible domestic sources of terrorism.

Controls on Specially Designed Countermeasure Equipment. The addition of end-game countermeasure equipment, such as towed decoys or terrain bounce jammers, can greatly complicate cruise-missile defenses. Since countermeasures' effectiveness is higher as a missile's radar signature diminishes, incentives for using them will rise as radar cross-section values for cruise missiles fall lower and lower. Since such countermeasure equipment is used to enhance manned aircraft survivability, at first glance it would appear that such items might be exportable under Category II controls as parts of manned aircraft. But to achieve their intended synergistic effect with stealthy cruise missiles, countermeasure devices must be specially designed or modified to fit their companion vehicle. This suggests that such devices could perhaps be captured under the existing framework, and that the membership should investigate precisely how the regime might be modified to bring them under control.

Broadened Parameters Covering Jet Engines. The capability of a jet engine is the most critical variable in determining the range of a cruise missile. Commercial and military engines with slightly above 2,000 pounds of thrust are fully usable in cruise-missile development or conversion programs. Yet the MTCR currently does not subject them even to minimal control. Broadening the MTCR's current parameters covering jet-engine thrust under Category II would impose only a slight administrative burden on export-control organizations to review licensing applications that are commonly used in manned aircraft. Such case-by-case review would greatly enhance the membership's capacity to monitor the diversion of jet engines to cruise-missile applications with Category I capabilities.

None of the above changes are possible without the determined leadership of senior executive-branch decision-makers, as well as more rigorous and consistent management of the inter-agency process by the National Security Council. Committed senior leadership is also essential to forge changes in MTCR policy, which requires consensus among 33 partner states. Leaders of key MTCR states must come together to convince the broad partnership of the benefits of enhanced MTCR controls on cruise-missile proliferation. If regime partners can be convinced that the spread of these missiles to regions of common vital interest is undesirable, efforts to strengthen the MTCR will be feasible. Without these changes, an uncertain proliferation setting could greatly increase the WMD threat to the United States, its allies, and its friends.

Strengthening Multilateral Nonproliferation Regimes

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Senate Governmental Affairs Committee
Subcommittee on International Security, Proliferation and Federal Services

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I. Introduction:

Mr. Chairman, Senator Cochran, and Members of the Sub-Committee:

It is my privilege to testify before you today on behalf of the State Department on the important subject of multilateral nonproliferation regimes, which play a vital role in U.S. and international efforts to impede the spread of weapons of mass destruction (WMD), missiles for their delivery, and advanced conventional weapons.

Nonproliferation continues to be one of the most important and complex of America's foreign policy challenges. Preventing the spread of WMD and missiles is among the President's highest national security priorities. He has made clear that halting proliferation is a central tenet of U.S. foreign policy and has articulated the need for a comprehensive strategy to combat this threat.

We are responding to this challenge with an activist agenda that includes a broad range of tools - norms, export controls, interdiction, sanctions, counterproliferation, deterrence, and direct diplomacy. Our toolkit also includes the multilateral nonproliferation arrangements or regimes - the Missile Technology Control Regime (MTCR), the Australia Group (AG) Chemical/Biological regime, the Nuclear Suppliers Group (NSG), the Zangger Committee, and the Wassenaar Arrangement (WA) Conventional Arms and Dual-Use Goods and Technologies regime. Members of these regimes agree as a matter of policy to establish laws, policies, and/or regulations consistent with the regimes' guidelines. The guidelines of the regimes are not internationally legally-binding arrangements. The other key multilateral approaches are treaties or conventions that establish basic norms related to chemical, biological, and nuclear weapons. These multilateral mechanisms are legally-binding on members and are global in scope. They are the Chemical Weapons Convention (CWC), the Biological Weapons

Convention (BWC) the Nuclear Nonproliferation Treaty (NPT), and the International Atomic Energy Agency (IAEA).

II: The Regimes, Treaties

As part of our overall nonproliferation strategy, the regimes and treaties have made important contributions in slowing WMD and missile proliferation worldwide. Through effective enforcement of comprehensive export controls, broad multilateral cooperation in halting shipments of proliferation concern and active outreach to key non-members to increase their awareness of proliferation threats, regime members have made it more difficult, more costly, and more time-consuming for programs of proliferation concern to obtain the expertise and material needed to advance their programs. The treaties have established a global norm against the proliferation of WMD and provided a basis on which the international community can cooperate to enforce that norm. In the case of the CWC and the NPT, there are international verification organizations that have a global norm against the proliferation of WMD and provide a basis on which the international community can cooperate to enforce that norm. In the case of the CWC and the NPT, there are international verification organizations that have a legal right to inspect and require other measures from states' parties in order to promote compliance with these treaties.

The Australia Group (AG), which controls chemical and biological weapons-related goods, was established in 1984, in the wake of chemical weapons (CW) use during the Iran-Iraq war. Both Iran and Iraq clearly had produced CW with supplies and materials acquired from foreign companies. The AG was formed to ensure that companies and persons in participating countries did not -- either intentionally or inadvertently -- assist states and other actors seeking to acquire a CBW capability. The AG provides a venue for discussion of CBW threats and trends, including those related to terrorism, as well as participants' experiences in implementing and enforcing CBW export controls. It also works toward harmonizing participants' export controls. The AG control list covers 54 precursor chemicals used for CW production, many biological toxins and microorganisms with high potential for BW use, as well as dual-use production equipment, technology, and facilities. The thirty-three members of the AG are Argentina, Australia, Austria, Belgium, Bulgaria, Canada, the Czech Republic, Cyprus, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, the Republic of Korea, Luxembourg, Netherlands, New Zealand, Norway, Poland, Portugal,

Romania, the Slovak Republic, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States.

The Missile Technology Control Regime or MTCR was created in 1987. Its member states (Partners) seek to limit the proliferation of missiles capable of delivering WMD and related equipment and technology. Like the three other informal regimes, the MTCR is not a treaty or a legally-binding arrangement. The centerpiece of the regime is a common export policy known as the MTCR Guidelines, applied to a common list of controlled items known as the MTCR Annex, which each Partner country implements according to its own laws. The MTCR restricts transfers of missiles -- and equipment and technology related to such missiles -- capable of delivering at least a 500-kg payload to a distance of 300 km. These are MTCR Category I or MTCR-class missiles. Such missiles are inherently capable of WMD delivery. Examples include the SCUD and the North Korean No Dong. The MTCR Annex controls the key equipment and technology needed for missile development, production, and operation. As with the other regimes, MTCR export controls are not licensing bans -- but rather regulatory efforts by individual regime Partners to prevent the transfer of goods and technology that could contribute to the development, production, and operation of missiles for proscribed purposes. The 33 MTCR Partner countries are: Argentina, Australia, Austria, Belgium, Brazil, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Poland, Portugal, Russia, South Africa, South Korea, Spain, Sweden, Switzerland, Turkey, Ukraine, the United Kingdom, and the United States.

The Nuclear Suppliers Group (NSG) was formed in 1974 following the Indian nuclear explosion, which demonstrated how nuclear technology and materials transferred for peaceful purposes could be misused. The NSG Guidelines for Nuclear Transfers, first published in 1978, required the following for exports of nuclear materials and equipment: (1) formal recipient government assurances confirming the application of IAEA safeguards and pledging no nuclear explosive use; (2) adequate physical protection; and (3) particular caution in the transfer of sensitive materials. In 1992, the NSG added the requirement for full scope IAEA safeguards as a condition of supply to non-nuclear weapons states of nuclear Trigger List items (called the "Trigger List" because such exports trigger the requirement for safeguards). Nuclear technology was added to the Trigger List in 1995. Part 2 of the 1992 NSG Guidelines governs exports of nuclear-related dual-use equipment, materials, and technology.

The NSG now includes the following 40 countries: Argentina, Australia, Austria, Belarus, Belgium, Brazil, Bulgaria, Canada, Cyprus, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Kazakhstan, Latvia, Luxembourg, the Netherlands, New Zealand, Norway, Poland, Portugal, the Republic of Korea, Romania, the Russian Federation, the Slovak Republic, Slovenia, South Africa, Spain, Sweden, Switzerland, Turkey, Ukraine, the United Kingdom, and the United States.

The Wassenaar Arrangement (WA) was established in mid-1996 to promote transparency, responsibility, and restraint in transfers of conventional arms and related dual-use products. The WA coordinates control lists of such items and all members have agreed to avoid transfers of listed items to military end-users in "countries of concern." These countries are understood to include Iran, Iraq, Libya, and North Korea. Members exchange information on arms transfers, sensitive list dual-use transfers, and denials of basic list and sensitive list dual-use items. The goal is to foster common and consistent export policies and to help members detect and prevent destabilizing accumulations or other threats that might undermine the regime's objectives. WA membership includes 32 counties: Argentina, Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Poland, Portugal, the Republic of Korea, Romania, the Russian Federation, Slovakia, Spain, Sweden, Switzerland, Turkey, Ukraine, the United Kingdom, and the United States.

The Biological Weapons Convention (BWC) entered into force in 1975 (the United States having previously fully implemented President Nixon's 1969 order to dismantle the U.S. offensive program). Under the terms of the Convention, the parties undertake not to develop, produce, stockpile, or acquire biological agents or toxins "of types and in quantities that have no justification for prophylactic, protective, and other peaceful purposes," as well as weapons and means of delivery. There are currently 146 States Parties and 17 signatories to the BWC.

The Chemical Weapons Convention (CWC), which entered into force in 1997, establishes a ban on chemical weapons. It prohibits the development, production, stockpiling, and use of chemical weapons and requires destruction of such weapons and the facilities used to produce them. The Convention also establishes a detailed verification regime. Currently, 145 countries are

parties to the Convention. Non-parties include North Korea, Iraq, Libya, Syria, Egypt, and Israel.

The International Atomic Energy Agency (IAEA) was established at the initiative of President Eisenhower in 1957 to promote cooperation in the peaceful uses of nuclear energy while guarding against the diversion of nuclear material and equipment to military purposes. The subsequent negotiation of the NPT led to a large expansion of the IAEA's role in "safeguarding" nuclear material. Today, the IAEA has 134 members and assists developing countries in a wide range of peaceful nuclear applications, advises its members on critical nuclear safety matters, and implements safeguards agreements with more than 140 countries. These agreements play an important role in international security as they allow the IAEA to serve as a "burglar alarm" and alert the international community to certain nuclear weapons proliferation activities. In the aftermath of September 11, the IAEA also is well-placed to provide assistance to countries desiring to expand their national programs to protect against nuclear terrorism.

The Nuclear Non-Proliferation Treaty (NPT) entered into force in 1970. Efforts after World War II to place all nuclear material under international control failed, and by the 1960s there was strong support for limiting the number of nuclear-weapon states to those then extant. Non-nuclear-weapons states agree under the Treaty not to manufacture or acquire nuclear weapons and to accept international inspection. As they joined the Treaty, the five then-existing nuclear-weapon states (U.S., UK, and Russia in 1970; then France and China in 1992) agree not to assist non-nuclear-weapon states to acquire or manufacture nuclear weapons and to pursue negotiations on measures related to nuclear disarmament. Other measures include a requirement to ensure the application of IAEA safeguards on nuclear exports to non-nuclear weapons states, and an obligation to facilitate international cooperation among NPT parties in the peaceful uses of nuclear energy with particular concern for developing countries. The NPT also calls for a conference every five years to review implementation. The primary goal of the NPT was to forestall what many believed would be 25-35 more states with nuclear weapons by 2000. With 187 parties today, the NPT is virtually universal. Only India, Pakistan, Israel, and Cuba remain non-parties.

The purpose of the 35-nation Nuclear Nonproliferation Treaty Exporters (Zangger) Committee is to harmonize implementation of the NPT's requirement to apply IAEA safeguards to nuclear

exports. It was established between 1971 and 1974 in Vienna by a group of 15 nuclear supplier states chaired by Professor Claude Zangger of Switzerland. Article III.2 of the Treaty requires parties to ensure that IAEA safeguards are applied to exports to non-nuclear-weapon states of (a) source or special fissionable material, or (b) equipment or material especially designed or prepared for the processing, use or production of special fissionable material. The Committee maintains and updates a list of equipment and materials that may only be exported if safeguards are applied to the recipient facility. The group operates on an informal basis and its decisions are not legally binding upon its members. The relative informality of the Committee has enabled it to take the lead on certain nonproliferation issues that would be more difficult to resolve in the NSG. All of the NPT nuclear-weapons states, including China, are members of the Zangger Committee. However, China is the only member of the Zangger Committee that is not a member of the NSG. China has not been willing to accept the NSG policy of requiring full-scope safeguards (FSS) as a condition of nuclear supply to non-nuclear states. The 35 Zangger Committee members are: Argentina, Australia, Austria, Belgium, Bulgaria, Canada, China, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Luxembourg, the Netherlands, Norway, Poland, Portugal, the Republic of Korea, Romania, the Russian Federation, the Slovak Republic, Slovenia, South Africa, Spain, Sweden, Switzerland, Turkey, Ukraine, the United Kingdom, and the United States.

III. Current Effectiveness

Each of these regimes and treaties continues to serve a vital role in the fight against weapons and missile proliferation. These efforts have impeded progress in missile and CBW programs of concern -- among other things causing delays, forcing the use of elaborate and time-consuming procurement networks, and compelling reliance on older and sometimes less effective technology. They have established a global political and legal barrier against the spread of WMD and led to unprecedented international inspections of nuclear and chemical weapons programs. Each has recorded a number of successes and each faces unique challenges. I would like to review now the current effectiveness of the various mechanisms.

By the 1990s, the Australia Group had largely succeeded in removing its members as an inadvertent source of supply for CBW programs under state (or national) auspices. Since September 11, the group has been focusing on revamping its control lists to

better address the terrorist threat. In 2002, the AG adopted licensing guidelines and became the first regime to require participants to have catch-all controls (covering non-AG listed items when destined for a CBW use and to control intangible transfers of technology. The AG also agreed to control technology for the development and production of listed biological agents and equipment. In recent years, AG members have begun to consider measures to address the challenges posed by cooperation on CBW programs by non-member countries. While the AG has been attacked in the Biological Weapons Convention (BWC) and the Chemical Weapons Convention (CWC) by some members of the non-aligned movement seeking to abolish export controls on CBW-related goods, AG participants agree on the continued necessity and viability of the AG, its compatibility with the conventions and the need to educate non-members on the regime. Dealing with a hostile environment in the BWC and the CWC in Geneva and The Hague will remain a priority.

Over the course of the MTCR's fifteen-year history, the Regime has had important successes in slowing missile proliferation worldwide. For example, the MTCR Partners have persuaded most major suppliers (e.g., Brazil, the EU countries, Japan, South Korea, Ukraine, and South Africa) to control responsibly their missile-related exports. We have reduced the number of countries with MTCR-class programs, eliminating Argentina's Condor missile program, and missile programs in the Czech Republic, Hungary, Poland, and the Slovak Republic, and we will soon eliminate Bularia's missile program. In addition, MTCR Partner countries have cooperated to halt numerous shipments of proliferation concern. The MTCR has established a broad outreach program to increase awareness of the global missile threat among transshipment centers and other MTCR non-members. The MTCR Guidelines and Annex have become the international standard for responsible missile-related export behavior.

The NSG's greatest successes included reaching agreement in 1992 to: 1) require fullscope safeguards as a condition of nuclear supply to non-nuclear states; and 2) to control nuclear dual-use equipment, material and technology which could be of significant use in nuclear explosive programs. Also of significance was the adoption in the late 1990s of dual-use catch-all controls by the great majority of NSG members on a national basis. Such controls cover items that could be of nuclear weapons significance but are not included on the control list.

We have had notable success in gaining Wassenaar Arrangement consensus on guidelines for exports of Man Portable Air Defense Systems (MANPADS), expanding the arrangement's mandate to explicitly prevent terrorists from acquiring controlled items, and increasing subcategories for arms reporting. Wassennaar provides a useful forum for discussing developments that have a bearing on national export control policies, such as changes in technology that might affect what should be subject to export controls, regional developments and possible mutual restraint.

The BWC has served for nearly 30 years as an important international prohibition on nearly all activities associated with biological weapons. The BWC does not include a mechanism for checking compliance as it is inherently unverifiable. From 1995 until 2001, an Ad Hoc Group of States Parties worked toward completion of a legally binding protocol to "enhance transparency and promote compliance." The draft protocol was based on traditional arms control measures that are not effective on biological technology or agents. In early 2001, the United States reviewed its policy toward the BWC protocol and concluded that the United States could not support the approach embodied in the draft protocol and that the protocol's flaws could not be fixed. The draft protocol would not improve U.S. ability to verify BWC compliance nor deter countries seeking to develop biological weapons. The draft protocol would have put U.S. national security and confidential business information at risk. In July 2001, the United States informed States Parties of its decision. The United States has proposed several important alternative measures to combat the BW threat.

The CWC has helped reduce the threat from chemical weapons. It established an international proscription on chemical weapons, making clear that chemical weapons are not legitimate weapons. The Convention has resulted in international disclosure of chemical weapons programs in a number of countries, including India, China, and Iran. Stockpiles of chemical weapons, as well as chemical weapons production facilities, are being destroyed in Russia and a number of other countries. Around the world, facilities that could be used for chemical weapons-related purposes are subject to international inspection. The CWC demonstrates the value of properly-designed multilateral agreements for placing constraints on potential proliferators. Our experience with the CWC demonstrates the need for supplementary mechanisms, such as the Australia Group, to assist like-minded states in coordinating national efforts to prevent the export of materials to those who would use them to produce CW. Our experience with the CWC also demonstrates the critical

importance of U.S. leadership not only in negotiating an agreement, but also in ensuring that it is effectively implemented. U.S. leadership has been essential in the ongoing effort to restore the health of the international organization responsible for monitoring compliance -- the Organization for the Prohibition of Chemical Weapons (OPCW), which is headquartered in The Hague.

As the key verification mechanism under the NPT, the IAEA has performed well, but has also been frank in recognizing its deficiencies and in proposing remedies. Over the past ten years, the IAEA has taken several steps to improve its safeguards systems. It has an important role to play in monitoring the nuclear programs of Iraq and North Korea, but these countries have continued to impose obstacles to the IAEA fulfilling its responsibilities. The IAEA has served as an important source of assistance to developing countries, which might otherwise not obtain the benefits of peaceful nuclear applications as envisaged for NPT parties in good standing. In the aftermath of the 1986 Chernobyl accident, the IAEA expanded its programs in advising and training some states in the safe operation of nuclear power reactors. Adoption by member states of the Model Additional Protocol to existing safeguards agreements, approved by the IAEA in 1997, would strengthen the effectiveness and improve the efficiency of the safeguards system. After September 11, the IAEA moved promptly to expand its programs to combat nuclear terrorism, although it is premature to judge the effectiveness of this effort. A strong, effective, and efficient IAEA serves important U.S. interests. The IAEA must have sufficient and predicable financial resources to fulfill all aspects of its mission.

The NPT contributed importantly to stemming the tide of nuclear proliferation in the latter half of the twentieth century. States such as South Africa, Argentina, and Brazil decided against nuclear weapons and joined the NPT. Following the dissolution of the Soviet Union, all former Soviet nuclear weapons were transferred to Russia. All other former Soviet states joined the NPT as non-nuclear-weapon states. The NPT's steadily-growing membership since 1970 has consistently affirmed the global norm against the spread of nuclear weapons. That goal remains critical today, even more so with the threat of nuclear terrorism. The NPT is a 32-year old multilateral treaty that has retained its relevance into the twenty-first century. Among the lessons from the long history of the NPT is the importance of American leadership. Nonetheless, the United States cannot do it alone; international cooperation and consultation are essential.

The periodic NPT review process called for in the Treaty is an important means for addressing issues relevant to NPT implementation. The Treaty's verification system must be monitored continually so that it can be strengthened against those who would violate the Treaty.

Since the Zangger Committee agreed to admit China in 1997, China has played a constructive role in the Committee's work. The Committee also agreed on a strong statement of concern following India and Pakistan's respective nuclear tests in May 1998. The Committee took the lead in developing supplier consensus to add enrichment, reprocessing, and heavy water production equipment to the Trigger List.

IV. Facing the Future

Nonproliferation faces a challenging future. As events of the past year have demonstrated, we face an increasing proliferation threat from terrorists and their state sponsors. The treaties face a continuous threat from states that would seek to violate them. We must scrutinize not only the nonproliferation regimes and treaties but also all our nonproliferation tools with an eye toward improving their effectiveness in helping to ensure global security and stability.

In this regard, we need to continue to work with our regime partners on "regional nonproliferation" -- focusing on steps, beyond simply controlling our own exports, that we and our partners can take individually or collectively to impede WMD and missile proliferation. The regimes must continue to update control lists to reflect technological advances and ensure that they keep pace with proliferation trends; work to extend export controls in line with regime standards to all potential suppliers of WMD and missile equipment and technology as well as to those countries that serve as transshipment points, and increase efforts to make non-members more aware of the threat and consequences of unchecked proliferation. The regimes must also help non-members understand that responsible nonproliferation policies and practices do not hinder trade and can actually be beneficial to trade by increasing confidence, and urge them to adopt policies and practices consistent with regime standards, providing export control assistance as necessary.

AG members need to take steps to deal with two key aspects of the regional CBW threat: 1) CBW programs in non-AG countries, and 2) sources of support for such programs in non-AG countries. The AG provides a valuable avenue for participants to discuss

appropriate actions, divide the labor, and avoid duplication of effort.

At the urging of the United States, the MTCR Partners continue to focus on additional ways to address ongoing missile proliferation challenges, particularly in the context of the global campaign against terrorism. We seek to place renewed emphasis on regional nonproliferation, information-sharing, and interdiction cooperation. We also will seek continuing refinements and updates to the MTCR Annex that will address emerging technological and proliferation trends.

The NSG is considering U.S. proposals to enhance its ability to deal with the threat of nuclear terrorism. These proposals include enhanced information sharing on approvals of Trigger List and nuclear-related dual-use exports as well as denials of Trigger List exports. Changes in the Guidelines have also been recommended. The NSG will continue to pursue vigorous outreach dialogue with key non-member states, including China, India, Israel, and Pakistan. The NSG also continues to focus on the problems raised by Russian nuclear supply to India.

In the Wassenaar Arrangement, the United States is seeking ways to expand arms transfer reporting in existing categories and to add small arms/light weapons reporting for items on the Wassenaar Munitions List. We also want to reach agreement on a Statement of Understanding concerning catch-all controls as well as a provision for "no undercut" denial consultations in the Arrangement's Initial Elements.

The United States is actively working to develop more effective ways to combat the BW threat. The unprecedented attack on the United States on September 11 and subsequent bioterrorism underscored the dangers posed by both determined State actors as well as non-State actors. The United States therefore has decided it must look beyond traditional arms control measures to deal with the complex and dangerous threat posed by BW. Countering this threat will require a full range of measures -- tightened export controls, intensified nonproliferation dialogue, increased domestic preparedness and controls, enhanced biodefense and counterterrorism capabilities, and innovative measures against disease outbreaks as well as the full compliance with the BWC by all States Parties. The U.S. proposed "alternative measures" to strengthen the Convention before the November 2001 BWC Review Conference with a goal of highlighting compliance concerns and attempting to gain support from States Parties for the U.S. package and other measures that would address the BW

threat of today and the future. We hope that BWC parties can agree on measures that will effectively do so.

As a first priority with respect to the CWC, the United States seeks to ensure the effective operation of the OPCW. To correct serious mismanagement problems, the United States recently led a successful multilateral effort to remove and replace the head of the OPCW Technical Secretariat. We are now trying to restore financial stability to the OPCW to enable it to fulfill its worldwide verification mission. Furthermore, we are stressing the importance of addressing concerns with compliance, using bilateral and other appropriate mechanisms provided by the Convention, possibly including challenge inspection. The five-year Review Conference for the CWC is slated to commence in April 2003; we are actively examining ways to use this opportunity to refine and strengthen implementation.

As the NPT inspection regime on which the NPT relies, the IAEA safeguards system must be adequately funded and vigorously implemented. The powers of the IAEA under the NPT will be enhanced significantly if NPT parties adopt the Additional Protocol to existing safeguards agreements. President Bush forwarded the U.S. Additional Protocol to the Senate in May of this year to demonstrate the importance we attach to its universal acceptance. The IAEA can play an important role in efforts to address the risk of nuclear terrorism, not only through its safeguards systems but also through programs designed to help states with national programs to secure nuclear facilities and materials.

The NPT will realize its full potential only if the international community adopts an approach of zero tolerance for violations. That requires vigorous efforts to bring Iraq and North Korea into compliance, and to warn any other state contemplating a violation of the NPT that doing so will be met with a concerted action and effective response.

The Zangger Committee, owing to its link to the NPT, is uniquely positioned to engage NPT-Party critics of the nonproliferation regimes such as Egypt, Indonesia, Malaysia, and Mexico and to present supplier government views at NPT conferences and meetings. The Committee also continues to take the lead in considering additions to the Trigger List, with the latest such effort, the addition of plutonium separation equipment, expected to be finalized by October 2002.

V. Emerging Threats

These regimes and treaties have contributed greatly to international nonproliferation efforts, but we cannot become complacent. As a starting point, rigorous, energetic, and ever vigilant enforcement is essential. Nonproliferation remains a perpetually unfinished project. More work always needs to be done. We must deal with continuing proliferation threats posed by countries such as Iran, Iraq, Libya, North Korea, India, and Pakistan. We must strengthen cooperation and cope with the impact of technological advances. We must continue to combat the terrorist threat. We must consider new potential threats, expand our nonproliferation toolkit, and improve the efficacy of those tools we have.

As the anthrax letters demonstrated last year, the use -- or the threat of use -- of a biological agent can have a profound and devastating impact. We need to recalibrate our focus to concentrate on the small-scale terrorist threat as well as the larger state-sponsored military threat. For example, we need to do more to ensure that terrorists do not gain access to the dual-use production equipment and the biological pathogens that could be used to produce BW. We must work with governments, institutes, academia, and research centers world-wide to improve accounting controls, security, and access to such items. Perhaps more importantly, we need to keep abreast of procurement trends and technological advances to stay ahead of the terrorist and state-sponsored programs. Many of these activities will require efforts both inside and outside the regimes and treaties.

MTCR Partners' vigorous enforcement of export controls consistent with the MTCR Guidelines and Annex continues to make it more difficult for proliferators to get items for their missile programs, increasing the cost, time, and effort required. Responsible countries must work to prevent proliferators, terrorists and smugglers from acquiring missiles. Ample information indicates significant movement of proliferation-related products through loosely-controlled transshipment points. MTCR Partner and like-minded countries must encourage such countries to adopt effective transshipment controls, shut down front companies, prosecute brokers involved in proliferation activities, and improve enforcement procedures. The MTCR must also examine what role it can play in strengthening efforts to keep WMD and means of production and delivery out of the hands of terrorists.

In addition to the MTCR, the United States supports the wide acceptance of the International Code of Conduct Against Ballistic Missile Proliferation (ICOC). Initiated by the MTCR countries in 1999, the ICOC is intended to be a new multilateral complement to the work of the MTCR. The Code will supplement and not supplant the MTCR. The ICOC would consist of a small set of broad principles, general commitments, and modest confidence-building measures. It is intended to be a voluntary political commitment to establish a broad multilateral norm against missile proliferation. It will complement the MTCR and other national missile nonproliferation efforts by establishing a widely-subscribed consensus that countries should cooperate on a voluntary basis to impede missile proliferation. We hope the ICOC will come into effect as early as the end of this year.

Both the NSG and Zangger Committee are expected to play an increased vital role in dealing with the threat posed by nuclear terrorism, once U.S. proposals for strengthening these regimes are considered and adopted. However, neither group is currently positioned to address a newly-identified concern -- the vulnerability of multinational nuclear companies to possible penetration by employees loyal to non-state actors. The globalization of the nuclear industry has been an accelerating phenomenon in recent years and U.S. Government agencies have begun to consider ways to address potential threats to multinational companies.

The United States succeeded in convincing our WA partners to expand the Arrangement's mandate explicitly to prevent terrorists from acquiring controlled items. We will seek to maintain this momentum in addressing international terrorism issues to include establishment an appropriate information sharing mechanism in the WA General Working Group. Although some WA members have opposed our efforts to expand transparency commitments within the WA, we have made progress and are optimistic of our ability to continue to further this goal.

The U.S. "alternatives" proposal attempts to enhance implementation of and compliance with the 1975 BWC in light of concerns stemming from terrorism and regional proliferation. Such proposed measures include promotion of standards for biosafety and biosecurity, scientific and industrial codes of conduct and improved disease surveillance. The nature of developing threats is such that effective implementation of the BWC requires agreement on more specific measures addressing those threats.

The CWC is one of a number of tools that we have to address the chemical weapons threat. These tools compliment and supplement each other. The Convention was designed primarily to deal with weapons programs of states. However, by obligating states not to assist any person in acquiring chemical weapons and requiring them to ensure domestic compliance, it indirectly assists in fighting terrorism, as well. It can directly impact regional proliferation, but only if the relevant states become parties.

The threat of a "dirty bomb" or radiological dispersal device has also gained more attention since September 11. The IAEA is expanding its activities in this area. It has coordinated assistance for member states in identifying, locating, and securing radiological devices that were carelessly abandoned after being used for peaceful and military purposes. Some of these devices have radioactive material that would be useful in a dirty bomb. The IAEA can also provide assistance to states in establishing a proper framework for regulation and control of these devices while in civilian uses. In addition to advising states on proper standards, the IAEA can assist in the procurement of equipment to detect illegal trafficking in nuclear and other radioactive material.

In closing, multilateral nonproliferation regimes and treaties have an important role to play as two components of a comprehensive approach to advancing U.S. national security and nonproliferation policy. They must remain vibrant, active tools, focused on their collective and individual core mission -- impeding threatening weapons programs, especially via impeding the spread of weapons and related equipment and technology, and reinforcing and verifying treaty obligations against the acquisition of WMD. At the same time, these multilateral instruments must also possess the flexibility to adapt to new challenges on the battlefield of nonproliferation. The continued exercise of strong U.S. leadership will play an indispensable role in strengthening these multilateral regimes and treaties to better combat proliferation.

Testimony of Deputy Assistant Secretary of Defense
Marshall Billingslea
Before the Subcommittee on International Security, Proliferation, and Federal Services
of the Senate Committee on Government Affairs

Strengthening Multilateral Non-Proliferation Regimes

Monday, July 29, 2002, at 2:30 p.m.
Room 342, Dirksen Senate Office Building
Washington, D.C.

Chairman Akaka, Senator Cochran, Members of the subcommittee:

As requested, today I will provide the view of the Department of Defense regarding the effectiveness of current multilateral non-proliferation regimes and organizations in preventing WMD and missile proliferation, and how these regimes and organizations fit into the Administration's broader strategy to combat proliferation and terrorism. I will discuss some of the emerging trends that we are witnessing and how these regimes and organizations are able, or unable, to address such developments. I will then conclude with a look at where we should go from here – in terms of steps that need to be taken to halt the spread of WMD and missile proliferation, and in terms of what current realities require of us if we are to prevail in the war against terror and in our quest to ensure that these weapons are not used against our citizens, troops, friends and allies.

The WMD/Terrorism Threat

I will start by characterizing the growing WMD threat as best I can. In terms of the terrorist dimension to the problem, we see an alarming pattern developing. With increasing frequency since the mid-1980s, we have seen a steady growth in the awareness of, and interest in, WMD by terrorist groups. These groups are aggressively trying to procure the necessary materials to conduct such an attack. For instance, Osama bin Laden has publicly announced his WMD aspirations, and has likened the acquisition of use of these weapons to a religious duty.

Our friends and allies have, on several occasions, thwarted WMD acquisition efforts, whether we are talking about cyanide smuggling or trafficking in radiological materials. A few months ago, for instance, a terrorist cell was caught with a cyanide compound and a map of the U.S. embassy in Rome. Though we have had some important success, we know we are not completely blocking WMD procurement efforts by terrorist organizations.

Part of the problem is that much of the equipment used to make and deliver WMD is commercially available from a large number of sources. It is very difficult to track dual-use technology and to stop it from falling into the wrong hands. The manufacturing equipment is generally small, and portable. It is easily concealed. For instance, this hearing room is big enough to house a complete nerve agent production plant. Even less space is needed to make biological weapons.

I note that the Japanese group -- Aum Shinrikyo -- produced Sarin for its nerve gas attack in the Tokyo subway in a bathroom. Further, the Aum's production complex was built in plain view, and looking like a common warehouse from the exterior. There really were not any tell-tale signatures to indicate what was happening inside their complex.

Likewise, terrorist groups have both used, and are interested in, a variety of delivery mechanisms for their WMD, again many of which can be constructed or adapted from commonly-available materials or systems, such as pesticide sprayers. There are, in short, seemingly infinite ways that a determined terrorist groups could conduct a WMD attack. As you can see, it is difficult to combat the spread of this capability through multilateral arms control instruments such as treaties, or export control regimes, though we believe that these regimes are generally helpful to the overall effort to block proliferation.

Terrorist WMD aspirations and threats are receiving a high degree of attention from the Bush Administration because the results of a WMD attack by terrorist groups, or by countries, could be catastrophic. Moreover, as these groups gain greater understanding of chemical and biological processes, and as they gain greater access to materials and equipment, the lethality of their efforts could multiply many-fold.

We are particularly intent on ensuring that these groups are not able to obtain highly contagious pathogens such as Smallpox. The results of a smallpox release in the United States or Europe would be catastrophic.

Giving added impetus to our efforts is the variety of excellent work being done by the medical and academic community regarding the unconventional threats we now face. In particular, I would like to direct the attention of the subcommittee to the work done by Johns Hopkins University in the recent exercise called "Dark Winter."

The scenario was based on terrorist release of smallpox in three separate locations within the United States. Senior U.S. officials and leading scientists participated in this exercise. Their conclusions and the projected results of this WMD attack are alarming.

Within 22 days, smallpox spread to 26 states, with nearly 6000 new infections occurring daily. This would completely overwhelm the U.S. public health system. All of

our vaccine stocks would be depleted within days. Inter-state commerce would come to a complete halt, and the economy would collapse. By the end of 2 months, under a worst-case scenario, 1 million would be dead, and 2 million more infected. If you apply the same model to Europe, with higher population density, the effects of a smallpox attack would be even worse.

In addition to the fact that many terrorist groups are now known to harbor WMD ambitions, there is another worrisome linkage.

Every country that is a "state-sponsor" of terrorism also is pursuing its own, national-level WMD and missile programs. In other words, every country that harbors, funds, or otherwise assists terrorist groups as a matter of government policy also -- as a matter of policy -- is pursuing nuclear, chemical, or biological weapons and missile systems to deliver these weapons.

As the Department of State's *Patterns of Global Terrorism* annual assessment for 2001 indicates, countries such as Iran and Syria continue to support terror groups such as Hamas, Hizballah, and Palestinian Islamic Jihad, and other groups such as the PFLP-GC. Some of the groups, like Hamas, are exploring ways to utilize WMD. Hamas is working with poisons and chemicals and an effort to coat suicide bomber fragments. At the same time, both Iran and Syria themselves have robust chemical warfare programs, and both are exploring biological weapons. Both countries can deliver these weapons by a variety of means, such as via short-range missile systems such as SCUDs, or artillery shells, and Iran is making strides in developing the Shahab-3 and longer-range missiles. We also believe that Iran is aggressively pursuing nuclear weapon, and we are concerned that the Bushehr nuclear power project is, in reality, a pretext for the creation of an infrastructure designed to help Tehran acquire atomic weapons.

As an aside, I note that Iran is flaring off six times as much natural gas as any other country. The gas they are wasting has three times the energy value of the Bushehr reactor (3000 Megawatts versus 1000 MW). If Tehran's agenda were truly to improve its energy reserves, it would just spend a fraction of the money it is spending on Bushehr and generate three times as much power by simply capturing the natural gas it is wasting.

The same worrisome linkage exists in other terror-abetting countries. Cuba, for instance, has a limited developmental research effort relating to biological weapons, and also harbors terrorist groups such as the Basque separatist ETA and FARC and ELN operatives.

Iraq, which stands in violation of numerous Security Council resolutions and which expelled international weapons inspectors several years ago, is believed to be rebuilding its WMD infrastructure. After the Gulf War, it was discovered that Iraq had made substantial progress in the development and weaponization of a number of

chemical and biological substances, and had progressed from rudimentary chemicals and pathogens to exploring more complex and dangerous capabilities. The IAEA also discovered that Iraq had engaged in a crash nuclear program using a variety of conventional and unconventional approaches to acquiring fissile material. On the terrorism side, Iraq today continues to harbor several terrorist organizations and provides bases of operation for groups such as the PKK, MEK, Abu Nidal, and the Palestine Liberation Front.

The linkage between terrorist groups with WMD aspirations, and countries that have their own aspirations, concerns us for several reasons.

First, these countries give wide latitude to terrorist groups that operate within their borders. Terrorists are able to establish training and research camps where they are free to develop WMD and to perfect their plans for delivery. As we learned with Aum Shinrikyo, it is hard enough to spot these groups when they are operating in an open society. It is exponentially harder to learn what these groups are up to when they are operating in a closed system, such as in Iran or Iraq.

There also is a very dangerous potential that equipment and expertise meant for a state-level program could fall into the hands of terrorist groups, either unintentionally, or by design.

Finally, we are worried by the potential for a country such as Iraq to use terrorist networks to conduct a WMD attack. One major problem with WMD terrorism is that it can be very difficult to detect an attack in time to mitigate its consequences. Another serious problem is determining who is behind an attack, as we have discovered in connection with the anthrax attacks in the United States.

Assessment of Nonproliferation Regimes

President Bush has placed a high priority on combating the spread of WMD and their delivery systems. Proliferation, and the fact that several nations and terrorist groups either possess or are striving for WMD and missile systems, is a central security threat facing the United States and the international community. In parallel, the war on terrorism requires, inter alia, that we work actively to deny states that sponsor terrorism and terrorist groups access to these weapons.

We have moved rapidly to counter imminent terrorist threats and to identify and thwart future ones. In countering these urgent threats, President Bush has stated that traditional Cold War concepts, such as deterrence and containment, may no longer be appropriate in every situation. The international security situation has changed, and we must adapt our nonproliferation and defense strategies to recognize these changes.

The evidence uncovered in Afghanistan, that Al Qaida was seeking weapons of mass destruction and that scientists from other countries were willing to assist them in their efforts, is only the most recent and vivid illustration of the need to maintain and strengthen international controls over such weapons and their related technologies. This evidence also highlights the need for the U.S., and the international community, to develop and implement a robust strategy to eliminate the threat posed by the proliferation of WMD to state sponsors of terrorism and the terrorist groups that they support.

Over the last 50 years, we have achieved important success in stemming the proliferation of WMD through a variety of mechanisms, ranging from treaties to multilateral technology control mechanisms such as the Australia Group and the Missile Technology Control Regime. Domestic export controls and transshipment laws and regulations designed to control the movement of sensitive goods and technologies are also important.

That said, while the traditional nonproliferation policy instruments the US has used to combat the proliferation of WMD – international treaties, multilateral export control regimes, U.S. export controls, and security assistance to other countries – continue to have value in the collective international nonproliferation framework, they also have limitations. One of the limitations is enforceability. At this stage, for instance, several countries such as Iran, Iraq, Libya, and Cuba seem able to violate their obligations under treaties such as the Biological Weapons Convention with relative impunity. The United States continues to employ treaty compliance as an issue at the annual or biannual review conferences associated with these treaties and regimes.

In the case of multilateral export control regimes – MTCR, AG, NSG, Wassenaar –which are voluntary, non-binding agreements, an underlying assumption has been that the members are "like-minded" and would implement the voluntary controls in a like-minded fashion. Unfortunately, in some instances, that has not always been the case.

Domestic export control laws and multilateral export and transshipment controls continue to be vital to the success of U.S. and international nonproliferation efforts. Proliferant countries continue to seek raw materials and dual-use technologies from Western sources, and we have been able to hold in check the WMD and missile aspirations of several nations by working with our allies. There is no better illustration of the benefits of multilateral cooperation than the fact that many of the missile systems we are facing today are based on older Soviet SCUD technology, rather than advanced Western propulsion and guidance systems. We have been able to keep much of this technology out of the hands of hostile governments, and – as a result – they are working with less optimal technologies. The caveat to this example is, however, that both Russian and Chinese firms continue to sell missile technology and dual-use materials to states of concern which is enabling those nations to overcome developmental hurdles and to build more sophisticated longer-range missile systems.

Moreover, with the global economy becoming more and more interconnected, dual-use items and technologies used to develop weapons of mass destruction cannot be effectively controlled without cooperation among exporting and transit countries. Moreover, export and transshipment controls are only as good as the capability of those who adopt such measures to enforce their laws and regulations. This is an area where the Department of Defense sees an opportunity for improvement. We need to look at ways to bolster our interaction and cooperation with key transit countries, most of whom are friendly to the United States but who lack the technical capacity and training to monitor and seize dangerous cargo. The Bush Administration has placed a priority on working with several of these transit countries, and we have had several important successes that I would be happy to discuss in a different setting. We have concluded, on the basis of our experiences to date, that there is a great opportunity presented by working with these like-minded nations.

There is a growing recognition by the international community that all states benefit from curbing WMD and WMD-related technology proliferation, and that our friends and allies must contribute to the effort by ensuring that their territory is not misused by those seeking to acquire WMD. The Missile Technology Control Regime, the Nuclear Suppliers Group, and the Australia Group have all initiated diplomatic outreach programs and workshops on export controls with non-member states to help them understand priority nonproliferation concerns and encourage them to adopt effective laws and regulations to control the movement of sensitive goods and technologies from and through their territory. Again, this is a promising area in which we should concentrate our efforts.

We also need to work on countering the ability of WMD states and terrorist organizations, denied an item by one country, to obtain the same item from other sources outside the reach of traditional nonproliferation treaties and regimes. Today, the know-how required for the development and production of weapons of mass destruction is increasingly available to those who seek it, and in some cases is just a "click" of the computer mouse away. As a result of increased economic interaction and advances in information and communications technology, it is now easier than ever before to transfer sensitive technology around the globe, and more difficult than ever to monitor or control such transfers. In addition, proliferant countries have become much more sophisticated and covert in their acquisition efforts. They are increasingly able to obtain more advanced technology from non-Western sources, diversifying their existing arsenals, improving delivery systems, and becoming more self-sufficient in the development and fabrication of WMD components. We recognize this fact, and are working on ways to counter it.

Even more troubling, we are seeing new patterns of WMD-related trade developing that existing export control regimes are currently unable to address.

Increasingly, trade in WMD and missile related items is occurring between countries outside the regimes. The very success of the non-proliferation regimes over the last 50 years has had the unintended consequence of creating a lucrative "black market" in WMD technology. Some key supplier countries, such as China and North Korea, operate outside of multilateral export control regimes. Moreover, states of concern, such as Iran, are becoming more and more self-reliant and becoming suppliers themselves. Their growing indigenous production capability allows them to fabricate what they previously had to import. There is also the new trend of "secondary proliferation," i.e. former importers are now becoming exporters to other states of concern. And, most troubling of all, is the nexus that I have described between WMD, state-sponsors of terrorism, and terrorists seeking WMD capabilities.

As a result, the threat posed by proliferation today is diverse, unpredictable, dangerous, and increasingly difficult to counter using traditional nonproliferation approaches. Today's threat, unlike during the Cold War, is shaped by state and non-state actors, including radical extremists, who operate outside the boundaries of international law.

The potential for terrorists and other non-state actors gaining access to WMD capabilities has dramatically raised the cost of failing to contain proliferation. The world has already witnessed the use of chemical and biological agents by terrorist organizations and by states that sponsor terrorism.

The Rajneeshees cult poisoned a salad bar with salmonella in Oregon State in 1984; Aum Shinrikyo released sarin gas in the Tokyo subway in 1994; Iraq used chemical weapons against Iran during the 1980-88 Iran-Iraq war, and cold-bloodedly gassed its own citizens of Kurdish descent in the spring and summer of 1988.

The next terrorist attack against the U.S. could involve the use of a nuclear weapon, or involve a major chemical, biological, or radiological attack – by conventional or unconventional means. These threats highlight the need for the U.S., and the international Community, to develop a more robust and effective nonproliferation strategy. To be effective, our strategy must encompass a broad range of policies and programs, including proactive measures.

Next Steps

But while the dangers from proliferation are growing, the U.S. and the international community are formulating ways to improve their ability to deal effectively with these threats. We will continue to use existing diplomatic and economic tools to engage with countries involved in proliferation activities to urge them to constrain, halt, or reverse those activities. And we will continue to work with and assist friends and allies to develop and implement their own domestic export controls to deny proliferators

access to the necessary equipment, materials, and technology related to WMD. But to meet the threat head on and stop it will require a new definition of nonproliferation, a stronger global nonproliferation architecture, and strenuous national efforts.

On the international front, we need to expand and enhance enforcement of existing international nonproliferation treaties and regimes. This includes adoption of the IAEA Additional Protocol by all member states party to the Nuclear Non-Proliferation Treaty, and insistence that all states fully comply with their obligations under that treaty and other treaties, such as the Chemical Weapons Convention, and the Biological Weapons Convention. "Naming names" is a powerful diplomatic tool and we will continue to "name names" at Review Conferences for these treaties as well as publicly.

The U.S. also has proposed an amendment to the 1988 Suppression of Unlawful Acts against the Safety of Maritime Navigation (the "SUA Convention") to cover a wider range of additional offenses, including terrorist acts. Initially, the SUA Convention was designed to ensure that individuals who commit acts of terrorism that endanger the safe navigation of a ship, or endanger a person on board, are either prosecuted in the state in which they are found, or extradited to another state for prosecution.

The proposed amendment adds a provision making it a criminal offense to carry or transport, or cause to be carried or transported, items in violation of the Chemical Weapons Convention (CWC), the Nuclear Non-Proliferation Treaty (NPT), and the Biological Weapons Convention (BWC). If adopted, the proposal would effectively transforms the SUA Convention from an after-the-fact extradite or prosecute treaty to a proactive treaty where military forces could board ships in international waters if they were carrying items in violation of the CWC, NPT, and BWC. The scope of activity envisioned goes well beyond what traditional law enforcement agencies can provide. In fact, in order to be effective, the proposed amendment will require the active role of signature country's militaries, and the U.S. military in particular.

We also need to continue to strengthen the multilateral export control regimes to better equip them to combat the evolving global proliferation threat. Sensitive dual-use items and technology cannot be controlled effectively unless there is broad cooperation among exporting and transit countries. We have made an important start in this effort with the decision taken by the Australia Group to broaden the number of dual-use items it would control and with the various diplomatic outreach programs initiated by several other multilateral export control regimes.

But these steps – unfortunately – will not be enough, given that yesterday's recipients of WMD-related systems and technologies are today's purveyor's of WMD-related systems and technologies to other countries, and given the linkages between these countries and terrorist groups. As President Bush said in June at the West Point commencement ceremonies:

"We cannot defend America and our friends by hoping for the best. We cannot put our faith in the word of tyrants, who solemnly sign nonproliferation treaties, and then systematically break them. If we wait for threats to fully materialize, we will have waited too long . . . the war on terror will not be won on the defensive. We must take the battle to the enemy . . . In the world we have entered, the only path to safety is the path of action."

In Conclusion

The future is ours to lose. In preventing the spread of weapons of mass destruction and their delivery systems, there no excuse for inaction. The U.S., and the international community, must act, and act decisively. As long as there are would-be-proliferators or groups seeking WMD, we must remain vigilant and resolute, and we need to take the initiative away from these groups so that they are not able to choose the time and place of an attack. We will need to be much more proactive and creative in our diplomatic efforts; we will need to continue to strengthen existing international nonproliferation regimes; we will need to continue to provide direct, material assistance to transshipment countries to help them identify and stop dangerous shipments from slipping through their territory; and we will need to be prepared to act, when necessary, to halt dangerous shipments that threaten our security and that of our friends and allies.

Nuclear Non-Proliferation Treaty and the International Atomic Energy Agency

General Background

The Nuclear Non-Proliferation Treaty was established in 1970 and seeks to curb the spread of nuclear weapons. With the 187 signatories, there are two categories of NPT members: Nuclear Weapons States (NWS) - consisting of the U.S., Russia, China, France and the U.K. - and Non-Nuclear Weapons States (NNWS). The NPT has the widest adherence of any arms control agreement. India, Israel and Pakistan remain outside the NPT. Since the treaty restricts NWS status to those nations that have manufactured and exploded a nuclear device prior to 1967, these nations would have to join the treaty as NNWS by dismantling their nuclear weapons and placing them under international safeguards. The treaty prohibits NWS from aiding NNWS from acquiring or developing nuclear weapons. The NPT also establishes safeguards for the transfer of fissionable material and ensures transfers of nuclear material are not being used for nuclear weapons. The NPT conducts a review conference every five years and a decision after 25 years over whether the treaty should be extended. The 1995 review conference extended the treaty indefinitely.

The International Atomic Energy Agency (IAEA) is charged with inspecting non-nuclear weapons states nuclear facilities. It operates an international inspection system to provide assurances that nuclear materials and technology are not diverted for use in nuclear weapons. The agency also provides assistance in civilian applications of nuclear technology. All nuclear weapon members of the NPT agree to allow the IAEA to inspect their nuclear inventories. The IAEA conducts thousands of inspections annually. However, even if IAEA inspectors detect clandestine nuclear activity, the NPT contains no formal provisions for enforcement. The IAEA is headquartered in Vienna, Austria. There are approximately 2,193 staff representing 93 nationalities. The overall budget of the IAEA is about $300 million including voluntary contributions.

Challenges and Concerns

Events since September 11 have drawn attention to the political danger of terrorists obtaining nuclear weapons. IAEA inspectors recently helped Georgian scientists to transfer radioactive material discovered at a nuclear storage site. The IAEA recovered two Soviet era radioactive batteries which were plucked, steaming, from the bushes, and encased in lead in the remote mountains of the Caucuses mountains. While officials have declared this a success, the possibility of more radioactive material turning up to manufacture a crude nuclear weapon cannot be ruled out.

The IAEA held a special session on November 2001 to focus on the issue of combating nuclear terrorism. The IAEA Director General stated that the willingness of terrorists to commit suicide for their aims makes the nuclear terrorism threat far more likely than it was before September 11. According to the IAEA there have been 175 cases of trafficking of nuclear material since 1993

and 201 cases of trafficking other radioactive material. The IAEA estimates that $30-50 million annually will be needed to strengthen and expand its programs to meet the terrorist threat.

Some NPT member states, such as Iraq and North Korea have violated the NPT and diverted civilian nuclear technology and materials to covert weapons programs. Iraq was a party to the NPT for many years and has used its civil programs to disguise its nuclear weapons program. Iraq ended cooperation with UNCSCOM in 1999 and efforts to reestablish inspections in Iraq have been blocked by Russia and France in the U.S. Security Council.
North Korea acceded to the NPT in 1985 but refused to accept safeguards until 1992. When the IAEA discovered discrepancies, it reported them to the United Nations National Security Council, which urged North Korea to comply. North Korea remain obligated under the NPT to allow inspections, despite its noncompliance.

Inspections in Iraq and North Korea provide lessons for strengthening the IAEA. The IAEA has upgraded safeguards to prevent repeat problems in Iraq and elsewhere. Although prior to the Gulf War, member states have not provided intelligence information to the IAEA, they are increasingly using intelligence from member states. Recently the agency has begun to use commercial satellite imagery to augment its information databases. The IAEA has reasserted itself to gain access to facilities, additional authority is needed. A new inspection agreement, the Additional Safeguards Protocol, would increase inspector's authority to collect more information about a wider range of activities, use more intrusive inspection methods, and expand access to undeclared activities. The U.S. and the IAEA reached agreement based on the model protocol, but it was never ratified. The IAEA will continue to need technology upgrades for detection of nuclear materials and depends on support from member states and its budget is limited – divided among missions popular with certain members such as nuclear safety and technical assistance.

Missile Technology Control Regime

General Background

The Missile Technology Control Regime (MTCR) is a voluntary agreement among states pledges to control the export of missile systems and technology capable of delivering 500 kilograms of payload 300 kilometers or more. The objective of the MTCR is to create a common export policy for missile technology. There are 33 nations in the MTCR and membership is determined by consensus. The MTCR does not has a formal independent mechanism and does not have a budget. Technical meetings are held on an ad hoc basis. An office within the French Ministry of Foreign Affairs acts as the point of contact for coordination of meetings. Since there is no official secretariat, the regimes activities are carried out through bilateral diplomatic relations.

Unlike the NPT and the CWC, the MTCR is neither an international treaty nor a legally binding agreement. Its members voluntarily pledge to support the regimes export guidelines. There are no provisions for enforcement or sanctions. U.S. laws do require sanctions against entities that import or export items controlled by the regime even if traded with a state that is not an adherent to the regime. These laws are included in this appendix.

Trade of MTCR with non-members is not absolutely prohibited but rather constrained by export laws. MTCR guidelines call for restraint in the transfer of missile technologies, especially whole missile transfers. Transfers require the exporting government obtain binding assurances on end-use from the recipient government.

While originally designed to address the spread of missiles delivering nuclear weapons, the MTCR was expanded in 1993 to include the restriction of delivery systems for biological and chemical weapons. Manned aircraft and space programs are exempt from the agreement so long as they do not contribute to the delivery of WMD.

Missiles and missile technology covered by the MTCR are defined as the following:

- Ballistic Missiles
- Space Launch Vehicles
- Unmanned Aerial Vehicles
- Cruise Missiles
- Drones
- Remotely Piloted Vehicles

Challenges and Concerns

The MTCR faces a wide range of challenges and concerns over preventing missile proliferation. There is resentment among non-MTCR members over the control of missile technology. There is a lack of clear and reliable information about countries' missile programs and capabilities.

There are questions over the effectiveness of the regime as the threat of missile proliferation has continued to widen. It is currently estimated that fewer than 10 countries have the capability to indigenously develop and maintain missiles. At least five countries - India, Israel, Iran and Pakistan and North Korea - have active testing programs. According to recent testimony from Director of Central Intelligence George Tenet, Russia, China and North Korea are the leading proliferators of missile technology.

While several non-member states have committed to adhere unilaterally to MTCR guidelines, problems persist. China is not a member of the MTCR but has agreed to abide by MTCR guidelines. China's adherence to the MTCR remains in question and CIA reports on proliferation continue to cite Chinese transfers to Pakistan and Iran which violate terms of the regime. The U.S. imposed sanctions on China in September of 2001 for shipping missile equipment to Pakistan. China has agreed not to export missile technologies and in exchange the U.S. has continued to process U.S. companies applications to use Chinese space launch facilities.

Unlike other regimes, the MTCR employs a supply-side approach to missile proliferation that many see as ineffective given the current and future trends in missile proliferation. There is no missile equivalent to the NPT, CWC and BWC. The MTCR is a norm setting organization that may only be effective while key technology remains in the hands of member states. Non-member states have possessed missile technology for some time and the emerging missile states such as Iran, Iraq and Syria may follow North Korea to become suppliers as well as consumers.

The MTCR was not designed to deal with contemporary missile proliferation. It attempts to keep technology away from non-members and does not account for emerging missiles states and non-state actors outside the MTCR. It was never intended to halt missile proliferation - rather slow it until a more complete regime could be adopted.

There are also many challenges to controlling missile technology. Missile programs are dual-use. Rationales behind them include trade and security considerations. There are no commonly agreed to set of norms for the export of missile technology. Missile technology is difficult to identify and there is a shortage of information on countries' missile programs. Changes in military capabilities can take place with little or no warning. It is necessary to establish objective information on countries' capabilities, intentions and stages of development in missile programs.

There may be clear signs of a new approach to missile proliferation. The Draft Code of Conduct developed at the 2000 Helsinki Plenary designed a set of principles and commitments and confidence building measures which were circulated among states world wide to develop a common concept of responsible missile behavior. The definitions in the code are intended to be broad enough to allow non-NPT and non-MTCR members to sign the agreement. The last Ottowa Plenary Meeting in 2001 addressed the need for further adaptation to new technologies and stronger enforcement of export controls.

The Draft Code of Conduct is likely to encounter a set of challenges over the potential advantages increased transparency gives countries with developed missile programs. This would be especially true if those countries with less developed programs are required to disclose information on their development.

Useful Websites

1. Federation of American Scientists (www.fas.org)
2. The Acronym Institute for Disarmament and Diplomacy (www.acronym.org.uk/dd/index.htm)
3. Arms Control Association (www.armscontrol.org)
4. Organization for the Prohibition of Chemical Weapons (www.opcw.nl)
5. International Atomic Energy Agency (www.iaea.org)
6. Center for Non-proliferation Studies (www.cns.miis.edu)

Appendix: A

Recent Non-Proliferation Statements from the Administration

John R. Bolton, Under Secretary for Arms Control and International Security
Statement to the Conference on Disarmament
Geneva, Switzerland
January 24, 2002

Mr. President and distinguished delegates,

It is an honor for me to address the Conference on Disarmament (CD) at the beginning of its 2002 session. At the outset, let me congratulate you, Mister President, on assuming your office. I can assure you of the full support of the United States in carrying out your duties. I would also like to recognize the outstanding CD Secretary General, a counterpart of mine on UN matters during the first Bush Administration.

It is a particular honor for me today to be able to introduce the new U.S. ambassador to the Conference, Eric Javits, who comes to you after a long career specializing in what he characterizes as "difficult negotiations." He clearly has the proper background for the CD and has the full support of the Bush Administration as he strives in this distinguished Conference to advance international peace and security.

Permit me to outline to this body, the world's oldest multilateral arms control negotiating forum, the fundamental elements of the Bush Administration's security policy. Our timing is particularly opportune. The September 11 terrorist attacks have made all too clear the grave threats to civilized nations that come from terrorists who strike without warning, their state sponsors, and rogue states that seek weapons of mass destruction. We must defend our homelands, our forces, and our friends and allies against these threats. And we must insist on holding accountable states that violate their nonproliferation commitments.

The fight against terrorism will remain a top international security priority. As President Bush said: "Our lives, our way of life, and our every hope for the world depend on a single commitment: The authors of mass murder must be defeated, and never allowed to gain or use the weapons of mass destruction." The United States and its partners in this fight will meet this threat with every method at our disposal.

Above all, we are acting to end state sponsorship of terror. The United States believes that with very few exceptions, terrorist groups have not acquired and cannot acquire weapons of mass destruction without the support of nation-states. This support might be technical assistance. It might be funding. Perhaps such assistance has taken the form of simply turning a blind eye to terrorist camps within one's borders. But the fact that governments which sponsor terrorist groups also are pursuing chemical, biological, nuclear, and missile programs is alarming, and cannot be ignored.

Nations that assist terror are playing a dangerous game. As President Bush stated to a joint session of the U.S. Congress last fall: "We will pursue nations that provide aid or safe haven to terrorism. Every nation, in every region, now has a decision to make. Either you are with us, or you are with the terrorists. From this day forward, any nation that continues to harbor or support terrorism will be regarded by the United States as a hostile regime."

If the September 11 terrorist attacks taught the United States nothing else, it taught us not to underestimate the intentions and capabilities of rogue states and terrorist groups. We will not be complacent to the threat of any kind of attack on the United States, especially from weapons of mass destruction, whether chemical, biological, nuclear, or from missiles.

Chemical Weapons

On chemical weapons, the United States is alarmed by the continuing spread of dangerous technology to countries pursuing illegal programs. The United States is a strong proponent of the Chemical Weapons Convention (CWC), which provides several useful tools to combat chemical warfare programs. The United States has made effective use of the consultation provision of Article IX of the Convention to address our questions and compliance concerns. To date, we have conducted several visits at the invitation of other States Parties in a cooperative effort to resolve these questions and compliance concerns. In many cases, this has proven to be highly successful.

The United States will continue to use such consultation mechanisms to enhance verification and promote full compliance with the provisions of the Convention. Although bilateral consultations are not a prerequisite for launching a challenge inspection, the United States believes that challenge inspections may in some cases be the most appropriate mechanism for resolving compliance concerns.

Some States Parties have sought erroneously to characterize the challenge inspection process as tantamount to an abuse of political power. On the contrary, challenge inspections were included as a fundamental component of the CWC verification regime that benefits all States Parties, both as a deterrent to would-be violators and as a fact-finding tool to address compliance concerns. They are a flexible and indispensable tool that, if viewed realistically and used judiciously, can be instrumental in achieving the goals of the Chemical Weapons Convention. I caution those nations that are violating the Chemical Weapons Convention: You should not be smug in the assumption that your chemical warfare program will never be uncovered and exposed to the international community.

Biological Weapons

On biological weapons, the United States made its position crystal clear at the Fifth Review Conference of the Biological Weapons Convention (BWC) late last year: we will not condone violation of the BWC. We flatly oppose flawed diplomatic arrangements that purport to strengthen the BWC but actually increase the specter of biological warfare by not effectively confronting the serious problem of BWC noncompliance. It is for this reason that the United States rejected the draft protocol to the Biological Weapons Convention and the continuance of the BWC Ad Hoc Group and its mandate, and offered an alternate way ahead.

Regarding the BWC protocol, the United States was urged to go along with this proposal because it was "flawed, but better than nothing." After an exhaustive evaluation within the U.S. Government, we decided that the protocol was actually counterproductive. New approaches and new ways of thinking are needed to prevent the proliferation of biological weapons.

The United States presented a number of new proposals to do just this, including tightened national export controls, fully implementing the BWC by nationally criminalizing activity that violates it, intensified non-proliferation activities, increased domestic preparedness and controls, enhanced biodefense and counter-bioterrorism capabilities, and innovative measures against disease outbreaks. Many, if not all of these measures can begin to be implemented now. We look forward to discussing and refining them with all of you and hope that you will join us in endorsing and beginning to implement them as we prepare for the resumption of the BWC Review Conference next November.

Nuclear Weapons

On nuclear weapons, the United States recently completed a Nuclear Posture Review, the basic conclusions of which have recently been made public. Fundamental to this review is the assumption that the United States and Russia are no longer adversaries, and, therefore, that such Cold War notions as mutual assured destruction are no longer appropriate as the defining characteristic of our strategic relationship. Accordingly, President Bush has announced that the United States will reduce its strategic nuclear force to a total of between 1,700 and 2,200 operationally deployed strategic warheads over the next ten years. President Putin has made a similarly bold and historic decision with respect to Russian strategic nuclear forces.

Given the new relationship between Moscow and Washington, the specter of nuclear war between the United States and the Russian Federation is now a comfortingly remote possibility. More likely is the possibility of the use of nuclear or radiological weapons by rogue states or terrorist groups. We are also currently faced with dangerously-high tensions in South Asia between India and Pakistan, both of which have nuclear explosive devices.

The proliferation of nuclear materials and technology is a serious threat to international security. The International Atomic Energy Agency's (IAEA) nuclear inspection system must be reinforced, as we press others to adopt strengthened IAEA safeguards designed to detect clandestine nuclear activities. The United States continues to emphasize the importance of universal adherence to, as well as full compliance with and implementation of, the NPT and comprehensive safeguards. Countries such as North Korea and Iraq must cease their violations of the NPT and allow the IAEA to do its work. Further, I caution those who think that they can pursue nuclear weapons without detection: the United States and its allies will prove you wrong.

And let me reiterate U.S. policy on nuclear weapons proliferation: the United States regards the proliferation of nuclear weapons technology as a direct threat to international security, and will treat it accordingly. The same holds true for nations that traffic in deadly chemical and biological weapons technology, and missile systems.

Missiles

Almost every state that actively sponsors terror is known to be seeking weapons of mass destruction and the missiles to deliver them at longer and longer ranges. Their hope is to blackmail the civilized world into abandoning the war on terror. They want the United States and others to forsake their friends and allies and security commitments around the world. September 11 reinforced our resolve to build a limited missile defense shield to defend our nation, friends, forces and interests against missile attacks from rogue states and terrorist organizations who wish to destroy civilized society.

It is an undeniable fact that the United States simply has no defense against a missile attack on our homeland. While we do have defenses against shorter-range missiles, we have none against even a single missile launched against our cities. We must fill this void in our defenses. As a result, we announced last month our decision to withdraw from the Anti-Ballistic Missile (ABM) Treaty. This was an important decision for the Bush Administration and was made in close consultations with Moscow. Although our Russian friends did not agree with our withdrawal decision, the world is aware of the close and growing relationship between our two nations. Our new strategic relationship is much broader than the ABM Treaty, as evidenced by the announcement by both the United States and Russia that we will reduce our offensive nuclear arsenals to the lowest levels in decades.

We are also concerned about the spread of missile technology that may not threaten the United States at this time, but poses serious threats to our friends and allies, as well as to deployed U.S. forces. Too many nations are remiss in not controlling their involvement in the proliferation of missile technology. We are aware of a long list of missile proliferation activities by enterprises from at least a dozen nations. Most of these transactions are serious, and could result in U.S. sanctions, as has been done several times over the past year. The United States calls on all countries to control missile-related transfers and ensure that private companies operating within their borders cease illegal missile transactions.

President Bush has made clear the imperative of restructuring deterrence and defense capabilities to formulate a comprehensive strategy to enhance our security. This strategy must include strengthening nonproliferation measures (prevention), more robust counterproliferation capabilities (protection), and a new concept of deterrence, relying more on missile defense and less on offensive nuclear forces.

In this context, the security and well being of the United States and its allies depend on the ability to operate in space. America is committed to the exploration and use of outer space by all nations for peaceful purposes for the benefit of humanity -- purposes that allow defense and intelligence-related activities in pursuit of national security goals. We remain firmly committed to the Outer Space Treaty, and

we believe that the current international regime regulating the use of space meets all our purposes. We see no need for new agreements.

Future of the Conference on Disarmament

This point leads me to touch briefly on the future of this body, the Conference on Disarmament. If it remains deadlocked in futility, it will continue to lose credibility and the attention of the world. To be productive and contribute to international security, the CD must change the way it does business. It must focus on new threats, such as efforts by terrorist groups to acquire weapons of mass destruction. It must squarely face the serious problem of violations of weapons of mass destruction nonproliferation regimes and treaties. Finally, in order to perform a useful function, the CD must put aside irreconcilable differences and work on issues that are ready for negotiation, such as a Fissile Material Cutoff Treaty. I know of no one more qualified to help lead a new approach here in the CD than Eric Javits, who has already begun working with delegates to find ways to move this body forward in 2002.

I have one personal favor to ask the distinguished delegates in this room. It has become fashionable to characterize my country as "unilateralist" and against all arms control agreements. Nonetheless, our commitment to multilateral regimes to promote nonproliferation and international security never has been as strong as it is today, through numerous arms control treaties and nonproliferation arrangements, including the NPT, CFE, CWC, BWC, LTBT, PNET, and the TTBT, as well as to nonproliferation regimes like the Zangger Committee, the NSG, MTCR, the Wassenaar Arrangement and the Australia Group. In fact, trying to characterize our policy as "unilateralist" or "multilateralist" is a futile exercise. Our policy is, quite simply, pro-American, as you would expect.

The main emphasis of the Bush Administration's arms control policy is the determination to enforce existing treaties, and to seek treaties and arrangements that meet today's threats to peace and stability, not yesterday's. Fundamental to the Bush Administration's policy is the commitment to honor our arms control agreements, and to insist that other nations live up to them as well. Now is the time for the CD to build on its achievements to forge additional restraints against the spread of weapons of mass destruction. This is Ambassador Javits' mission here, for which he has my full support and that of my government.

John R. Bolton, Under Secretary for Arms Control and International Security
Remarks to the 5th Biological Weapons Convention RevCon Meeting
Geneva, Switzerland
November 19, 2001

Mr. President, the United States congratulates you on your election, and pledges its cooperation in the vital work before us. We are here to review the functioning of the Biological Weapons Convention under circumstances none of us would have wished and none of us foresaw. Suddenly, all of us are engaged in a war -- a war that ignores national boundaries and threatens the very fiber of our societies.

President Bush warned in his recent address to the UN General Assembly that: "the world faces the horrifying prospect of terrorists searching for weapons of mass destruction, the tools to turn their hatred into holocaust. They can be expected to use chemical, biological, and nuclear weapons the moment they are capable of doing so." This conference is therefore unfortunately timely.

We, the parties to the Biological Weapons Convention, must demonstrate an unwavering commitment to fighting this undeniable threat. We must overcome years of talking past each other, and address the real issues. Will we be courageous, unflinching, and timely in our actions to develop effective tools to deal with the threat as it exists today, or will we merely defer to slow-moving multilateral mechanisms that are oblivious to what is happening in the real world?

The United States has repeatedly made clear why the arms control approaches of the past will not resolve our current problems. This is why we rejected the flawed mechanisms of the draft Protocol previously under consideration by the Ad Hoc Group. Countries that joined the BWC and then ignore their commitments and certain non-state actors would never have been hampered by the Protocol. They would

not have declared their current covert offensive programs or the locations of their illegal work -- nor would the draft Protocol have required them to do so. Although the United States has been criticized publicly -- both in the media and by foreign governments -- for rejecting the draft Protocol, many of those same governments have told us privately that they shared America's reservations, describing the draft as "flawed" or "better than nothing." Do we really believe that a Protocol that would allow violators to conduct an offensive biological weapons program while publicly announcing their compliance with the agreement is "better than nothing?" We think not. We can -- and must -- do better.

Before we consider new ways to strengthen the Biological Weapons Convention, however, we must first confront the failure of many states to abide by that very document. Too many states are parties to the BWC but have not lived up to their commitments. Any nation ready to violate one agreement is perfectly capable of violating another, denying its actual behavior all the while. The United States will simply not enter into agreements that allow rogue states or others to develop and deploy biological weapons. We will continue to reject flawed texts like the BWC draft Protocol, recommended to us simply because they are the product of lengthy negotiations or arbitrary deadlines, if such texts are not in the best interests of the United States and many other countries represented here today.

Straight Talk About BWC Compliance

The most important reason we gather here is to assess compliance with the BWC provisions outlawing the development, production, acquisition, stockpiling, or retention of biological weapons and their delivery systems. While the vast majority of the BWC's parties have conscientiously met their commitments, the United States is extremely concerned that some states are engaged in biological weapons activities that violate the Convention. We also are concerned about potential use of biological weapons by terrorist groups, and states that support them. So I plan to name names. Prior to September 11, some would have avoided this approach. The world has changed, however, and so must our business-as-usual approach.

First, we are concerned by the stated intention of Usama bin Ladin and his al Qaeda terrorist organization to use biological weapons against the United States. While we do not yet know the source of the recent anthrax attacks against us, we do know that some of the September 11 terrorists made inquiries into renting crop dusters, almost certainly to attack our cities. We also know that Usama bin Ladin considers obtaining weapons of mass destruction to be a sacred duty, that he has claimed to possess such weapons, and that he has threatened to use them against us. We are concerned that he could have been trying to acquire a rudimentary biological weapons capability, possibly with support from a state. While the United States is not prepared, at this time, to comment on whether rogue states may have assisted a possible al Qaeda biological weapons program, rest assured that the United States will not rely alone on treaties or international organizations to deal with such terrorist groups or the states that support them. Neither the Biological Weapons Convention nor the former draft BWC Protocol would stop biological terrorism by groups like al Qaeda or restrain their rogue-state patrons.

Beyond al Qaeda, the most serious concern is Iraq. Iraq's biological weapons program remains a serious threat to international security. After signing the BWC in 1972, Iraq developed, produced, and stockpiled biological warfare agents and weapons, and continued this activity even after ratifying the BWC in 1991. Despite the obligation to fully disclose and destroy its BW program which the UN Security Council required to conclude the Gulf War, Iraq denied having a BW program and pursued a policy of obstruction, denial and evasion to conceal its program. Only under increased pressure from UNCSCOM and the looming defection of one of Iraq's weapons directors did Baghdad admit the existence of its offensive BW program. Baghdad unilaterally ended UNCSCOM weapons inspections and monitoring in Iraq in December 1998. Even with unprecedented intrusiveness, UNCSCOM, when faced with a nation dedicated to deception and concealment, unfortunately could not fully dismantle Iraq's BW program. Its successor, UNMOVIC, is prepared to resume on-site activities in Iraq, but Saddam Hussein's continued belligerence prevents it from so doing. The United States strongly suspects that Iraq has taken advantage of three years of no UN inspections to improve all phases of its offensive BW program. The existence of Iraq's program is beyond dispute, in complete contravention of the BWC. The BWC Protocol would have neither hindered nor stopped it.

Also extremely disturbing is North Korea's BW program. The United States believes North Korea has a dedicated, national-level effort to achieve a BW capability and that it has developed and produced, and may

have weaponized, BW agents in violation of the Convention. North Korea likely has the capability to produce sufficient quantities of biological agents for military purposes within weeks of a decision to do so. While we are hopeful that Pyongyang will come into compliance with the BWC and end its program, the fact remains that the BWC has been ineffective in restraining North Korea. The draft BWC Protocol would have done no better.

We are also quite concerned about Iran, which the United States believes probably has produced and weaponized BW agents in violation of the Convention. The United States believes that Libya has an offensive BW program in the research and development stage, and it may be capable of producing small quantities of agent. We believe that Syria (which has not ratified the BWC) has an offensive BW program in the research and development stage, and it may be capable of producing small quantities of agent. Finally, we are concerned about the growing interest of Sudan (a non-BWC party) in developing a BW program. The BWC has not succeeded in dissuading these states from pursuing BW programs and we believe the draft BWC Protocol would have likewise failed to do so.

This list is not meant to be exhaustive, but to demonstrate real challenges left unaddressed by the Biological Weapons Convention. There are other states I could have named which the United States will be contacting privately concerning our belief that they are pursuing an offensive BW program. The United States calls upon all BWC parties and signatories that have not done so to immediately terminate their offensive biological weapons programs and comply fully with their obligations.

New Approaches to the BW Threat

In light of the September 11 terrorist attacks, widespread violations of the BWC, and the weaknesses of the draft BWC Protocol, which rendered it incapable of effectively addressing these serious threats, the United States has crafted alternative proposals. Just as we can no longer rely solely on traditional means to fight a war against terrorism, we need to look beyond traditional arms control measures to deal with the complex and dangerous threats posed by biological weapons. Countering these threats will require a full range of measures -- tightened export controls, an intensified non-proliferation dialogue, increased domestic preparedness and controls, enhanced biodefense and counter-bioterrorism capabilities, and innovative measures against disease outbreaks. Strict compliance by all Parties with the BWC is also critical.

The United States has a dedicated bio-defense program to ensure that Americans and our friends and allies are protected against bioweapons attacks. In light of the recent anthrax attacks, our efforts will increase. Robust biodefense efforts are necessary to combat known threats, and to ensure that we have the means to defeat those specific threats. U.S. bio-defense programs are a means to an end, to protect Americans and our friends and allies. An essential element in our strategy is to find agreement in this body on measures that countries can undertake immediately to strengthen the BWC. We strongly believe that the key is to broaden our understanding of the biological weapons threat and the types of measures that are potentially valuable in countering it.

U.S. Proposals for Strengthening the BWC

National Implementation (Article IV)
Let me begin with measures to strengthen National Implementation. The United States proposes that Parties agree to enact national criminal legislation to enhance their bilateral extradition agreements with respect to BW offenses and to make it a criminal offense for any person to engage in activities prohibited by the BWC. While Article IV permits the adoption of such legislation, it does not explicitly require it. This body must make clear that doing so is essential.

Further, Parties should have strict standards for the security of pathogenic microorganisms and: (a) adopt and implement strict regulations for access to particularly dangerous micro-organisms, including regulations governing domestic and international transfers; and (b) report internationally any releases or adverse events that could affect other countries. Sensitizing scientists to the risks of genetic engineering, and exploring national oversight of high-risk experiments, is critical and timely, as is a professional code of conduct for scientists working with pathogenic micro-organisms.

Such measures, if adopted and implemented, will contribute significantly to doing what none of the measures in the draft BWC Protocol would do: control access to dangerous pathogens, deter their misuse, punish those who misuse them, and alert states to their risks. Individually and collectively, they would establish powerful new tools to strengthen the BWC by enhancing our ability to prevent the development, production or acquisition of dangerous pathogens for illegal purposes. These benefits can be achieved quickly, since implementation does not depend on lengthy international negotiation.

Consultation and Cooperation (Article V)
The United States seeks to establish a mechanism for international investigations of suspicious disease outbreaks and/or alleged BW incidents. It would require Parties to accept international inspectors upon determination by the UN Secretary General that an inspection should take place. This would make investigations of such events more certain and timely. It would also allow us to acquire internationally what is likely to be the first hard evidence of either accidental or deliberate use of biological warfare agents and help ensure that any such event did not get covered up by the responsible parties.

We are also supportive of setting up a voluntary cooperative mechanism for clarifying and resolving compliance concerns by mutual consent, to include exchanges of information, voluntary visits, or other procedures to clarify and resolve doubts about compliance.

Assistance to Victims (Article VII) and Technical and Scientific Cooperation (Article X)
Enhanced cooperation with the World Health Organization would be in everyone's interests. As we are aware, biosafety standards vary widely throughout the world. The United States strongly believes every country would benefit from adopting rigorous procedures, and therefore proposes that Parties adopt and implement strict biosafety procedures, based on WHO or equivalent national guidelines. Furthermore, we should enhance support of WHO's global disease surveillance and response capabilities. Parties could agree to provide rapid emergency medical and investigative assistance, if requested, in the event of a serious outbreak of infectious disease, and to indicate in advance what types of assistance they would be prepared to provide.

Restricting access and enhancing safety procedures for use of dangerous pathogens, strengthening international tools to detect serious illness and/or potential illegal use of biology and providing assurance of help in the event of a serious disease outbreak -- these measures all enhance collective security and collective well-being -- which is, after all, our ultimate objective. With the exception of the final measure, none of these measures was contemplated in the draft BWC Protocol.

The United States believes these proposals provide sound and effective ways to strengthen the Convention and the overall effort against biological weapons. These are measures State Parties can adopt now to make the world safer and proliferation more difficult. The choice is ours.

Review Conference Objectives

To preserve international unity in our efforts to fight against terrorism and WMD proliferation, we need to work together, and avoid procedural or tactical divisiveness during the Review Conference that may hinder reaching our mutual goal of combating the BW threat. We welcome all reactions to these ideas, and additional new ways to strengthen the BWC.

The time for "better than nothing" protocols is over. It is time for us to consider serious measures to address the BW threat. It is time to set aside years of diplomatic inertia. We will not be protected by a "Maginot treaty" approach to the BW threat. The United States asks the states assembled here to join us in forging a new and effective approach to combat the scourge of biological weapons. I have laid out serious proposals that the United States hopes will form the basis of this new approach. I ask that these proposals be endorsed in the Final Declaration.

By working together during this Review Conference, by exchanging ideas and proposals that will help us meet this critical challenge, I am confident this Convention can succeed in advancing the worldwide effort to reduce and ultimately eliminate the biological weapons threat.

Appendix B: U.S. Laws Affecting Weapons of Mass Destruction (WMD) Proliferation

1. Biological Weapons

Biological Weapons Convention (Title 10 U.S.C. 10) implements the BWC, providing criminal penalties for its violation. It does not amend the Export Administration Act or the Arms Export Control Act.

2. Chemical Weapons

Chemical Weapons Convention (22 U.S.C. 75) Implementing legislation for the CWC was introduced in the 103rd Congress (S.2221/H.R.4849) and the 104th Congress S.1732). None was reported from committee. In th 105th Congress, implementing legislation was incorporated into the FY1999 Omnibus Appropriations Act and signed into law October 20, 1998 (22 U.S.C. 75)

3. Nuclear Non-proliferation

The Atomic Energy Act of 1954 (AEA, P.L. 83-703, 42 U.S.C. 2011). The Atomic Energy Act of 1954 gave primary authority for the development and oversight of the U.S. government's nuclear program's to the Atomic Energy Agency, now the Nuclear Regulatory Agency. This Act is to promote research and development of nuclear energy while regulating the flow of military relevant information.

The Nuclear Non-Proliferation Act of 1978 (NNPA, P.L., 22 U.S.C. 3201). The NNPA clarified and strengthened U.S. non-proliferation policy and reaffirmed the U.S. commitment to be a reliable supplier of nuclear technology and nuclear fuels.

The Arms Export Control Act (AECA, P.L. 90-629, 22 U.S.C. 2751).

Section 30(f) (22 U.S.C. 2753(f) prohibits U.S. military sales or leases to any country that the President determines is in material breach of binding commitments to the U.S. regarding non-proliferation of nuclear explosive devices and unsafeguarded special nuclear material.

Section 40 (22 U.S.C. 2780) prohibits exporting or otherwise providing munitions, financial assistance to facilitate transfer of munitions, granting eligibility status of such transfers, or otherwise facilitating the acquisition of munitions to a country the government of which has repeatedly provided support for international terrorism. Included in the definition of act of international terrorism are all activities the Secretary of State determines willfully aid or abet the international proliferation or nuclear explosive devices to individuals or groups or willfully aid or abet an individual or groups in acquiring unsafeguarded special nuclear material.

Section 101 (22U.S.C. 2799aa). Prohibits foreign economic or military assistance to any country that the President determines delivers or receives nuclear enrichment material, materials or technology.

Section 102 (22 U.S.C. 2799aa-1). Prohibits foreign economic or military assistance to countries that the President determines deliver or receive nuclear reprocessing equipment, material or technology to or from another country; or any non-nuclear weapon state which illegally exports from the United States items that would contribute to nuclear proliferation.

Export Administration Act of 1979 (EAA, P.L. 96-72)

Section 5 (50 U.S.C. app. 2404). Authorizes the President to curtail or prohibit the export of any goods or services for national security reasons.

Section 6 (50 U.S.C. app. 2405). Authorizes the President to curtail or prohibit the export of goods and services for foreign policy reasons.

Export Import Bank Act of 1945 (P.L. 79-173)

Section 2(b)(1)(B)(12 U.S.C. 635 (b)(1)(B)). This section provides that the Bank will deny applications for credit for nonfinancial, noncommercial considerations when the President determines it is in the U.S. national interest to deny credit to advance U.S. policies in international terrorism and nuclear proliferation.

Section 2(b)(4)(12 U.S.C. 635 (b)(4). Provides that the Secretary of State shall determine and report to Congress and to the Export-Import Bank Directors if any country has agreed to and violated IAEA safeguards or entered into a cooperation agreement with the United States concerning the use of civil nuclear energy but has violated, abrogated or terminated any guarantee or undertaking related to the agreement.

Nuclear Non-Proliferation Act of 1994. This bill strengthens penalties against those who transfer nuclear bomb designs and components and those countries that detonate nuclear devices.

Nunn-Lugar/Cooperative Threat Reduction Program Legislation. Congress approved funding to assist in the safe and secure storage and dismantlement of nuclear weapons in the Former Soviet States.

The Iran-Iraq Arms Non-proliferation Act of 1992. (Title XVI of P.L. 102-484, as amended, 50 U.S.C. 1701 note) This Act requires sanctions against any person who transfers goods and technology so as to contribute knowingly and materially to the efforts of Iran and Iraq to acquire WMD or destabilizing numbers of advanced conventional weapons.

Iran Nonproliferation Act of 2000. (P.L. 106-178) This Act authorizes the imposition of penalties on countries whose companies provide assistance to Iran in the acquisition of WMD missile delivery systems.

4. Missile Technology Control Regime (MTCR)

Missile Technology Control Act of 1990 (P.L. 101-510) This Act became law in the 101st Congress (H.R. 4739, Title XVII of the National Defense Authorization Act for Fiscal Year1991, P.L. 101-510). It added chapter 7 to th Arms Export Control Act

The Arms Export Control Act (AECA, P.L. 90-629, 22 U.S.C. 2751 et seq.) Chapter 7 of the AECA requires the President to impose sanctions on U.S. and foreign individuals who improperly conduct trade in controlled missile technology.

The Export Administration Act of 1979. (EAA, sanctions 6 (1) and 11B, 50 U.S.C. app. 2405 and app. 2410b). The EAA requires controls on U.S. missile-related exports and sanctions against U.S. and foreign persons who improperly transfer dual-use goods and technology listed in the MTCR annex.

The Iran-Iraq Arms Non-proliferation Act of 1992. (Title XVI of P.L. 102-484, as amended, 50 U.S.C. 1701 note) This Act requires sanctions against any person who transfers goods and technology so as to contribute knowingly and materially to the efforts of Iran and Iraq to acquire WMD or destabilizing numbers of advanced conventional weapons.

Iran Nonproliferation Act of 2000. (P.L. 106-178) This Act authorizes the imposition of penalties on countries whose companies provide assistance to Iran in the acquisition of WMD missile delivery systems.

Foreign Assistance Act of 1961, Section 498(b). (22 U.S.C. 229a(b)) This section prohibits foreign assistance to any republic of the former Soviet Union if it has transferred missiles or missile technology to another state.

The FREEDOM Support Act (Title V, P.L. 102-511, 22 U.S.C. 5851) This provides authorization and funding for non-proliferation and disarmament activities, including support for the disarmament and destruction of nuclear, biological and chemical material and weapons and delivery systems and conventional weapons of the states of the former Soviet Union.

The Cooperative Threat Reduction Act of 1993. (Title XII, P.L. 103-160, as amended, 22 U.S.C. 5951 et seq.) The Nunn-Lugar Act authorizes and provides funds for the elimination of former Soviet WMD delivery systems.

II

107TH CONGRESS
1ST SESSION

S. 673

To establish within the executive branch of the Government an interagency committee to review and coordinate United States nonproliferation efforts in the independent states of the former Soviet Union.

IN THE SENATE OF THE UNITED STATES

APRIL 2 (legislative day, MARCH 30), 2001

Mr. HAGEL (for himself, Mr. BIDEN, and Mr. LUGAR) introduced the following bill; which was read twice and referred to the Committee on Governmental Affairs

---

A BILL

To establish within the executive branch of the Government an interagency committee to review and coordinate United States nonproliferation efforts in the independent states of the former Soviet Union.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "Nonproliferation Assistance Coordination Act of 2001".

SEC. 2. FINDINGS.

Congress finds that—

(1) United States nonproliferation efforts in the independent states of the former Soviet Union have achieved important results in ensuring that weapons of mass destruction, weapons-usable material and technology, and weapons-related knowledge remain beyond the reach of terrorists and weapons-proliferating states;

(2) although these efforts are in the United States national security interest, the effectiveness of these efforts suffers from a lack of coordination within and among United States Government agencies;

(3) increased spending and investment by the United States private sector on nonproliferation efforts in the independent states of the former Soviet Union, specifically, spending and investment by the United States private sector in job creation initiatives and proposals for unemployed Russian weapons scientists and technicians, is making an important contribution in ensuring that knowledge related to weapons of mass destruction remains beyond the reach of terrorists and weapons-proliferating states; and

(4) increased spending and investment by the United States private sector on nonproliferation ef-

1 forts in the independent states of the former Soviet
2 Union requires the establishment of a coordinating
3 body to ensure that United States public and private
4 efforts are not in conflict, and to ensure that public
5 spending on efforts by the independent states of the
6 former Soviet Union is maximized to ensure effi-
7 ciency and further United States national security
8 interests.

9 **SEC. 3. INDEPENDENT STATES OF THE FORMER SOVIET**
10 **UNION DEFINED.**

11 In this Act, the term "independent states of the
12 former Soviet Union" has the meaning given the term in
13 section 3 of the FREEDOM Support Act (22 U.S.C.
14 5801).

15 **SEC. 4. ESTABLISHMENT OF COMMITTEE ON NON-**
16 **PROLIFERATION ASSISTANCE TO THE INDE-**
17 **PENDENT STATES OF THE FORMER SOVIET**
18 **UNION.**

19 (a) ESTABLISHMENT.—There is established within
20 the executive branch of the Government an interagency
21 committee known as the "Committee on Nonproliferation
22 Assistance to the Independent States of the Former Soviet
23 Union" (in this Act referred to as the "Committee").

24 (b) MEMBERSHIP.—

1 (1) IN GENERAL.—The Committee shall be
2 composed of five members, as follows:
3 (A) A representative of the Department of
4 State designated by the Secretary of State.
5 (B) A representative of the Department of
6 Energy designated by the Secretary of Energy.
7 (C) A representative of the Department of
8 Defense designated by the Secretary of De-
9 fense.
10 (D) A representative of the Department of
11 Commerce designated by the Secretary of Com-
12 merce.
13 (E) A representative of the Assistant to
14 the President for National Security Affairs des-
15 ignated by the Assistant to the President.
16 (2) LEVEL OF REPRESENTATION.—The Sec-
17 retary of a department named in subparagraph (A),
18 (B), (C), or (D) of paragraph (1) shall designate as
19 the department's representative an official of that
20 department who is not below the level of an Assist-
21 ant Secretary of the department.
22 (b) CHAIR.—The representative of the Assistant to
23 the President for National Security Affairs shall serve as
24 Chair of the Committee. The Chair may invite the head
25 of any other department or agency of the United States

1 to designate a representative of that department or agency
2 to participate from time to time in the activities of the
3 Committee.

4 **SEC. 5. DUTIES OF COMMITTEE.**

5 (a) IN GENERAL.—The Committee shall have pri-
6 mary continuing responsibility within the executive branch
7 of the Government for—

8 (1) monitoring United States nonproliferation
9 efforts in the independent states of the former So-
10 viet Union; and

11 (2) coordinating the implementation of United
12 States policy with respect to such efforts.

13 (b) DUTIES SPECIFIED.—In carrying out the respon-
14 sibilities described in subsection (a), the Committee
15 shall—

16 (1) arrange for the preparation of analyses on
17 the issues and problems relating to coordination
18 within and among United States departments and
19 agencies on nonproliferation efforts of the inde-
20 pendent states of the former Soviet Union;

21 (2) arrange for the preparation of analyses on
22 the issues and problems relating to coordination be-
23 tween the United States public and private sectors
24 on nonproliferation efforts in the independent states
25 of the former Soviet Union, including coordination

between public and private spending on nonproliferation programs of the independent states of the former Soviet Union and coordination between public spending and private investment in defense conversion activities of the independent states of the former Soviet Union;

(3) provide guidance on arrangements that will coordinate, de-conflict, and maximize the utility of United States public spending on nonproliferation programs of the independent states of the former Soviet Union to ensure efficiency and further United States national security interests;

(4) encourage companies and nongovernmental organizations involved in nonproliferation efforts of the independent states of the former Soviet Union to voluntarily report these efforts to the Committee;

(5)(A) arrange for the preparation of analyses on the issues and problems relating to the coordination between the United States and other countries with respect to nonproliferation efforts in the independent states of the former Soviet Union; and

(B) provide guidance and arrangements that will coordinate, de-conflict, and maximize the utility of United States public spending on nonproliferation programs of the independent states of the former

Soviet Union to ensure efficiency and further United States national security interests; and

(6) consider, and make recommendations to the President and Congress with respect to, proposals for new legislation or regulations relating to United States nonproliferation efforts in the independent states of the former Soviet Union as may be necessary.

SEC. 6. ADMINISTRATIVE SUPPORT.

All United States departments and agencies shall provide, to the extent permitted by law, such information and assistance as may be requested by the Committee or the Secretary of State in carrying out their functions and activities under this Act.

SEC. 7. CONFIDENTIALITY OF INFORMATION.

Information which has been submitted or received in confidence shall not be publicly disclosed, except to the extent required by law, and such information shall be used by the Committee only for the purpose of carrying out the functions and activities set forth in this Act.

SEC. 8. STATUTORY CONSTRUCTION.

Nothing in this Act—

(1) applies to the data-gathering, regulatory, or enforcement authority of any existing United States department or agency over nonproliferation efforts

1 in the independent states of the former Soviet
2 Union, and the review of those efforts undertaken by
3 the Committee shall not in any way supersede or
4 prejudice any other process provided by law; or
5 (2) applies to any activity that is reportable
6 pursuant to title V of the National Security Act of
7 1947 (50 U.S.C. 413 et seq.).

○

S. 673
The Nonproliferation Assistance Coordination Act of 2001
Senators Hagel, Biden and Lugar

Section by Section Analysis

Section 1. Short Title

The Nonproliferation Assistance Coordination Act of 2001

Section 2. Findings

The nonproliferation efforts in the former Soviet Union have achieved important results but lack coordination among US Government agencies.

Increased spending by the US private sector on nonproliferation efforts and job creation efforts for unemployed Russian weapons scientists is key in isolating such knowledge from terrorists.

Increased spending requires the establishment of a coordinating body to realign conflicting programs and maximize the efficiency of such programs

Section 3. Definitions

Defines 'independent states of the former Soviet Union' as Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan. (22 U.S.C. 5801)

Section 4. Establishment of Committee on Nonproliferation Assistance to the Independent States of the Former Soviet Union.

Establishes a Committee of five members representing the Assistant to the President for National Security Affairs and Departments of State, Energy, Defense, and Commerce. The Secretaries of the aforementioned departments shall designate their respective representative who is an official not below the level of an Assistant Secretary of the department. The representative from the Assistant to the President for National Security Affairs will serve as the Chair. The Chair may ask that representatives from other departments or agencies participate in the Committee's activities.

Section 5. Duties

The Committee shall have responsibility for monitoring US nonproliferation efforts in the independent states of the former Soviet Union and coordinating and implementing policy related to such efforts.

In carrying out their responsibilities, the Committee shall, with respect to the independent states of the former Soviet Union, –

1. arrange for the preparation of analyses on the issues and problems relating to coordination of United States departments and agencies on nonproliferation efforts;

2. arrange for the preparation of analyses on the issues and problems relating to coordination between the United States public and private sectors on nonproliferation efforts, including coordination between public and private spending on nonproliferation programs and coordination between public spending and private investment in defense conversion activities;

3. provide guidance on arrangements that will coordinate, de-conflict, and maximize the utility of United States public spending on nonproliferation programs to ensure efficiency and further United States national security interests;

4. encourage companies and nongovernmental organizations involved in nonproliferation efforts to voluntarily report these efforts to the Committee;

5. arrange for the preparation of analyses on the issues and problems relating to the coordination between the United States and other countries; and

6. consider, and make recommendations to the President and Congress with respect to proposals for new legislation or regulations relating to United States nonproliferation efforts in the independent states of the former Soviet Union as may be necessary.

Section 6. Administrative Support

Requires all US departments and agencies to provide, to the extent permitted by law, any information and/or assistance requested by the Committee or the Secretary of State in carrying out their functions under this Act.

Section 7. Confidentiality of Information

States that information submitted or received in confidence will not be publically disclosed, except to the extent required by law, and that such information will only be used by the Committee for carrying out its functions under this Act.

Section 8. Statutory Construction

Clarifies that nothing in this Act applies to the data-gathering, regulatory, or enforcement authority of any existing US department or agency over nonproliferation efforts and that the review of such efforts shall not supersede any other process provided by law. It further clarifies that nothing in this Act applies to any activity that is reportable pursuant to title V of the National Security Act of 1947 (50 U.S.C. 413 et seq.) relating to accountability for intelligence activities.

Combating Proliferation of Weapons of Mass Destruction:

The Elimination of Highly Enriched Uranium From Nuclear Warheads Through the Megatons to Megawatts Program

Submitted for the Record by USEC Inc.

Executive Agent for the United States Government

Implementing the Megatons to Megawatts Program

For the Hearing on

Combating Proliferation of Weapons of Mass Destruction With Non-Proliferation Programs

United States Senate

Subcommittee on International Security, Proliferation, and Federal Services Committee on Governmental Affairs

November 14, 2001

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Summary

Since the end of the Cold War, the United States and Russia have made enormous progress in reducing their nuclear arsenals. Along with this unprecedented reduction of nuclear stockpiles have come heightened concerns about ensuring safeguards for these weapons and weapons-grade fissionable materials. Through the Nunn-Lugar Cooperative Threat Reduction program and other initiatives, the U.S. government has provided Russia with financial assistance and expertise to help improve the effectiveness of its nuclear safeguards activities. The urgency of these safeguards and non-proliferation efforts was obvious. A steady stream of news reports told of terrorist group intentions and efforts to secure nuclear weapons of mass destruction.

Through the early 1990s, U.S. and Russian negotiators sought mutually acceptable ways to increase the effectiveness of Russian safeguards for its nuclear weapons and weapons materials. One such effort culminated in a 1993 government-to-government agreement to implement an historic and innovative program to reduce the potential threat posed by excess Russian nuclear fissile materials. In essence, the agreement put a new twist on the swords into plowshares goal—the two nations would work together to beat Russian nuclear bombs into fuel rods to generate electricity.

The 1993 U.S.-Russian HEU Purchase Agreement stipulated that over a 20-year period 500 metric tons of highly enriched uranium (HEU) extracted from dismantled Russian nuclear warheads would be diluted in Russia into low enriched uranium (LEU) suitable for use as fuel for commercial nuclear electric generating stations. The total value to Russia for conversion of this weapons material would be $12 billion--$8 billion for the enrichment component of the fuel and $4 billion for the natural uranium component.

The parties also agreed that this program would be implemented on a commercial basis. Purchases by the United States of the Russian enrichment component of the low enriched uranium would fund Russian conversion of the warhead material into fuel. The fuel would be sold to electric utility customers operating nuclear power plants. This commercial transaction would be financially self-sustaining—no taxpayer funds would be required.

The United States appointed USEC and Russia appointed Tenex as their executive agents authorized to implement the agreement. In 1994, the executive agents signed a 20-year commercial implementing contract and promptly began working together on the historic program, which has come to be known as Megatons to Megawatts.

In September 2001, the parties celebrated an important milestone in the Megatons to Megawatts program. Fissionable material equivalent to 5,000 warheads has been eliminated by its conversion into power plant fuel. At a time of global concern about weapons of mass destruction, the elimination of that many potential nuclear warheads is indeed good news. The Megatons to Megawatts program is continuing to fulfill its mandate, and the number of weapons eliminated increases steadily.

In brief, this is the current status of the Megatons to Megawatts program as of November 14, 2001:

- The U.S and Russian executive agents, USEC and Tenex, are forty percent ahead of the original 1993 schedule for implementing this 20-year program which, when completed, will have eliminated weapons-grade material equivalent to 20,000 nuclear warheads.

- As of November 14, 2001, 137 metric tons of warhead HEU has been converted into power plant fuel purchased by USEC, eliminating the equivalent of 5,481 nuclear warheads.

- A seven-year working partnership between USEC and Tenex has established a record of trust, cooperation and accommodation by the executive agents.

- USEC inventory and financial resources have ensured continuity during periods of temporary shipment disruptions and accommodation of Russian financial needs.

- Current terms for commercial implementation of the Megatons to Megawatts program expire December 31, 2001. A review of the program has been underway by the Administration, and USEC is in consultation with the Administration about pursuing new financial terms with Russia beginning January 1, 2002. These new, market-based terms will apply through the completion of the contract in 2013.

Given recent events and possible future threats to our national security, it is likely that an increased urgency and emphasis will be placed on nuclear weapons material management and protection. In that context, effective and timely implementation of the Megatons to Megawatts program becomes even more important.

Concern is growing about the risks of proliferation of nuclear weapons and the threat of weapons of mass destruction. The Megatons to Megawatts program is one successful effort to minimize those risks. USEC is committed to the continued success of this program.

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Background Information on the Megatons to Megawatts Program

Actions taken in the early 1990s by the Bush administration and the Congress to reduce potential nuclear threats were truly visionary. That vision has been translated into tangible results:

- 428 ballistic missiles, 87 bombers, 483 long-range nuclear cruise missiles, 225 submarine launched ballistic missiles—all these, as well as additional nuclear weapons, have been dismantled and destroyed.
- 5,600 nuclear warheads that were on strategic delivery systems aimed at the United States have been deactivated. A substantial quantity of fissionable material from those warheads has been sequestered in Russian storage facilities.

From the outset of these efforts, it was clear that this very success would create new challenges of nuclear materials protection, control and accountability (MPC&A). The removal of warhead materials on such a scale created substantial problems of how to safeguard the highly enriched uranium (HEU) and plutonium taken from such warheads. Given the magnitude of such activities by Russia, the U.S. government has been actively assisting and helping to fund MPC&A programs to enhance security of these nuclear weapons materials. A particularly attractive proposal focused on what to do with the large stocks of Russian HEU resulting from weapons system destruction.

In 1992, the Bush Administration structured an agreement with Russia to eliminate 500 metric tons of HEU taken from dismantled nuclear warheads over a 20-year period by converting the HEU to LEU that would be purchased by the U.S. for use in commercial nuclear power plants. The result was the 1993 U.S.-Russian HEU Purchase Agreement. This agreement specified the implementation goal of being financially self-sustaining using commercial business terms. In other words, this was to be a business transaction that would pay for itself and not require taxpayer funding. This commercial undertaking was to pay Russia $8 billion for the enrichment of the fuel on delivery and ultimately return $4 billion in natural uranium component to them.

In 1994, a commercial implementing contract was signed by the United States Enrichment Corporation (USEC), acting as the executive agent for the U.S. government, and Techsnabexport (Tenex), executive agent for the Russian Federation. The national security objectives of the Megatons to Megawatts program are clear—eliminate Russian nuclear warhead material equivalent to 20,000 nuclear warheads, assist in their nuclear housekeeping functions and do so without taxpayer funds. The business objectives are equally clear—purchase fuel derived from warheads from Russia and sell that fuel to customers. This is a symbiotic relationship—one cannot exist without the other. Profits from the sales of this warhead-derived fuel make it possible to achieve the national security goals without taxpayer funding. The ongoing success of the Megatons to Megawatts program demonstrates that national security objectives can be consistent with commercial business objectives.

As you would expect of such a unique, immense undertaking, there have been occasional challenges, differences of opinion, and temporary obstacles to overcome. Yet, all of these matters were addressed and resolved through flexibility, ingenuity and accommodation by both partners who were, and remain, steadfastly committed to the long-term success of this landmark undertaking. Several examples exemplify this point:

- Both parties worked together in 1994 to resolve technical problems to assure that the weapons-derived LEU could meet commercial nuclear fuel specifications and thereby be sold at a fair market value.

- Over the past seven years, USEC has made advanced and early payments to its Russian partner numerous times totaling more than $500 million in order to facilitate dilution and processing or to meet Russian budgetary requirements.

- Despite four separate interruptions in deliveries, USEC used its production and inventory resources to ensure customer sales were met and both parties cooperated on the resumption of deliveries to continue the implementation of this important national security program.

USEC and Tenex have established a strong, productive and mutually beneficial partnership. And that partnership has achieved an impressive track record consistent with the objectives and mutual interests of their respective governments.

Megatons to Megawatts Results to Date

The results achieved by this seven-year partnership between USEC and Tenex confirms that the deal is working very effectively. As of today:

1. Approximately 137 metric tons of Russian warhead HEU have been converted in Russia into LEU fuel and purchased by USEC for use by its electric utility customers.

2. The 137 metric tons of HEU eliminated is the estimated equivalent of 5,481 nuclear warheads—enough nuclear explosives to destroy every city in the world. The peaceful utilization of 137 metric tons of HEU to LEU fuel will produce electricity to power a city the size of Boston for nearly 200 years or meet the entire electric power demand of America for half a year.

3. The executive agents are 40% ahead of the original 1993, 20-year schedule for conversion of a total of 500 metric tons of HEU into fuel—the equivalent of an estimated 20,000 nuclear warheads.

4. USEC has paid Russia approximately $2.3 billion for purchases of this weapons-derived fuel to date. No taxpayer funds have been spent on these purchases.

5. As the global leader in uranium enrichment, USEC has integrated this substantial amount of LEU into its business. HEU-derived enrichment purchased from Russia now constitutes approximately half of USEC's product mix.

The 1996 contract amendment that provides for five-year fixed terms on price and quantities will expire at the end of next month. USEC and Tenex negotiated proposed new contract amendment terms in May 2000 that were intended to go into effect January 1, 2002. The new terms adopt market-based pricing for the remainder of the contract as well as other terms that are mutually acceptable to the parties.

Approval of these terms by the Administration is still pending. Our Russian partner has also informed us that further delay on terms that would allow us to continue deliveries in 2002 and beyond will decrease the amount of nuclear weapons HEU conversion. Accordingly, we believe there is an urgent need for the Administration to approve the proposed new terms so the executive agents can continue their work of converting weapons material into fuel—on time and at levels that will optimize market stability and product value.

USEC has negotiated a revised pricing arrangement that is fair, equitable and ready to be executed—and when executed, it will ensure the continued success of the HEU contract through the permanent disposal of another 15,000 nuclear warheads by 2013.

Considerable attention has been given to the potential for increasing the conversion of nuclear warhead HEU and plutonium into power plant fuel. While the conversion of nuclear warhead materials into fuel for power plants has provided a unique opportunity to support non-proliferation efforts, there are practical limitations as to how much of this weapons-derived material can be absorbed in the commercial market place.

For example, without an increase in the number of nuclear power plants, there is a limit to the amount of weapons-derived fuel that can be introduced into the marketplace without having an effect upon global production of nuclear fuel. If and when the renewed interest in nuclear power results in widespread resumption of nuclear power plant construction and operations, the benefits would be considerable. In addition to environmental benefits and reduction of global climate change, expansion of nuclear power plant operations would offer additional opportunities for consumption of Megatons to Megawatts fuel.

There is no shortage of creativity among those in the non-proliferation community. A number of innovative concepts have been proposed to advance the objectives of reducing the potential risks of diversion or theft of weapons-grade fissionable materials. These range from dilution and storage of weapons-grade fissionable material in Russia to the conversion of weapons-grade material to fuel and the creation of a strategic enrichment reserve in the United States. These and other concepts add to the choices of policy makers, and all will require substantial government funding to implement.

In conclusion, during the past seven years, USEC and its Russian counterpart, Tenex, have forged a strong, cooperative partnership with mutual interest in making the HEU deal work. In terms of actual performance, USEC has met the objectives of the U.S.-Russian HEU Purchase Agreement ahead of schedule and at no cost to the taxpayer. Finally, USEC has submitted a pricing amendment for approval by the U.S. Government that will ensure this success continues over the next 13 years.

Given recent events and possible future threats to our national security, it is likely that an increased urgency and emphasis will be placed on nuclear weapons material management and protection. Effective and timely implementation of the Megatons to Megawatts program becomes even more important in this context.

Concern is growing about the risks of proliferation of nuclear weapons and the threat of weapons of mass destruction. The Megatons to Megawatts program is one successful effort to minimize those risks. USEC is committed to the continued success of this program.

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Appendix ___ :
Current and Future Weapons of Mass Destruction (WMD) Proliferation Threats

I. Threat Assessment

This assessment provides an objective consideration of the *probabilities* of chemical, biological, nuclear and radiological threats in order to assign export control policy priorities that address the proliferation of WMD. At least 25 countries are suspected of having or seeking to develop nuclear, biological or chemical weapons. As many as 28 countries have pursued and probably developed chemical and biological weapons programs. These countries include the former and current WMD programs of many close US allies, as well as current or suspected programs in rogue states. A smaller number of nations have pursued research and development programs for nuclear weapons. The proliferation of WMD extends beyond states because some terrorist groups currently have the resources and sophistication to develop or otherwise obtain these weapons. However, states and terrorist groups should not be considered separately because both may work in tandem to obtain, develop and use WMD.

Chemical, biological, nuclear and radiological WMD do have distinctions in how proliferation threats are posed. A fundamental factor in chemical and biological proliferation threats is the assumption that many types of legitimate technologies could be modified for use or used directly in the manufacture and distribution of WMD. Nuclear proliferation is largely concerned with controlling nuclear material and expertise from the former Soviet Union and other states with nuclear weapons programs. Radiological threats are related to the security of radiological sites including nuclear power plants and medical facilities.

Chemical Weapons

The most common chemical agents for warfare and terrorism fall into two broad categories: 1) blister agents such as the mustard gas used in the trenches during the First World War, and 2) nerve agents such as the sarin gas used by the Aum Shinrikyo cult in the Tokyo subway attacks. Many of the precursor chemicals that are key ingredients in blister and nerve agents are already controlled, which may limit their threat for proliferation.

An additional source of concern invokes a more shadowy set of compounds described as "binary" nerve agents, which may have been developed by researchers in the former Soviet Union. In binary agents, two relatively non-toxic or commonplace chemicals are combined at the moment of weapon deployment to create a compound that could be 5 to 10 times more deadly than ordinary nerve agents. Whether these binary compounds pose a realistic threat is a matter of dispute.

Many unsophisticated, minimally-regulated and readily-available chemical compounds pose an additional threat as crude chemical warfare agents. This may be more relevant to the issue of WMD terrorism by non-state actors. Chlorine gas, anhydrous ammonia, phosphate compounds,

diesel or jet fuel and other industrial and agricultural chemicals are used in vast quantities in the US and abroad. Their legitimate uses extend from the chemical synthesis of fertilizers to the treatment of water in backyard swimming pools.

The globalization of industry and the widespread dissemination of information technologies will pose significant challenges to any controls on chemical warfare technology. Globalization poses problems when the equipment and technological expertise necessary for developing chemical WMD is available in many of the countries where a multi-national corporation has research and manufacturing capabilities. In addition, the Internet currently details on the synthesis of chemical weapons, and this observation extends to the biological, nuclear and radiological weapons that will be discussed below. (http://www.chm.bris.ac.uk/webprojects2001/sharp/new_page_4.html and http://www.chm.bris.ac.uk/motm/sarin/synthesis.html)

Biological Weapons

The threat of biological agents has been driven to the forefront of national security considerations following the recent anthrax attacks in Florida, New York and Washington D.C. It is now clear that the technical and operational challenges to developing or acquiring anthrax weapons have been overcome. The current anthrax attacks may warrant a reexamination of the terminology to include "weapons of mass disruption" or "weapons of mass exposure" rather than the conventional idea of biological WMD that could cause 1,000 or more casualties. So far, the number of individuals infected with anthrax is well below any accepted threshold for casualties in a true WMD attack, and yet the impact on the public health and law enforcement infrastructure in at least three metropolitan areas has been substantial.

One reasonable concern is that the emphasis on anthrax may obscure attention to other biological agents that have been considered or actually developed as agents of biological warfare and bioterrorism. Other credible bioterrorism agents that affect human health include smallpox, Q fever, plague and tularemia. A much less publicized but equally significant threat involves bioterrorism attacks against our national agriculture industry, also called *agroterrorism*. Examples of agroterrorism include the intentional release of biological agents that infect livestock, such as foot and mouth disease, as well as agents that cause various crop diseases.

Bioterrorism is of particular concern because of the potential for clandestine distribution of infectious biological agents, as well as the potential for epidemic disease outbreak following the distribution of infectious agents. Fortunately, neither of these factors have been crucial in the recent anthrax attacks, which were "well announced" in the sense that some of the letters carrying anthrax spores were clearly identified as such. Because anthrax is not a transmissible disease, experts do not currently believe that it has significantly spread beyond the paths of the contaminated letters. The recent infection of a woman in New York who had no obvious contact with mail facilities is causing a reevaluation of the possible modes of anthrax transmission in the current attacks. A bioterrorism scenario with smallpox or plague might develop very differently due to the transmissible nature of those diseases. An attack with plague bacteria would be spread by contagious transmission, but it could also be controlled, due to our ability to treat this

disease with antibiotics. Antibiotic treatment is not possible for smallpox, which is caused by a virus. Vaccination is the only valid protection against viral diseases such as smallpox or influenza. A significant population of the American population is not vaccinated against smallpox.

Bioterrorism could extend to the use of biological toxins, especially the botulism toxin and ricin, which is purified from castor beans. The potential for creating mass casualties by environmental distribution of biological toxins is probably low due to technological challenges, but these agents might be effective for contaminating a food supply.

Genetic modifications of existing biological warfare agents are perhaps the most peobable scenario for future developments in biological WMD. The most likely genetic modifications would involve antibiotic resistance genes that would protect the biological agents from treatment with standard antibiotics. There are no indications that the anthrax strains in the mail attacks were engineered with antibiotic resistance genes. Unfortunately, genetic manipulations techniques may represent the most difficult proliferation issue from an export control standpoint, because virtually the entire basis for genetic manipulation of bacteria and viruses is a matter of open record in scientific journals.

Nuclear/Radiological

The threats posed from nuclear proliferation to terrorist groups mainly involve the material and knowledge required for the creation of a nuclear weapon. The spread of nuclear material and expertise from the former Soviet Union remains a top concern that many believe increases the likelihood of a terrorist group obtaining a nuclear weapon. The key obstacle to building a nuclear weapon is acquiring a sufficient quantity of fissile material, either plutonium or highly enriched uranium. Most nuclear experts conclude that there is no evidence to suggest that terrorist groups have obtained the material necessary for the development of a nuclear weapon. Nevertheless, many experts fear the misuse of lost or stolen nuclear material, especially from states in the former Soviet Union.

The International Atomic Energy Agency (IAEA) recently warned that terrorist attacks involving nuclear material are more likely than before the September 11 attacks. The agency specifically cites the possible threats from radiological weapons or *dirty bombs*. While it would be difficult to make a dirty bomb lethal over a large geographic area, such a weapon would have the effect of creating public fear and prolonged health problems for those exposed to the radioactive fallout. A terrorist organization would not face serious technological barriers in creating a radiological weapon. Such weapons use conventional explosives to disperse nuclear waste material, nuclear fuel or other radiological material. The material required for a radiological weapon is easier to acquire and less expensive than the fissile materials needed to develop nuclear weapons.

Another radiological threat is the sabotage or suicide attack on a nuclear power reactor. A large airplane suicide attack could destroy the containment dome of a reactor and potentially create a

meltdown. According to some, the area impacted by fallout from a sabotaged nuclear reactor would be more severe than a radiological bomb.[1] There are tens of thousands of radioactive sources around the world. These sources include nuclear waste such as cesium and cobalt, which are not safeguarded as stringently as nuclear weapons grade material such as plutonium and uranium. In mock attack exercises performed in the U.S., participants were able to obtain weapons-grade nuclear material or otherwise achieve their goals. Little material would required and it could be obtained from a power plant or medical facility with a source for radiation therapy. The level of technical sophistication required to make these dirty bombs is also much lower than the expertise needed for nuclear weapons. However, working with radioactive materials poses significant risks to personal health unless proper safety and protective equipment is available. The willingness of terrorists to sacrifice their lives to achieve their aims makes nuclear terrorism more likely than before. Because terrorist groups have demonstrated the will to die for their cause, nuclear material could conceivably be removed from radioactive sources without concerns for health and safety.

The trafficking of nuclear expertise represents another significant nuclear threat. There is a credible threat of proliferation of nuclear expertise or "loose nukes," the leakage of nuclear weapons knowledge from the former Soviet Union. There is substantial concern over the threat of Russian or Pakistani nuclear experts training terrorist groups to make nuclear weapons. In a study conducted by the Nuclear Control Institute (NCI), nuclear explosive experts concluded that a group of dedicated terrorists without nuclear backgrounds could assemble a nuclear weapon if provided with the right material. The NCI report estimates that it would take about a year to complete assembly. If a state or terrorist group covertly obtained an assembled nuclear weapon, built-in safeguards and self-destruction mechanisms would pose serious challenges for successful detonation.

The techniques recently used by suspected terrorists to obtain radiological material call attention to the issue of how export control policies could play a role in curbing proliferation. There are indications that terrorist organizations such as al-Qaeda have sought to obtain radiological weapons through the use of front companies. In one example, an environmental firm was used as a front to buy nuclear waste.[2] This example raises questions over how export controls can be adapted to control WMD material from terrorist groups.

II. Dual-Use Technologies

Chemical Weapons

The standard equipment and technologies used in the chemical industry are easily diverted for use in chemical weapons production. With sufficient time and effort, refineries and other chemical plants could be modified to allow the production of chemical weapons. The recent discovery of chemical weapons production facilities within a larger industrial chemical complex

[1] Edward Lyman, Science Director, Nuclear Control Institute.
[2] Sunday Times. 14 October, 2001.

in the former Soviet Union underscores the difficulty involved in determining whether certain industrial-scale chemical engineering equipment requires strict controls on sales and exports. Because many chemical warfare agents are highly corrosive and toxic, there are basic operational requirements for safely producing and distributing them. The necessary containment facilities, corrosion-resistant reaction vessels, reaction temperature control instruments and distillation equipment are probably prohibitively expensive for all but the most well-financed organizations and states. Non-state terrorist groups would still face significant challenges when attempting to produce chemical WMD, even if they could obtain the equipment needed to produce chemical weapons. Nevertheless, we have seen how the significant financial resources of the Aum Shinrikyo enabled that group to prepare small amounts of crude nerve agents, most notably the sarin nerve gas used in the Tokyo subway attack.

Biological Weapons

Similar to chemical weapons, the role of dual-use technologies and equipment is an integral part of biological weapons proliferation. The basic equipment for producing biological weapons includes: 1) growth media; 2) sterilization equipment for preparing the growth media; 3) fermenters for controlling the basic environmental conditions when growing microorganisms; and 4) sterile biocontainment equipment that prevents contamination when working with "seed cultures" of microorganisms or when preparing and refining large quantities of the organisms once they have grown. More sophisticated equipment includes: 1) specialized chemicals that contribute to the dispersal of biological agents; 2) milling machines used to prepare dried biological agents that can be easily dispersed; and 3) sprayers or other devices for dispersing wet or dry biological agents. Taken alone, any piece of equipment mentioned above could have a perfectly legitimate use in industrial or agricultural practice. For example, several types of equipment described above are used by the pharmaceutical industry to prepare invaluable vaccines and drugs. Crop irrigation and pesticide application equipment is used by farmers across the country. The basic arguments for export controls on these types of equipment may be countered with claims that legitimate businesses, at home and abroad, could be hurt by unnecessary limitations on their sale and export.

One of the most important aspects is the scale of the equipment used for production. Large-scale equipment will allow easier production of biological agents, whether yeast for the baking and brewing industries or anthrax for biowarfare purposes. Clearly, the scale problem can be overcome by producing smaller batches of bioweapons over a longer period of time. If a group is able to work without any constraints on time (or space, if enough equipment is available), they will eventually be able to produce significant amounts of weapons even if they are restricted to using small-scale equipment.

The scale of the Soviet bioweapons program was probably very large, in terms of employees, equipment and overall infrastructure. This observation leads to concerns that a "brain drain" might result in former Soviet bioweaponeers leaving unfavorable conditions at home to work for bioweapons programs in other countries. However, the sheer numbers associated with the scale of the Soviet bioweapons program (65,000 people employed) may be misleading in the sense that a large number of those people probably had no specific scientific knowledge for

bioweapons research, nor did they have specialized engineering skills for designing, building and operating large scale production facilities. Therefore, the absolute number of people with scientific and technical expertise to develop advanced biological weapons programs is probably small and could be more easily monitored with the cooperation of officials from states in the former Soviet Union.

Nuclear /Radiological Weapons

The dual-use technologies required in nuclear weapons production largely consist of the scientific expertise necessary for their development and the devices used to test and deliver them. There is growing concern that this knowledge could be used to train terrorist groups that seek to develop nuclear weapons of their own, no matter how crude those weapons may be. This was recently demonstrated by Pakistan's detainment of three of its leading nuclear scientists for questioning to determine whether nuclear weapons technology may have been transferred to Osama Bin Laden.

Much of the technology required for the production of a nuclear weapon is dual-use. The examination of dual-use nuclear technology has typically included missile technology required for weapons delivery and supercomputers used for accurate and covert weapons testing and simulation. Machine tool technologies used for the production of aircraft engines are also used for missile technology. Spent fuel rod from civilian power plants can be used for the development of a nuclear weapon.

There are also many sources of radiological material that can be used in a dirty bomb. The security measures to protect radioactive materials used for the civilian purposes of cancer treatment and industrial and food irradiation is light relative to the damage these materials can cause. Since today's terorrists are willing to die for their cause, the danger of handling intensely radioactive material can no longer be seen as an effective deterrent.

Despite the threats posed by dual-use technologies, high-technology threasholds for building nuclear weapons would make it easier for terorrist groups to buy or steal a complete weapon. It may also be preferable for terrorist groups or rogue states to use or deliver nuclear weapons by asymmetric means such as by ship, plane or suitcase. For example, if delivered by ship, design limitations would be minimal, since the weapon could fit into a much larger container. Therefore, constraints on a weapon's weight, shape and volume would be low. Radiological weapons can be made from nuclear waste, which could have been used for civilian purposes. Sources of radiological material can range from power plants to medical facilities.

III. Current Export Control Mechanisms

This hearing will also examine how recent developments in WMD technology affect the utility of export controls and what new measures may be needed to curb the threat of WMD proliferation. The existing export control systems continue to foster frustration among those in government and industry. Current and future national security trends will likely force a wider

analysis of how export controls – initially designed by states to regulate state behavior – can address the threats posed by non-state terrorist groups. In the current diffuse security environment, states may need to consider how the federal agencies that enforce control regime policies can work more closely with national ministries of justice to determine the proper melding of foreign policy and law enforcement. The importance of coalition building for the war on terrorism is likely to complicate the current situation by illustrating the importance of sharing dual-use technologies with our long-standing allies and new coalition partners.

Several key challenges to effective export controls include:

- Globalization of many industries, including defense
- Consolidation of the defense industry
- Rapid technological developments and virtually instantaneous information transfer
- Increased numbers of suppliers that produce high-technology items

The Department of Commerce is the lead agency for controlling the export of dual-use technologies. The current export control system process is complicated both by the way export controls are enforced and the interagency export license review process between the Departments of Commerce, State, Defense and Energy.

Under current regulations, exporters are required to apply for licenses for all potentially dual-use technologies. Exporters are required to follow a step-by-step process to determine whether an export license is required for a technology they wish to export. The Department of Commerce administers the Commodity Control List (CCL) of approximately 2400 dual-use items including equipment, materials, software, and technology (data and expertise) which might require an export license. Export licenses are also required for dual-use technologies that are exported to particular countries that pose security concerns and friendly countries where there may be a risk of diverting technologies to third party. An analysis of end-use and end-users also may determine the need for an export license. The current interagency approach is considered by many to be overly burdensome and lacking transparency. The export control system is better at licensing items than determining which dual-use technologies to control. The CCL is periodically updated with input from other government agencies including the Departments of Defense and State.

The Department of Commerce Bureau of Export Administration (BXA) must provide a complete analysis of several thousand export licenses applications each year. The BXA reviews not just the item to be exported, but also the country it will be exported to, its intended end-use and the reliability of the exporter and the recipient of the technology.[3] The BXA has 9 days to notify an applicant whether the application is accepted, denied, requires more information or additional review.

Current regulations give the Departments of Defense, Energy and State a direct and equal role in the review of all license applications submitted to the BXA. The Departments of State, Defense

[3] For current rules governing the export license review process, see Executive Order 12981, "Administration of Export Controls," December 5, 1995.

and Energy partcipate in an interagency review process administered by the Department of Commerce. The review process is facilitated by the involvement of several groups that provide broad expertise and allow for interagency coordination. If no recommendation is made within a 30-day period, reviewing agencies will be deemed to have no objection to the license decision of BXA. Disagreement over the granting of an export license for a particular dual-use technology will trigger a three-tiered dispute resolution process. One basis of appeal is an assessment of foreign availability. If the item in question can be shown to be readily available from a non-U.S. source in sufficient quantity and of comparable quality, license denials may be reversed. Such disagreements arise in about 6% of all license applications. About 93% of all disputes are resolved by consensus in the first tier. A representative from the Department of Commerce chairs the dispute resolution process.

The U.S. has been broadly criticized for taking a "go it alone" approach despite increased participation in efforts to secure and expand the foundation for a truly effective multilateral system. There are common perceptions that the US is slighting other nations by suggesting that their export controls are "leaky" and that all US export controls are thinly-disguised protectionist policies that benefit US companies and place other nations at a disadvantage. Many experts believe that a gradual approach involving bilateral or regional agreements may be the best path toward developing an effective multilateral export system. Most experts also support technology sharing with allies based on a policy of building "higher walls around fewer items."

IV. Existing International Export Control Mechanisms

There are several multilateral export control regimes in place to prevent the proliferation of sensitive WMD technology and military articles. There are four key multilateral export control regimes designed to achieve nonproliferation and national security objectives.

The Nuclear Suppliers Group (NSG)
This regime was established in the 1970's and establishes an agreement among nuclear supplier states. Common guidelines govern nuclear transfers to non-nuclear weapons states. These guidelines were initially published by the IAEA in 1978. In 1991, NSG adherents met over WMD proliferation concerns regarding Iraq. The 35 member countries agreed to new guidelines on the transfer of dual-use technologies that could contribute to a nuclear weapons program. Among the major challenges are updating the lists of controlled items, managing the increasing number of countries that seek to join for the prestige that accompanies membership and establishing a more coordinated process for licensing and enforcement.

The Australia Group (AG)
This organization was established in 1985 to prevent any contribution to chemical and biological weapons programs through inadvertent supply of chemical precursers, biological agents or dual-use technologies. It also seeks to preserve the legitimate trade of these items. Members agree to common guidelines for export licensing of chemical and biological materials. AG members now view their institution as an important way of meeting their obligations for the implementation of export control and verification protocals under the Chemcial Weapons

Convention (CWC) of 1993 and the Biological and Toxin Weapons Convention (BTWC) of 1972. The AG faces particular challenges in controlling biological weapons, since this capability rests more on the acquisition of information relative to material and equipment. Since the initial stages of legitimate biological applications and weapons production are identical, verification limits on biotechnology are likely to be more intrusive than in the case of chemical and nuclear weapons.

The Missile Technology Control Regime (MTCR)
The MTCR is an informal, voluntary association of countries that share the goals of nonproliferation and seek the coordination of export licensing of missiles and related technology. Since it was established in 1987, membership has steadily grown to 32 countries. It controls the export of missiles and related technology according to payload (500 kg) and range (300 km) parameters. Export contol arrangements also cover specially designed production facilities and related missile technology. Rules, incentives and sanctions for either adhering to or violating the agreement have varied considerably.

The Wassenaar Agreement (WA)
This informal agreement of 33 countries is the successor to the Cold War export control regime (COCOM) and was established in 1995 to control the transfer of conventional weapons and sensitive dual-use items and technologies. The agreement was established to promote transparency in export control policies and greater responsibility in preventing destabilizing accumulations of conventional weapons and related technologies. The arrangement does not identify countries that member states must avoid when exporting dual-use technologies. It does not require member countries to consult others *prior* to granting licenses and the regime does not have a single-member veto for either adding or removing items from controlled lists. States use aggregate reporting to obfuscate understanding of which specific technologies were exported.

Appendix___: Background on Non-proliferation Assistance Programs

1. Former Soviet WMD Programs, Stockpiles and Treaties:

Most former Soviet states, except for Russia, were unaware and unprepared for the materials they inherited when the Soviet Union collapsed. The weapons of mass destruction stockpiles turned over to their control included complete weapons and weapon systems, materials, facilities, technology and critical personnel.

A. Nuclear Stockpile and Arms Control Agreements

A comprehensive inventory of all Russian nuclear weapon assets does not exist. In 1991, at the close of the Cold War, Russia had more than:

- 40,000 nuclear weapons
- 1,000 metric tons of highly enriched uranium
- at least 150 metric tons of weapon grade plutonium that could be used to make an additional 40,000 weapons.

A number of factors have come together to present an immediate risk of theft of these weapons and materials: delays in payments to guards at nuclear facilities, breakdowns in command structures, and inadequate budgets for protection of stockpiles and weapon laboratories.

The Strategic Arms Reduction Treaty (START) series were written to reduce the size of the American and Russian nuclear weapon stockpile, specifying the overall number of complete nuclear warheads, weapons, and delivery systems, and setting up a detailed verification system. The Office of Cooperative Threat Reduction (CTR) within DOD works with the former Soviet states to comply with START provisions. The Table below contains the numbers of nuclear weapons at the end of the Cold War, currently, and projected at future START milestones. As of April 2001 per START I, the Ukraine, Kazakhstan, and Belarus are nuclear weapons free. Therefore, all numbers below reflect Russian stockpiles only.

Weapon system	CTR (baseline)	2001 (current)	2004 (START I)	2007 (START II)
Active Warheads	13300	7796	4732	3419
Intercontinental Ballistic Missiles	1473	1051	731	436
ICBM Silos	831	448	401	266
ICBM mobile launchers	442	442	300	192
Long Range Nuclear Air-Launched Cruise Missiles	487	4	0	0
Submarine Launched Ballistic Missile Launchers	728	376	248	116
Submarine Launched Ballistic Missiles	936	737	433	275
Ballistic Missile Submarines	48	29	16	7
Nuclear Test Tunnels/Holes	194	0	0	0
Bombers	167	82	80	74

START I – Reductions to equal aggregate levels in strategic offensive arms, carried out in three phases over seven years from the date the treaty enters into force. Central limits include: 1,600 Strategic Nuclear Delivery Vehicles (SNDVs); 6,000 accountable warheads; 4,900 ballistic missile warheads; 1,540 warheads on 154 heavy intercontinental ballistic missiles (ICBMs) for the Soviet side. In addition to the elimination of missiles, their launchers and bombers, START establishes prohibitions on locations, training, testing and modernization.

START II – when implemented, will eliminate heavy intercontinental ballistic missiles (ICBMS) and all other multiple-warhead (MIRVed) ICBMS. Only ICBMs carrying a single-warhead will be allowed. It will also reduce the total number of strategic nuclear weapons deployed by both countries to two-thirds below pre-START levels. By the end of the second and final phase, each side must reduce its total deployed strategic nuclear warheads to 3,000-3,500. No more than 1,700-1,750 deployed warheads may be on SLBMS, which may be MIRVed. The September 26, 1997 Protocol on Early Deactivation extends the date by which the START II limitations and reductions must be completed from January 1, 2003 to December 31, 2007. It also extends the date by which the interim limitations must be carried out from seven years after entry into force of the START Treaty (December 5, 2001) to December 31, 2004.

START II Treaty was signed on January 3, 1993, by President George Bush and President Boris Yeltsin. The Treaty codifies the Joint Understanding signed by the two Presidents at the Washington Summit on June 17, 1992. The U.S. Senate ratified START II on January 26, 1996. Ratification of the Treaty in the Russian Duma, pending since 1996, was completed on 14 April 2000.

START III – will establish a ceiling of 2,000-2,500 strategic nuclear weapons for each of the parties, representing a 30-45 percent reduction in the number of total deployed strategic warheads permitted under START II. START III will include measures relating to the transparency of strategic nuclear warhead inventories and the destruction of strategic nuclear warheads. The Russian Federation has proposed a reduction of the overall threshold of up to1,500 warheads, a more substantial reduction of nuclear arms than had been foreseen at Helsinki in March 1997. Since early 2000, the Russian Federation has been ready to hold talks on reducing strategic offensive weapons on the basis of basic elements defined during the meeting between its President and the U.S. President in Helsinki in March 1997, and confirmed in Cologne in June 1999. As of early 2000, Russia remained committed to the goal of reducing the number of strategic nuclear warheads held by each side to 1,500, while the American position remains that 2,000 to 2,500 warheads are needed for effective nuclear deterrence.

START IV – A future START IV agreement would involve all declared nuclear nations. The goal of such a multilateral effort would be to substantially reduce global warhead inventories to the point where the declared powers would have some level of parity. Negotiation of the details of START IV are pending negotiation and ratification of START III

Current negotiations between Russia and the U.S. linking strategic arms reductions to missile defense testing may change the lower limits in both the U.S. and Russia.

B. Chemical & Biological Weapons - Arms Control Agreements

Geneva Protocol

The Geneva Protocol restated the prohibition on use of poisonous gases previously laid down by the Versailles and Washington Treaties and added a ban on bacteriological warfare. When they ratified or acceded to the protocol, some nations -- including the United Kingdom, France, and the U.S.S.R. -- declared that it would cease to be binding on them if their enemies, or the allies of their enemies, failed to respect the prohibitions of the protocol. The American position is that the protocol does not apply to the use of riot-control agents and herbicides. The Geneva Protocol was signed on June 17, 1925, and before World War II, the protocol was

ratified by many countries, including all the major powers except the United States and Japan. The protocol was ratified by the United States on January 22, 1975. The Soviet Union signed the Geneva Protocol on April 5, 1928.

The Biological Weapon Convention of 1972

On April 10, 1972 the U.S., U.K. and U.S.S.R. signed "The Convention on the Prohibition of the Development, Production, and Stockpiling of Bacteriological (biological) and Toxin Weapons and on Their Destruction" (BWC). Parties to the convention agree not to develop, produce, stockpile, or acquire biological agents or toxins "of types and in quantities that have no justification for prophylactic, protective, and other peaceful purposes," as well as related weapons and means of delivery. The BWC does not prohibit BW research and does not contain provisions to verify compliance. The BWC entered into force in 1975.

At the second Review Conference in September 1986, the parties agreed to implement data exchange measures to enhance confidence and to promote cooperation in areas of permitted biological activities. The third Review Conference in September 1991, created an Ad Hoc Group of Governmental Experts to evaluate potential verification measures. The Special Conference, held in September 1994, established an Ad Hoc Group to draft proposals to strengthen the BWC.

This summer, the Bush Administration decided the proposed protocols to strengthen the BWC that calls for inspections and other means for verifying compliance posed an unacceptable risk to national security, including exposing the U.S. biodefense programs and the pharmaceutical industry to spying. In July the Administration promised to propose alternatives before the November 19, 2001, meeting in Geneva to discuss the protocols and options for strengthening the BWC.

On November 2, 2001, the Bush Administration outlined a seven-point proposal that State Department officials said would form the basis of the American negotiating position in Geneva. Many components of this proposal, called the "Bush Doctrine" are similar to the protocols rejected by the Administration in July. The guidelines demand strong laws in participating countries banning biological weapons, extradition requirements, and stronger controls over biological agents. It would establish a U.N. procedure for "investigating suspicious outbreaks or allegations of biological weapons use." The proposal focuses on criminal and underground activity and makes states responsible for dealing with scientists and others who might engage in bioweapon activity.

Chemical Weapon Convention

The Chemical Weapons Convention (CWC) bans the production, acquisition, stockpiling, transfer and use of chemical weapons. Each State Party undertakes to destroy the chemical weapons and any chemical weapons production facilities it owns or possesses. The CWC penalizes countries that do not join by inhibiting their access to certain treaty-controlled chemicals. The CWC regime monitors commercial facilities that produce, process or consume dual-use chemicals to ensure they are not diverted for prohibited purposes.

The CWC entered into force April 29, 1997. The Organization for the Prohibition of Chemical Weapons (OPCW) in The Hague, Netherlands, is responsible for implementing the Chemical Weapons Convention (CWC). The U.S. and Russia were both original signatories of the CWC on January 13-15, 1993, in Paris.

C. Biological and Chemical Weapons in the former Soviet Union

Although the Soviet Union was a party to all talks, deliberations and preliminary agreements leading up to the agreement, they maintained the world's largest chemical arsenal of around 40,000 metric tons. The chemical weapons are stored at seven sites. To create, maintain and weaponize these chemicals, the Soviet Union employed 6,000 scientists, technicians and laborers at four main laboratories. Current estimates indicate that there were 2000 critical chemical weapon scientists.

In May 2001 Russian President Putin created a council to begin work on destroying their chemical weapon stockpiles, per the Chemical Weapon Convention. Moscow ratified the CWC in 1997, but has yet to begin destroying its 44,000 tons of highly toxic blister and nerve agents. The Russian plan is for the first 8,000 ton batch to be destroyed by April 29, 2002, although most experts agree that this is not feasible. Russia's lower house of parliament, the State Duma, voted October 31, 2001, to pass a bill allowing transportation of chemical weapons for destruction. The permit to move the chemical stockpiles across the country will significantly reduce the cost of the destruction efforts by reducing the number of destruction facilities to three. However, this will add to the possibility of theft, diversion and accident threat of chemical weapons while en route from the storage locations to the destruction facilities.

The U.S., Britain and Soviet Union signed the Biological Weapons and Toxins Convention (BWC) treaty in 1972 and by December 26, 1975, the U.S. had completed destruction of all biological weapons. In spite of this, the Soviet Union built an impressive biological weapon program, including four military facilities and 50 "commercial" facilities. These facilities employed around 40,000 employees, of which 9,000 were scientists and engineers. This program produced thousands of tons of anthrax, small pox, plague and weaponized them to be delivered via missiles. Of the biological weapon employees, 10,000 worked on animal and plant pathogens.

Soon after the collapse of the Soviet Union, President Yeltsin admitted that the U.S.S.R had systematically violated the BWC , ordered that these activities be stopped and that the stockpiled chemical and biological weapons be destroyed. However, these decrees have not been fully implemented or funded. A major concern for chemical and biological weapon proliferation is the movement of critical scientists and engineers to other countries. In 1990, there were 13,000 chemical and biological weapons personnel employed at the 7 largest "commercial" institutes. In 1999, there were 6220 personnel ("Toxic Archipelago Preventing Proliferation from the Former Soviet Chemical and Biological Weapons Complexes," Amy Smithson, December 1999). Reports from former biological weapon laboratories in the late 1990's indicate that people and information have been leaked to Iran. In 1994 a scientist from a Moscow bioweapon laboratory spent a year working in Iran, and current rumors indicate that Iran has offered to pay $50,000 annually to Russian bioweapon scientists to work on infectious diseases. In 1999 a Russian newspaper reported that a Russian scientific delegation visiting Iran gave an anti-crop agent during a trip to Tehran. There are also scattered reports of equipment trafficking.

2. U.S. Counter Proliferation Programs

The Nunn-Lugar legislative initiative of 1991 (the Soviet Nuclear Threat Reduction Act of 1991 - P.L. 102-228) established an array of threat reduction programs in the Departments of Defense and Energy to assist in dismantling former Soviet weapons of mass destruction and improve the security of such weapons and materials. These activities, along with others under the Department of State and National Science Foundation comprise the Cooperative Threat Reduction (CTR) Program. The destruction of strategic nuclear weapons and the protection of nuclear warheads are core tasks for CTR programs. The goals of CTR are to establish programs with former Soviet states to:

(1) Facilitate the elimination, and the safe and secure transportation and storage, of nuclear, chemical, and other weapons and their delivery vehicles.

(2) Facilitate the safe and secure storage of fissile materials derived from the elimination of nuclear weapons. Fissile materials (plutonium and highly enriched uranium) are the fundamental ingredients of all nuclear weapons and are also the most difficult and expensive part of a nuclear warhead to produce.

(3) Prevent the proliferation of weapons, weapons components, and weapons-related technology and expertise.

(4) Expand military-to-military and defense contacts.

Other non-proliferation activities have begun to address the "brain drain" problem in Russia and other former Soviet states to redirect weapon scientists and engineers from defense work to civilian employment.

An Interagency Working Group, chaired by the National Security Council (NSC) staff, reviews all CTR activities. This group is co-chaired by the NSC and is made up of representatives from the Department of Defense (DOD), Department of Commerce (Commerce), Department of State (State), Department of Energy (DOE), the intelligence community, Joint Chiefs of Staff, and the Nuclear Regulatory Commission (NRC). Per the President's delegation of authority and statutory responsibility, the Department of Defense has the lead role in implementing agreements with recipient nations and in managing CRT program activities.

Department of Defense CTR Counter Proliferation Programs

The Department of Defense (DOD) Cooperative Threat Reduction Office within the Office of the Secretary of Defense helps plan future assistance activities supporting CTR goals, manages the day-to-day business of working with representatives in recipient nations to identity specific needs, and oversees contracts. The Defense Threat Reduction Agency (DTRA), reporting to the Under Secretary of Defense for Acquisition, Technology and Logistics, is the CTR implementing agency, working with Russian and other former Soviet state governments to help them dismantle and destroy weapons and weapon systems in compliance with arms control agreements and treaties.

DOD separates its nonproliferation programs into five Objectives, most of which apply to helping Russia and other former Soviet states comply with the START treaties and other international agreements. Technical implementation of the programs is carried out by DTRA. Program and budget information for DOD CTR activities was compiled from the *Cooperative Threat Reduction Multi-Year Program Plan for Fiscal Year 2001.*

1. Objective 1: Assist Russia in accelerating strategic arms reductions to START levels (START I, II, and eventually III)

The primary program under Objective 1 is the Strategic Offensive Arms Elimination (SOAE). Since 1994, DOD, through CTR, has built up the infrastructure and equipment needed to support reduction of Russia's nuclear WMD delivery system. This program also provides funding and equipment for safety and accident response involving transportation of ballistic missiles, propellants, and warheads.

2. Objective 2: Enhance safety, security, control, accounting and centralization of nuclear weapons and fissile material in former Soviet states to prevent their proliferation and encourage their reduction.

The programs under Objective 2 encourage nuclear warhead dismantlement, provide enhanced security for Russian warheads in storage and transport, provide safe and secure storage for fissile material from dismantled warheads, address proliferation threat posed by continued production of weapon grade plutonium. To meet this objective, all former Soviet nuclear weapons were consolidated in Russia by 1996. The primary programs under Objective 2 are Nuclear Weapons Storage Security, Elimination of Weapon Grade Plutonium, Nuclear Weapons Transportation, Fissile Materials Processing, and Fissile Material Storage.

3. Objective 3: Assist Ukraine and Kazakhstan to eliminate START limited systems and WMD infrastructure.

This Objective was carried out under the Strategic Nuclear Arms Elimination program.

4. Objective 4: Assist former Soviet states to eliminate and prevent proliferation of biological and chemical weapons and associated capabilities.

This Objective is carried out under the Biological Weapon Proliferation Program (Russia) and Chemical Weapon Destruction Program (Russia). These programs provide collaborative research for chemical and biological weapon scientists through DOD partnership with the Department of State's program. They also provide enhanced security and safety systems for dangerous pathogens repositories at biological research centers, consolidate and dismantle infrastructure associated with biological weapon production or research, and assist the Russian Federation in the safe, secure and ecologically sound destruction of its chemical weapon stockpile and production infrastructure. The Chemical Weapon Destruction Program is specifically to help Russia build a Chemical Weapon Destruction facility.

5. Objective 5: Encourage military reduction and reform, and reduce proliferation threat in former Soviet Union.

This objective is carried out through the Defense and Military Contacts program, which encourages former Soviet states to downsize its defense establishment and support for democratic reform. It also helps former Soviet military better understand western society, especially relationship between civil and military sectors.

Department of Energy and other Non-Proliferation Programs

DOE separates its non-proliferation programs into four broad categories: control of fissile materials; reduction of the amount of material; redirection of nuclear complex workers; and safety of material and people. The same four categories hold for biological and chemical

weapons. Each category, and the related programs within DOE, State and NSF, are discussed in detail below.

A. Control

Nuclear Weapons

Within DOE, control of fissile material falls under the Material Protection, Control & Accounting Program (MPC&A) and the Second Line of Defense (SLD) Program. MPC&A is one of the most mature of the U.S. threat reduction programs and was the primary focus of the Nunn-Lugar/Soviet Nuclear Threat Reduction Act of 1991. MPC&A prevents theft or diversion of nuclear weapon material by improving security of material at nuclear laboratories and facilities. The program also works to reduce the amount of material stored and decreases the overall number of storage sites. This program is called the "first line of defense" against nuclear proliferation.

Complementing MPC&A is the Second Line of Defense (SLD) Program. This program helps Russian authorities protect their borders so that material diverted from a laboratory, facility or nuclear power plant will be detected and seized before it leaves Russian territory. This program was initiated in 1998, and works with the Russian Federation Customs Services in the first U.S.-Russian cooperative program to combat illicit trafficking of nuclear material and nuclear-related equipment.

Chemical and Biological Weapons

A major concern about the chemical and biological weapon facilities is that poor security and accountability could lead to theft or diversion of weapon-usable material (i.e. dangerous pathogen seed cultures, guidebooks for weapon production) onto the black market. The institutes operate under a security measure called perimeter-in access, which employs a combination of physical access control with some safety practices required to work with dangerous chemicals and/or toxins. The Department of Defense spent $13 million for security enhancement of biowarfare laboratories between 1997 and 2000. To further reduce the opportunity of theft or diversion of material, CTR is funding a series of grants through the Department of State International Science and Technology Center (ISTC) at some biological institutes. The sites chosen all work with dangerous pathogens and are being used to facilitate the consolidation of biological weapon materials into a few locations. The Department of State works with the Department of Health and Human Services Centers for Disease Control and Prevention in reviewing and strengthening laboratory safety measures.

B. Reduction

Nuclear Material

The DOE Highly Enriched Uranium (HEU) Purchase Agreement authorizes the contract mechanism between the U.S. Enrichment Corporation (USEC) and the Russian Techsnabexport. Starting in 1994, it allows the U.S. to purchase 500 metric tons of HEU to be removed from former Soviet nuclear weapons and converted to low enriched uranium (LEU) suitable for commercial fuel. All HEU is specified to be derived from dismantled nuclear weapons. The HEU provides a financial incentive to dismantle thousands of nuclear weapons and render the material in those weapons impotent, while providing a valuable commercial product to the U.S. and hundreds of millions of dollars a year to Russia. However, the amount under agreement represents only half of the HEU Russia owned at the end of the Cold War.

The mission of the Russian Plutonium Disposition Program is to reduce the inventory of surplus Russian weapons-usable plutonium in step with the U.S. plutonium disposition program. The program moved into a new phase in September 2000, with the signing of the Plutonium Disposition and Management Agreement, and began to dispose of 34 metric tons of excess weapons plutonium in Russia and rendering it unusable for military purposes. Until this point, it had been mostly used for joint technical studies to prepare for large-scale reduction in plutonium stockpiles. The U.S. and Russia are working together to develop disposition methods which are both cost effective and environmentally sound. This and the HEU program require thorough security measures to ensure that they do not create new proliferation threats.

C. Shrink and Redirect

During the Cold War, the Soviet Union established several hundred research institutes dedicated to the research, development, and production of weapons of mass destruction. Although precise figures are not available, it is estimated that at the time of the Soviet Union's collapse, from 30,000 to 75,000 highly trained senior weapon scientists worked at these institutes. The prospect of wayward weapons scientists and leaks of weapons-usable materials from the research institutes was a major motivation for starting a group of grant assistance programs, namely the International Science and Technology Center (ISTC), the Civilian Research and Development Foundation, the Science and Technology Center in Ukraine, and the Initiatives for Proliferation Prevention program

The DOE Initiatives for Proliferation Prevention (IPP) Program was started in 1994. IPP pairs U.S. and Russian weapon scientists and industry to develop commercially viable products and technologies and new civilian jobs to support them. Inter-laboratory teams review proposed projects to ensure technical viability, and U.S. government specialists ensure that they do not contribute to foreign military capabilities.

The International Science and Technology Center is an intergovernmental organization established in 1992 by agreement between the European Union, Japan, Russian Federation, and U.S. From its headquarters in Moscow, Russian Federation, the Center provides weapons scientists from CIS countries with opportunities for redirecting their scientific talents to peaceful research. Although precise figures are not available, science center officials estimate that at the time of the Soviet Union's collapse, from 30,000 to 75,000 highly trained senior weapons scientists worked at Soviet military and civilian research institutes. In the U.S., ISTC is operated through the Department of State, and like IPP, focuses on scientists still at work in weapon complex laboratories and facilities.

Another DOE program used to redirect former nuclear weapon personnel is the Nuclear Cities Initiative (NCI) started in 1998. This program mission is to both assist Russia reduce the size of its nuclear weapon complex and redirect the work of nuclear weapons scientists, engineers and technicians in the 10 closed nuclear cities to alternative, non-military scientific or commercial activities. Unlike IPP and ISTC, NCI focuses on providing assistance to scientists as they lose their jobs. NCI works with MinAtom, its institutes and western companies to create opportunities for short-term contract employment and to create municipal and telecommunications infrastructure necessary to attract and establish longer-term business opportunities.

DOE's IPP and the Department of State's ISTC programs are also used to help redirect chemical and biological weapon scientists and engineers. However, the bulk of the grants go to former nuclear weapon scientists and programs.

The Civilian Research and Development Foundation, operated by the National Science Foundation, awards grants to redirect mostly biological weapon scientists and engineers towards commercially viable research projects. CRDF also helps these scientists interact with potential collaborators at international science and industry conferences by arranging travel grants and itineraries, while the actual travel funds are supplied through ISTC. CRDF also enables scientists working on commercially-bound projects to receive business and management training.

The assignment given to the ISTC and other collaborative grant programs was and is extremely difficult, particularly since these efforts are taking place against a backdrop of economic turmoil. Through 1998, the ISTC and its sister science center in Ukraine alone have involved over 28,500 nuclear, missile, biological, and chemical weapons experts in such projects. State and Commerce share responsibility for providing assistance to improve the capabilities of Russia and other former Soviet states export control regimes to prevent proliferation. The NRC provides support to former Soviet states nuclear regulatory programs.

D. Safety

As part of the International Nuclear Safety Program, DOE's Nuclear Safety Cooperation predates the collapse of the Soviet Union and seeks to avert another Chernobyl-scale nuclear accident. These efforts are not to extend the life of these reactors, but to reduce the risks of operation until they can be shut down.

The Chemical and Biological National Security Program within DOE is not used to redirect critical personnel in the former Soviet Union, but is used to develop technologies needed by domestic emergency personnel in response to the threat of chemical and biological terrorism.

3. Current and Future Funding Levels of Non-Proliferation Programs

A. Department of Defense

The Department of Defense has not made its funding request for the Office of CTR funding for FY02. Therefore, requested and approved funding for FY01 is given, as well as projected FY02 funding required to carry out CTR objectives.

Objective 1

Strategic Offensive Arms Elimination (SOAE) - Russia:

- requested FY01 funding = $152.8 million
- approved FY01 funding = $152.8 million
- requested FY02 funding = $133.4 million

Objective 2

Nuclear Weapons Storage Security - Russia:

- requested FY01 funding = $89.7 million
- approved FY01 funding = $89.7 million
- requested FY02 funding = $56.0 million

Elimination of Weapon Grade Plutonium - Russia:

- requested FY01 funding = $32.1 million
- approved FY01 funding = $32.1 million
- requested FY02 funding = $41.7 million

Nuclear Weapons Transportation:

- requested FY01 funding = $14.0 million
- approved FY01 funding = $14.0 million
- requested FY02 funding = $9.5 million

Fissile Materials Processing:

- requested FY01 funding = $9.3 million
- approved FY01 funding = $9.3 million
- requested FY02 funding = $0, Russia did not request U.S. assistance for FY02

Fissile Material Storage:

- requested FY01 funding = $57.4 million
- approved FY01 funding = $57.4 million
- requested FY02 funding = $0, program completed in FY01.

Objective 3

Strategic Nuclear Arms Reduction - Ukraine:

- requested FY01 funding = $29.1 million
- approved FY01 funding = $29.1 million
- requested FY02 funding = $51.5 million

WMD Infrastructure Elimination - Ukraine:

- requested FY02 funding = $6.0 million

WMD Infrastructure Elimination - Kazakhstan:

- requested FY02 funding = $6.0 million

Objective 4

BW Proliferation Prevention:

- requested FY01 funding = $12.0 million
- approved FY01 funding = $12.0 million
- requesetd FY02 funding = $17.0 million

CW Destruction (Russia):

- requested FY01 funding = $35.0 million
- **approved FY01 funding = $ 0** (funding removed by House Appropriations through a prohibition on construction of a Chemical Weapon Destruction Facility in Russia specified in the National Defense Authorization Act of 2000)
- requested FY02 funding = $50.0 million

Objective 5

Defense and Military Contacts:

- requested FY01 funding = $14.0 million
- approved FY01 funding = $9.0 million (reduction from House Appropriations)
- requested FY02 funding = $18.0 million

Most of the DOD CTR programs were funded in FY01 at the requested levels to maintain the various Objectives. Two exceptions are the Chemical Weapon Destruction program and Defense and Military Contracts. The Chemical Weapon Destruction Program had no funding in both FY00 and FY01, contrary to DOD appropriation requests. This funding was meant to assist Russia in building their Chemical Weapon Destruction Facility, which is required to begin reduction of their chemical weapon stockpile. Funding such construction was prohibited in the National Defense Authorization Act of 2000. Defense and Military Contacts was reduced from $14.0 million to $9.0 million, which is still a $7.0 million increase from FY00 funding of $2.0 million.

B. Department of Energy and other Programs

The Office of Defense Nuclear Nonproliferation, which handles such programs in DOE, asked for $773.7 million in FY02, down $101 million from FY01. Several of DOE programs have multiple functions. Each one is listed below with current and requestedFY02 funding levels.

Materials Protection, Control, and Accounting (MPC&A):

- approved FY01 funding = $169 million
- requested FY02 funding = $138.8 million
- Senate request FY02 = $143.8 million

Second Line of Defense (SLD) Program:

- approved FY01 funding = $2.4 million
- requested FY02 funding = $4.0 million

Highly Enriched Uranium (HEU) Program:

- approved FY01 funding = $30.8 million
- requested FY02 funding = $50.0 million

Russian Plutonium / Fissile Material Disposition Program:

- approved FY01 funding = $226 million
- requested FY02 funding = $248.1 million
- Senate request FY02 = $229 million
  - the bulk of the budget request supports plutonium disposition activities in the U.S.

International Proliferation Prevention (IPP) Program:

- approved FY01funding = $ 24.1 million
- requested FY02 funding = $ 22.1 million

Nuclear Cities Initiative (NCI):

- approved FY01 funding = $22.6 million
- requested FY02 funding = $6.6 million
- Senate FY02 request = $14.5 million
  - NCI works to both reduce the size of the nuclear complex within the city and re-employ laid-off nuclear weapon personnel. DOE budget reduces funding commitment from three nuclear cities to one.

Nuclear Safety Cooperation:

- approved FY01 funding = $19.4 million
- requested FY02 funding = $13.8 million;
- Senate FY02 request = $19.7 million

Department of State's International Science and Technology Center (ISTC):

- approved FY01 funding = $35 million
- requested FY02 funding = $45 million (Dept. of State),
- OMB FY02 funding request = $37 million
  - FY01 funding was $10 million less than one year FY00 increase due to concerns in Congress that money was not being spent efficiently. FY02 State Department request returns to FY00 levels

NSF Civilian Research and Development Foundation (CRDF):

- approved FY01 funding = $ 1 million
- requested FY02 = $ 1 million

4. Assessment of Non-Proliferation Programs:

Problems identified of Non-Proliferation Programs on U.S. side:

Identified in Past Assessments	Recent Assessments
slow pace of implementation	pace has improved, although some problems remain
lack of flexibility in accounting and contracting procedures	some flexibility in accounting and contracting procedures exists
high level of bureaucracy	the U.S. CTR bureaucracy is reasonably well organized
use of U.S. contractors instead of local firms	local contractors and firms are increasingly being used
lack of information on current funding	lack of information and fluctuating funding remain a problem
too much "nuclear tourism"	"nuclear tourism" seems to have declined, at least in the DOD CTR program

Continuing and New Concerns:

Organizational and Bureaucratic Issues – current administrative and bureaucratic arrangements on the U.S. side appear adequate, although it took several years to find the right distribution of responsibilities among the various agencies. The Ukraine has a relatively effective CTR administrative system. On Russian side, effective administration is greatly complicated by the ongoing reform of the government, whereby some agencies are eliminated, others are created, and responsibilities are constantly redistributed. Privately, U.S. agencies and contractors express a desire to streamline the bureaucracy on the Russian side and enhance contacts with those responsible for implementation. Interview with Russian personnel also demonstrate a strong desire on the part of implementation groups for more direct contacts with their American counterparts.

Taxation Issues – one issue that has not yet been satisfactorily resolved is taxation of CTR assistance. The heart of the tax problem is the desire by the relevant Russian authorities, whose main responsibility is finding sources of revenue, to tax CTR-related assistance. CTR assistance was supposed to be exempt from Russian taxes, the legal status of this agreement was uncertain,

and bureaucratic implementation of its provision was complex. Although direct U.S. assistance as a rule is not subject to taxes, subcontractors often are taxed, especially since many forms of contracts could be construed as services rather than participation in an assistance program. A recently adopted law "On Grants (Assistance) to the Russian Federation" provides for considerable tax exemptions. However, salaries and benefits paid by subcontractors are taxable and implementation procedures for the law have also not been developed or put into effect.

Immunity Issues – The privileges granted to CTR personnel emerged as a problem during negotiations on the extension of the 1992 umbrella agreement in Russia that grants CTR personnel the same privileges as technical and administrative personnel under the Vienna Convention. The U.S. asked that these be expanded to the scope of privileges accorded to diplomatic personnel, including full immunity from prosecution. The Russian side refused to grant such extensive privileges, and employees of private contractors performing CTR functions continue to not have diplomatic immunity. Both taxation and immunity issues, while not preventing CTR programs from moving forward, drain time and energy from the implementation of the program and undermine some of the trust that has developed on both sides.

Environmental Concerns and Regional Governments – a relatively new problem is the increasing role of local authorities. The power of environmental groups, whether working with or against regional governments, also deserves notice. Many environmental concerns need to be taken seriously, given the toxic nature and complex technologies involved in elimination processes. CTR programs must work in an open and direct manner and closely with local Russian governments, contractors, and Russian non-government organizations.

Funding and Sustainability – the future of the CTR program depends on domestic and international politics. CTR programs are clearly vulnerable to possible fluctuations in levels of funding that could be caused by unrelated political developments. The CTR programs are not at an advanced stage and involve expensive, multi-year projects that cannot be easily terminated. Even with constant funding, plans must be made for ensuring that the dismantlement infrastructure is sustainable over the long term. After a period of three to seven years, the whole infrastructure the U.S. is now creating might become unusable because Russia cannot replace some critical elements of equipment. This problem is partially alleviated by the fact that the U.S. is transferring relevant technologies so that Russia will hopefully be able to build its own replacement equipment.

Creeping Missions and Slippery Slopes – the original expectation for the CTR program (provision of money and equipment to facilitate weapons elimination) has turned into a considerable more massive endeavor of creating the infrastructure for elimination, disposal and safe storage and transportation of weapons, materials and delivery vehicles. This expansion was perhaps inevitable because one cannot eliminate, for example, Submarine Launched Ballistic Missiles (SLBM) and leave the problem of liquid propellant aside. While most CTR programs

are now established, and further mission expansion is unlikely, there is another form expansion taking place as now CTR funds are increasingly being used to provide "support services," i.e. the infrastructure shortcomings, or transportation and support costs. Many are also concerned that the CTR program is becoming the funding source of first resort, rather than last resort for many of these support activities.

Fungible Funds and Strategic Modernization – One of the strongest critiques of non-proliferation programs is that, by funding operational tasks and projects, funds are being freed for Russian military buildup, and may allow Russia to maintain and even modernize it strategic forces. Based on trends in Russian strategic modernization in the 19990s, if the Russian military and government face the choice between spending money for modernization, or spending on elimination, the latter task is likely to be relegated to second places. In Russia, nuclear weapons are the centerpiece of security guarantees. The other political issue that could affect non-proliferation programs are the Anti-Ballistic Missile (ABM) Treaty and changes to Russian tactical nuclear weapons.

Concerns Relating to Chemical and Biological Weapon Non-Proliferation Activities:

The current brain drain prevention programs favor funding research grants to former Soviet nuclear weapons scientists. The four brain drain prevention programs spent a combined $310.3 million on scientific grant activities from 1994 to 1998, for a total of 1,733 collaborative research projects. However, only $26 million went to biotechnology grants and $11.3 million to chemistry grants to fund 178 and 69 projects involving biological and chemical weapon scientists, respectively. The U.S. government conservatively estimates that there are 10,500 key biological and chemical scientists and engineers that pose a proliferation risk. However, the grant assistance programs have yet to reach important segments of the chemical and biological weapons communities, such as the experts in poison gas aerosolization and weaponization, the specialists in anti-crop and anti-animal agents, and the biowarfare researchers at four military institutes still closed to outsiders, totally about 3,500 scientists. On average annually, the four brain drain prevention programs have provided $8.4 million in chemistry and biology grants, an amount that would be insufficient to enable 10,500 critical scientists and engineers to keep small families above the poverty line.

U.S. non-proliferation efforts have been hindered by decreasing access to many of the bioweapon laboratories. Four military bioweapon facilities are still closed to outsiders. Setting non-proliferation program priorities will require a detailed threat assessment which is dependent on knowing what capabilities and materials are housed in all former Soviet bioweapon laboratories.

Appendix ____ : Multilateral Nonproliferation Regimes

Biological Weapons Convention

General Background

The Biological Weapons Convention took effect in 1975 after it was ratified by 143 nations, including the U.S. The treaty prohibits the development, production, acquisition, stockpiling and use of biological weapons and weapons agents. Parties to the treaty have agreed not to transfer or assist any state or organization to manufacture or acquire any biological weapons agents, toxins, weapons, equipment or means of delivery. The BWC also requires all parties to destroy biological weapons stockpiles.

The BWC was negotiated in a short period of time (1969-1972) and contains no provisions for enforcement or verification of compliance, often the most difficult elements of arms control. The treaty is run by the United Nation - there is no independent mechanism. BWC members have sought to identify possible verification measures and then negotiate a verification protocol. This was submitted at the BWC Review Conference in 2001, but was opposed by the U.S.

Challenges and Concerns

Biological weapons pose unique challenges to proliferation efforts. Unlike other weapons, biological agents are not countable or measurable and are naturally occurring. Biological agents are ubiquitous, difficult to identify and necessary for a wide range of legitimate purposes, such as pharmaceutical and medical research. Biological weapons labs can be quite small, difficult to identify and virtually indistinguishable from a peaceful research laboratory.

The Administration's position on BWC has been influenced by the belief that biological weapons proliferation is inherently unverifiable and that efforts are best spent on ensuring greater compliance among Iraq, Iran and North Korea. The position states that compliance should not compromise bio-defense preparation, risk intellectual property of pharmaceutical and biotech firms or undermine the system of export controls for items that could be used offensively.

The U.S. stance on verification measures within the BWC differs from its European allies. The Administration opposes random visits to declared facilities and instead supports managed access, where the facilities themselves control access.

In November of 2001, a meeting of BWC member states discussed protocols under negotiation since 1995 to create a legally binding agreement to include verification measures within the BWC. The administration recommended focusing efforts on compliance among BWC member states and cited concerns over non-compliant members, particularly Iraq, Iran and North Korea.

The administration proposed an alternative plan which does not include the protocol's provision for an international implementing body with the power to conduct challenge inspections and routine non-intrusive visits. The proposal does include some protocol provisions such as requirements for members to enact domestic legislation criminalizing treaty-prohibited activities. However, it does not specify what criminal penalties individual countries would enforce. It would also expand the UN Secretary's mandate to investigate suspicious biological weapons use and would require states to report biological releases. Some question how the proposal can achieve member compliance without verification provisions that include challenge inspections.

Chemical Weapons Convention

General Background

The Chemical Weapons Convention is considered to be the most comprehensive non-proliferation treaty on chemical weapons. CWC negotiations were initiated in 1980 and entered into force in 1997. There are 145 states that have ratified or acceded the convention. The CWC is a multilateral treaty that bans the production, acquisition, stockpiling or transferring of chemical weapons. The convention also prohibits states and parties from assisting and encouraging chemical weapons development. The Organization for the Prohibition of Chemical Weapons (OPCW) oversees implementation of the CWC. The convention restricts chemical transfers to non-state parties. The OPCW is based in The Hague, Netherlands with a staff of 464 people representing 70 nationalities.

The CWC recognizes the dual-use nature of chemical weapons technology and materials. It focuses basic prohibitions on end-use rather than specific chemicals or technologies. This allows the CWC to prohibit the application of chemicals for offensive military purposes, while permitting commercial use. It focuses on chemicals and activities that may be subjected to monitoring and verification and incorporates an inventory of known chemical warfare agents. This inventory is amended as new chemical weapons agents and precursors are identified.

The CWC requires verification and compliance among all parties. On-site inspections are conducted to verify that facilities are being used for legitimate purposes. Parties are required to destroy chemical weapons stockpiles within 10 years of signing the treaty. Choice of destruction methods are left up to each state party and must be approved by the OPCW.

The convention has established on-site activities aimed at generating confidence among CWC members. Routine inspections of chemical weapons-related facilities and industry facilities are conducted to verify declarations and confirm that activities are consistent with CWC obligations. The OPCW receives declarations of chemical weapons related activities or materials and pertinent industry activities. States and parties are required to declare chemical industry facilities that produce chemicals of concern and are required to destroy all chemical weapons and production facilities and chemical weapons abandoned on other state's territories.

The CWC allows for challenge inspections of declared or undeclared facilities to deter chemical weapons development at clandestine facilities. Once a request for a challenge inspection is

submitted, the host country must grant access to the facility no later than 108 hours after arrival to allow for enough time to protect confidential equipment and information unrelated to the CWC, but not enough time to remove traces of illicit activity.

The OPCW may recommend punitive measure for parties that engage in actions that could result in "serious damage" to the convention and for more damaging noncompliance may bring issues before the United Nations National Security Council and General Assembly.

The treaty makes efforts to protect industry proprietary information while allowing for intrusive inspections. These measures were developed with active participation of the international chemical industry and have resulted in support from the U.S. chemical industry.

Challenges and Concerns

Several concerns have arisen since the implementation of the CWC. Countries with large chemical weapon industries have taken longer than expected to identify to meet declaration deadlines. The Sixth Session of the Conference of States Parties (CSP) of 2001 revealed that less than a quarter of states had declared their activities for 2000 and notification of national implementing measures remained below requirements. There are also funding issues including delays in dues payments by states and a lack of reimbursements for verification costs.[1] There are also concerns over enforcement. Sanctions were negotiated late in CWC negotiations and lack specificity.

The CWC faces issues over the number of nations who are willing to ratify its provisions. While 171 nations have signed and 140 have ratified the convention, some nations have not, including Iraq, North Korea, Libya and Syria. A number of other nations, including Egypt and Jordan, have linked their participation in the treaty to removal of Israel's nuclear capability. There are continued concerns about Iraq's intentions including evidence it has rebuilt plant formerly used for chemical weapons production. Many assume that a resurgence of Iraq's missile program will see a continuance of previous efforts to develop CW warheads.

There are verification concerns over effectiveness and the potential impact on the rights and property of the chemical industry. Questions have arose over whether the OPCW will be able to detect all clandestine production or stockpiling of chemical weapons. Since verification is not absolute, it could create a false sense of security among member states.

Because of the intrusiveness of the verification regime, there are concerns over how the CWC may impact the chemical industry. The potential loss of trade secrets from disclosure is the greatest concern to private industry. However, the Chemical Manufacturers Association and the Pharmaceutical Manufacturers Association have strongly supported the convention's confidentiality measures and have supported ratification.

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[1]Kelle, Alexander. Implementation on a Low Flame. CWC Update Issue No. 57, May 2001.

Questions for Mr. Christoff from Senator Akaka for the Record

Current and Future Weapons of Mass Destruction Proliferation Threats
November 7, 2001, Hearing

1. **Dr. Cupitt makes several recommendations to improve export controls to curb the threat of WMD proliferation. He recommends the development of a list of items to control those of greatest concern for WMD terrorism. He also recommends the creation of new export standards for an industry compliance program. Has GAO ever looked at which items are of greatest concern for WMD? Is it your experience that an industry compliance program—voluntary or obligatory—can work?**

While GAO has not examined or developed a list of items that are of greatest concern for WMD purposes, recent congressional debate has focused on opportunities to develop controls for "choke-point" (higher-risk) technology. However, this concept would be difficult to implement in practice as it would require a consensus among the Departments of State, Defense, and Commerce about the sensitive WMD-related items to include on such a list. Our past work has shown that it is often difficult to forge a consensus among these agencies because they have different perspectives on foreign policy, national security, and commercial issues.

Moving to a corporate compliance program could be problematic as our past work has identified numerous weaknesses in the implementation of selected U.S. export controls, including government and private industry screening of proposed recipients of sensitive U.S. exports. The government continues to rely on industry to determine whether an export needs to be licensed, even though industry has raised questions about its capability and willingness to make these assessments. Richard Cupitt also acknowledges this in his testimony of November 7, 2001, noting that "evidence suggests that industry compliance remains haphazard in the United States, even among the

biggest high-tech exporters." Thus, additional outreach and education efforts are needed to increase companies' understanding of U.S. export control law and regulations.

2. You have indicated that it is difficult to confirm the end use of exported technologies and that the Commerce Department doesn't get adequate information from intelligence agencies on front companies. How do we fix the problem? Should all licensing requests be centralized in a new federal agency instead of being divided among many agencies?

Our past work has identified longstanding problems in the executive branch's efforts to confirm the end use of exported technologies, including limitations in the information available from the intelligence agencies, one of the key players in the interagency process. Export controls must balance national security, economic, and foreign policy interests that often conflict with one another. As a result, U.S. export controls currently rely on a checks and balances system that requires the Department of Commerce, Defense, and State, with input from intelligence agencies, to collectively strike such a balance every time they consider a license application. This process generates continual questions as to whether each of these competing interests is properly represented. However, a single cross-cutting export licensing agency, should one be established, would still have to address this issue. The new agency's relationship to the Departments of State, Defense, and Commerce, and the intelligence community, would have to be carefully considered since its licensing decisions would affect–and be affected by–those agencies' oversight of U.S. foreign policy, security, and economic interests.

3. Challenge inspections are a provision of the Chemical Weapons Convention (CWC) and are a proposed element of the enforcement protocol for the Biological and Toxic Weapons Convention. To what extent have challenge inspections been used to enforce the CWC? And, if they have not been used, could you explain why not when there are clearly countries that may be violating the terms of the Chemical Weapons Convention?

As of March 2002, no CWC member state has requested a challenge inspection, in spite of concerns about noncompliance among several member states. Proliferation experts suggest that nations requesting a challenge inspection may be reluctant to divulge sensitive intelligence information or may fear that a retaliatory inspection would be launched against them in return

4. **There have been conflicting reports on the difficulty involved in developing biological and chemical weapons. Some reports invoke the specter of basement laboratories, while others offer reassurance by stressing the technical challenges required to make these weapons. Who is right?**

The ease or difficulty of developing a biological or chemical weapon depends upon who is attempting to develop such a device and the type of device desired, according to a variety of chemical and biological experts and intelligence officials. Terrorists without assistance from a state-sponsored program could make a chemical or biological device and disseminate agents, but such acts would be less likely to cause mass casualties (defined as at least 1,000 physical injuries or deaths by the Department of Health and Human Services). State actors would have more readily available knowledge and resources to acquire a biological agent or precursor chemical, process it, improvise a weapon or device, and disseminate the agent to cause mass casualties. Regardless of whether a terrorist organization or state actor may desire a biological or chemical device, some biological agents and precursor chemicals are difficult to obtain and others are difficult to process and produce in weaponized form. Environmental and meteorological factors can also disrupt the effective dissemination of biological and chemical agents.

RE: **Questions for Dr. Cupitt from Senator Daniel K. Akaka for the Record**
Hearing, "Current and Future Weapons of Mass Destruction Proliferation Threats," Subcommittee on International Security, Proliferation and Federal Services, November 7, 2001.

Responses

Question Set #1 and #4:

I don't believe the United States needs a new agency to address anti-terrorist export controls. The current interagency framework already exercises control over the export of dual-use items, especially WMD-related items, for anti-terrorist purposes. The existing framework has sufficient flexibility to meet new anti-terrorist threats as well.

Constant evaluation and adaptation, however, form the hallmark of an effective export control system. Let me suggest four steps that might enhance the dual-use interagency process:

a) Support efforts to improve the capabilities of the intelligence community, especially the Weapons Intelligence, Nonproliferation, and Arms Control Center of the Central Intelligence Agency, to gather and disseminate sufficient information in a timely fashion to the licensing community. While some intelligence may be impossible to gather, such as a meaningful background check of a recent graduate of a Chinese university, unease exists with the quality and quantity of intelligence input into the licensing process.
b) The Federal Bureau of Investigation (FBI) typically participates in reviewing encryption licenses, but not other applications. Given the transnational nature of terrorism, it might prove useful for the FBI to participate in the license process for items controlled for anti-terrorism purposes at least on an experimental basis. For these kinds of licenses, the FBI need not review the licenses, but integrating their information on the bona fides of the participants in the transaction (such as information on the exporter) could prove important, especially where the FBI can collect data that the CIA can not.
c) Move forward with the creation of the Office of Technology Assessment at the Commerce Department as per S.149. If funded and supported properly, this office should regularize reviews of the dual-use list and generate much more information about foreign export control systems.
d) Improve access by the Commerce Department and other agencies to databases with financial and commercial information (such as Dunn & Bradstreet). This will improve analysis of the bona fides of end-users. While some capacity to do this exists now, access remains highly constrained.

Question Set #2:

No matter how well the US interagency process works, if companies do not take steps to comply, then export controls will not function effectively.

Currently, compliance practices among US exporters vary widely, even among those companies most familiar with US policy. Discussions with several industry representatives, surprisingly, lead me to believe that many exporters might welcome some mandatory standards for export control compliance programs, especially if this eased their licensing burden, went further to mitigate their civil or criminal liability, and was phased in gradually on the basis of a thorough dialogue between government and industry.

Even the best compliance program will fail, however, if an exporter does not have access to a coterie of trained, competent export control compliance administrators. This expertise need not reside in-house, especially for small or medium size businesses, as freight forwarders or other service companies may fulfill this function.

Unfortunately, no official standards either for industry compliance programs or for individual knowledge and competence now exist. The Commerce Department has produced standards for companies with Special Comprehensive Licenses, but few companies have such licenses. The Department also has a developed a broader set of compliance guidelines (i.e., the Export Management System), but survey data indicates that few companies follow these guidelines closely. Here, let me make two suggestions:

a) While the diversity of business models argues against creating a single company model for export control compliance, something akin to the Export Management System could prove a useful starting point. All exporters need not have their own Export Management System to meet their legal obligations. A company, for example, could use another firm with an export compliance system that meets mandatory standards to process its export transactions.
b) Several companies and the Commerce Department currently provide dual-use export control training for industry. The United States should consider creating a quasi-governmental board to certify export control training programs, test individual knowledge, and issue certificates of competence, perhaps following the model currently used by the US Customs Service for brokers. The United States might also create Department of Labor job categories for export control compliance officers and administrators.

Question Set #3:

Well before September 11, the inability of the United States to reform its Export Administration Act (EAA) in the 1990s had damaged US credibility and hampered US leadership on export control issues in the international community. In general, I believe the bill passed by the US Senate (S. 149), if it becomes law without many significant amendments, will match US dual-use export controls much more closely to the security and economic conditions of this century, including the threat posed by terrorists. While I have made several suggestions in my responses to other questions that might fit in the EAA, in this instance the search for a perfect EAA (an unreachable goal anyway given the dynamic nature

of the threats and technologies) will certainly become the enemy of US efforts to lead the international community toward higher export control standards.

Question Set #5:

Effective chemical weapons appear easier to develop than biological weapons, as the experience of Aum Shinrikyo indicates. My understanding is that most experts believe that overcoming several significant hurdles, such as producing a highly virulent strain or dispersing the agent, would make the effective use of biological weapons difficult for all but the most determined, skilled, and well-financed terrorists. In addition, few large-scale offensive biological weapons programs have ever existed, so very few people have had any experience producing such items. Nonetheless, the history of the use of biological weapons in the United States --- first through the distribution of blankets contaminated by Small-pox in the late 18th century and most recently the use of the mails to spread Antrhax --- indicates that terrorists may find unsophisticated but effective methods which we have not yet anticipated. It is worth noting a parallel example from the nuclear field: the accomplishments of the Iraqi nuclear weapons program escaped attention for so long in part by using an outmoded technological approach. Finally, advances in genetic research may unveil new biological agents or toxins that don't face the same production or distribution hurdles, and these might become available to terrorists.

In contrast, many countries had significant chemical weapons programs in the 20th century. Fortunately, the states party to the Chemical Weapons Convention have eschewed these programs and dramatically increased monitoring over chemicals of concern worldwide. While not perfect, this goes a long way toward making it much harder for anyone to produce or transport massive quantities of the most deadly chemical weapons. Nonetheless, hundreds of thousands of chemical weapons, either abandoned or part of illicit arsenals, already exist. Chemical weapons precursors play such an important role in the global economy, moreover, that many people have experience working with these items. In addition, weaponization can take very simple forms. The first use of chemical weapons in World War I, for example, involved the release of gas from buried pressurized canisters. A concerned citizen even outlined how to create chlorine gas munitions in a letter to President Lincoln in 1861. Perhaps most important, terrorists and at least one state (Iraq) have put chemical weapons to use in the last fifteen years. Although employing chemical weapons on a small scale seems to have less potential than radiological or biological weapons for causing massive damage, they appear simpler to produce, easier to use, and can cause devastating local effects. These attributes may make them more attractive to terrorists than other mass casualty weapons.

Subcommittee on International Security, Proliferation and Federal Services
Hearing
November 7, 2001
Current and Future Weapons of Mass Destructions
Questions from Senator Daniel K. Akaka for the Record
Testimony of James A. Lewis

Question 1. You state that export controls can be effective only if they focus on technologies that are not widely available and only if the controls have a high degree of multilateral support. If we do control these technologies, do we make it impossible or difficult for terrorists to develop WMD?

Answer. Strong multilateral controls focused on technologies that are not widely available will make it difficult for terrorists to develop some kind of WMD – nuclear weapons or missiles, for example. Other kinds of weapons – radiological weapons or chemical weapons – which do not require advanced technologies for development will be harder to stop. For these kinds of WMD, export controls are not the best response and we need to find other means to enhance our security.

Question 2. China is a signatory to the Chemical Weapons Convention and the Biological and Toxic Weapons Convention. It "adheres" to the Missile Technology Control Regime. We provide the Chinese with information about their companies who proliferate. But we still cannot convince China to enforce export controls. We know China has aided Iran and Pakistan's weapons programs. What does this failure say about how successful we can be in strengthening WMD proliferation regimes if a country like China cannot comply with its obligations?

Answer. This is a complex issue that goes beyond proliferation. First, we tend to overestimate the degree of control China has over its exporters. In several cases, the United States discovered that Beijing was not aware of exports made by Chinese companies and was embarrassed by our information. Official corruption, a serious problem for China, plays a role in this. One of our goals should be to help Beijing improve its export control mechanisms. Second, the U.S. has had success in persuading Beijing to end support for some programs of concern. When Beijing has committed to do something, it has generally lived up to these commitments. It is fair to note that these nonproliferation commitments are often qualified or more limited than we would like, so working with Beijing to adhere to broad international norms should also be one of our goals. Finally, proliferators will not be deterred from seeking WMD even if China does not support them – India is a good example of this, as without any support from China it created extensive and successful nuclear weapons and missile programs.

Question 3. In your testimony, you state that the role of export controls in nonproliferation is shrinking, but you also concluded that the consequences of failing to reform export controls would be costly to national security. One of your recommendations is to expand export

controls from the diplomatic and arms functions to include law enforcement and counterterrorism activities. What steps would you take to initiate this? Would you accomplish this through interagency coordination or through the creation of a new agency?

Answer. Export controls would not have prevented any of the tragedies that occurred on September 11th. These attacks were staged from within the U.S. and carried out with items bought in the U.S., and therefore not subject to export controls. Export controls are just not the best tool for dealing with terrorism. It would be better to emphasize domestic safeguards on certain WMD technologies that could be attractive to terrorists. The U.S. needs to ensure that certain WMD materials – those which are not widely available on the commercial market, such as spent nuclear fuel or laboratory pathogens – are appropriately protected. This is not an export issue, so the export control agencies are not the appropriate agencies. A program of this kind (which may need new legal authorities) might better be assigned to agencies responsible for homeland security.

Question 4. There have been conflicting reposts on the difficulty involved in developing biological and chemical weapons. Some reports involve the specter of basement laboratories while others offer reassurance by stressing the technical challenges to make these weapons. Who is right?

It is relatively easy to make certain biological and chemical weapons, but it is difficult to make effective – effective in the sense of being able to cause mass casualties. The issue is delivery. Toxins and toxic chemicals are easy to produce, but "weaponizing" them is much more difficult and has been a deterrent to the use of CBW. A terrorist would need a method to deliver the toxic substance over a wide area (this is why crop-duster aircraft are a concern – they are designed to deliver large quantities of toxic material over a wide area). The Soviet Union and other nations spent millions of dollars attempting to "weaponize" CBW and we should take steps to ensure that this technical know-how does not become available to terrorists.

Questions for Mr. Milhollin from Senator Akaka for the Record

WISCONSIN PROJECT ON NUCLEAR ARMS CONTROL

December 5, 2001

Senator Daniel K. Akaka
Chairman, Subcommittee on International
Security, Proliferation and Federal Services
Senate Committee on Governmental Affairs

Dear Senator Akaka:

I am pleased to respond to the questions you posed in your letter of November 26, 2001. As you requested, my reply is being sent by e-mail.

Response to question one. I do not believe that it would improve things to create a separate agency to review export licenses. The expertise of the various agencies that now participate in the process will still have to be brought to bear on the decisions, so any change would require that the experts in these agencies be transferred from their present positions. Such a step does not seem to be efficient. Rather than create a new agency, it would be better to transfer leadership on export controls from the Commerce Department, where it now resides, to a national security agency such as the State Department or the Defense Department. The Commerce Department suffers from a conflict of interest – it must promote trade and regulate it at the same time. The promotion function invariably prevails. In addition, it would improve the licensing process to give the Central Intelligence Agency a vote on license applications. This improvement is now essential in light of the recent terrorist attacks.

Response to question two. It is altogether possible, desirable and necessary to control the export of technology, or "know-how." The transfer of knowledge can be just as empowering to a foreign government as the transfer of material or equipment. The recent transfer of rocket technology by U.S. firms to China is but one example. American technology, which was transferred by these firms in violation of U.S. law, enabled China to improve the performance of its largest rockets, which also serve as intercontinental ballistic missiles aimed at our cities. It is vital to our national security to discourage this sort of conduct with export control laws.

Response to question three. It is true that chemical and biological agents can be produced in a short time in simple laboratories using a small amount of commercially available equipment. Current generation mustard and nerve agents are based on technologies developed before World War II, and the paths to production have changed little since then. This is why chemical and biological weapons are so attractive to terrorist groups, such as the Aum Shinrikyo cult in Japan which attacked the Tokyo subway in March 1995.

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However, weaponization and delivery of these agents can be more challenging. In the case of chemical agents, special production equipment, including corrosion-resistant pipes, valves, and reaction vessels need to be used, and rigorous safety precautions need to be followed, due to the volatile nature of the chemicals. For biological weapons, pathogen particles need to be an appropriate size for inhalation – it is a complicated task to make them so – and must be stable for storage and delivery.

Despite these difficulties, the increasing availability of production technology and of trained personnel will continue to erode the technical obstacles to the production and use of chemical and biological weapons.

Sincerely,

Gary Milhollin

Questions for Mr. Billingslea from Senator Akaka for the Record

Hearing Date: 29 Nov 2001
Committee: Senate Governmental Affairs Committee
Member: Senator Akaka
Witness: DASD(NP) Billingslea
Question #: 1

Cooperative Threat Reduction Program

Question: Mr. Billingslea, environmental and local public advocacy groups have gained influence in the former Soviet Union (FSU). What problems is this creating for American aid efforts, and how can we resolve those problems?

Answer: In general, this is not a significant problem for the Cooperative Threat Reduction (CTR) Program because we work hard to build local trust on this issue. We take our environmental responsibilities seriously, and adopt the tougher of either country's environmental standards when working a CTR project. Many local citizens are happy to see the United States Government working on these projects because they know we have the resolve to accomplish the projects in an environmentally safe and secure manner.

The only potential "problem" is when local groups or leaders ask CTR to correct environmental or other problems remaining from the Soviet era. These problems are not related to CTR activities, and when such questions arise we politely remind the recipients that environmental remediation is not our responsibility and that U.S. law prohibits us from using CTR funds for environmental remediation. However, these questions can cause implementation delays because local citizens or officials regard this as an opportunity to raise these issues with regional or central government officials working with us. To date, this has occurred only once, during construction of a solid rocket motor elimination facility in Russia. The Russians originally proposed building the facility in Perm, but local groups opposed the project and the Russian Federation moved our efforts to Votkinsk, where the project was accepted. The criticism in Perm was not with our technical approach, but with larger environmental issues, not directly related to CTR. Unfortunately, this site move increased costs and delayed the project. In all other cases, CTR projects have proceeded with little or no delay from environmental groups. We believe the process we use is adequate, and no additional action by Congress is required.

Hearing Date: 29 Nov 2001
Committee: Senate Governmental Affairs Committee
Member: Senator Akaka
Witness: DASD(NP) Billingslea
Question #: 2

Cooperative Threat Reduction Program

Question: Since the start of the Nunn-Lugar nonproliferation programs, Congress has authorized $5.5 billion for assistance to former Soviet states. How much of this money has been spent in Russia and the newly independent states?

Answer: The Department of Defense (DoD) only received a portion of the $5.5 billion Congress authorized through FY 2001 for assistance to former Soviet states, which went to the Cooperative Threat Reduction (CTR) Program. The Departments of State and Energy received the remainder of these funds for their assistance activities.

From FY 1992 through FY 2001, Congress authorized just over $3.6 billion for the CTR Program to assist states of the former Soviet Union (FSU) in destroying, safeguarding and preventing the proliferation of weapons of mass destruction. The table below provides a breakout of DoD CTR Obligation Authority applied to assistance activities in FSU countries.

Country	Obligation Authority	Obligated	Disbursed
Russia	$2,442,756,291	$1,871,450,839	$1,414,025,570
Ukraine	$669,175,000	$598,644,296	$543,845,784
Kazakhstan	$172,817,641	$164,748,526	$156,596,508
Belarus	$74,936,560	$74,631,662	$73,898,881
Moldova	$40,000,000	$40,000,000	$40,000,000
Uzbekistan	$8,500,000	$8,402,360	$6,227,637
Georgia	$5,260,259	$5,255,013	$5,245,975
Multi-country	$199,411,540	$175,995,331	$158,950,857
Total	$3,612,857,291	$2,939,128,027	$2,398,791,212

Note: Table does not include the FY 2002 authorization.

Questions for Mr. Borman from Senator Akaka for the Record

Specific Questions

_____I will now address the specific questions posed by Chairman Akaka in the letter inviting Commerce to testify at this hearing.

1. How does the Department participate in nonproliferation activities with federal partners using multilateral export control regimes?

Commerce's Bureau of Export Administration is responsible for implementing U.S. national controls over the export of dual-use items (goods, software, and technology with civilian and military applications) covered by the four multilateral export control regimes. Commerce reviews approximately 7,500 export license applications for items controlled pursuant to these regimes. In addition, Commerce works closely with the Departments of State, Defense, and Energy to formulate proposals for the regimes and positions on proposals made by other regime members. For example, at the initiative of Commerce, the Wassenaar Arrangement adopted a "best practices" standard for effective enforcement of export controls at its December 2000 plenary session. This was the first time that a multilateral nonproliferation regime had adopted enforcement standards. Enforcement is an essential element of any export control system and adoption of this standard will enhance the effectiveness of the Wassenaar Arrangement.

Commerce also participates in efforts by the regimes to get non-member states to adopt nonproliferation policies and practices. For example, Commerce has participated in Missile Technology Control Regime (MTCR) outreach programs to key transhipment countries. Commerce has used this MTCR outreach program as the basis for the ongoing interagency effort to have these countries develop and implement effective transshipment controls, especially enforcement mechanisms. The initial step was the adoption of effective transshipment practices (modeled on those adopted by the Wassenaar Arrangement). Commerce is involved in ongoing efforts (both bilateral and regional) to strengthen export, reexport, and transit controls in these countries.

In addition to regime-based efforts, Commerce has involved other nations – principally some of our major allies (the United Kingdom, Germany, Japan, Sweden) – in the technical workshops it conducts with the FSU countries. This involvement has included cooperating countries sending officials to participate as members of the workshop "faculty" and having officials of those countries make presentations in multilateral conference programs.

2. How well do federal nonproliferation programs interact with U.S. commercial interests?

The export control cooperation program includes constructive interaction with U.S. commercial interests in two regards. First, Commerce's programs frequently include representatives of U.S. exporting companies. Participation by these company experts is particularly important in the exchanges focused on industry outreach and compliance. These experts can speak authoritatively

Governmental Affairs Subcommittee
On International Security, Proliferation and
Federal Services Hearing on
Multilateral Non-Proliferation Regimes
February 12, 2002

Questions for Ms. Elisa D. Harris
From Senator Daniel Akaka

1. You have testified that previous chemical and biological attacks suggest that assistance from national programs is likely to be key for terrorists in obtaining chemical and biological weapons.

Q: How important is the commercial availability of some chemical and biological agents or is government assistance the critical part?

A. The commercial availability of materials and equipment that can be used to produce both chemical and biological weapons certainly can facilitate terrorist efforts to acquire such weapons. That said, knowing what is needed to make a chemical or biological weapon is not the same as knowing how to do it, as was demonstrated by the Aum Shinrikyo in the 1990s. Despite substantial financial and technical resources, the Aum was unable to achieve its goal of producing mass casualties with its chemical and biological weapons programs. Specialized knowledge from national programs is likely to continue to be critical to terrorist efforts to use chemical or biological weapons successfully, especially on a large-scale.

2. The President has recently emphasized Iran's continued support of terrorist organizations and CIA Director Tenet has testified that Iran continues to maintain chemical weapons. Although Iran is a party to the CWC and is required to declare and destroy these weapons, press reports indicate that Iran's declarations have been misleading. No challenge inspections have been requested by the United States or any other CWC state party.

Q: Why have the United States or other States Parties not used the OPCW's full range of verification measures to resolve this issue?

A. There are a number of reasons why challenge inspections have not yet been utilized by the United States or other CWC States Parties. First, the U.S. spent the initial years after entry into force of the CWC in 1997 focused on domestic implementation, including drafting and passing implementing legislation, preparing data declarations for both military and industry facilities, and working with the OPCW to facilitate inspections of U.S. sites and facilities covered by the treaty. Second, the U.S. took advantage of the CWC's consultation provisions to pursue concerns about a number of other States Parties compliance with their treaty obligations. These consultations successfully resolved U.S. concerns in a number of cases. Finally, the OPCW itself was very much focused in the

first years after entry into force on assisting States Parties in setting up their National Authorities and preparing data declarations, on reviewing the initial data declarations, and on verifying chemical weapons destruction activities. Preparing for a challenge inspection was not, understandably, the top priority.

Q: Would you recommend that the United States request the OPCW conduct challenge inspections within Iran?

A. I believe that treaty implementation is sufficiently well advanced in both the U.S. and the OPCW that it is appropriate to be considering the possibility of challenge inspections. Such inspections would be relevant either to those countries where consultations have not addressed U.S. concerns or in countries where such bilateral efforts are inappropriate or unlikely to be productive. In either situation, proceeding with a challenge inspection request would require solid intelligence information about the location and nature of the violation.

3. Many nations have ratified the CWC. But there are serious concerns over countries that have not - like Iran, Iraq, Libya, North Korea and Syria.

Q: Is there a way the convention can address the threat posed by terrorist groups harbored in countries that have not ratified the CWC and may have chemical weapons material?

A. Iran is a CWC States Party. Late last year, Libya, announced its intention to join the treaty. Given the potential for national programs to serve as a critical source of assistance for sub-national CW efforts, both the OPCW and States Parties themselves should undertake a concerted diplomatic effort to convince the key hold out countries to abandon their chemical weapons programs and join the CWC.

Q: How can the OPCW better detect clandestine production and stockpiling?

A. Both the OPCW and States Parties should ensure that all of the tools available in the treaty for pursuing concerns about clandestine activity, including challenge inspections, are utilized to their fullest.

4. The Organization for the Prohibition of Chemical Weapons has been in operation for almost a decade, and has conducted over 1,000 inspections at 500 sites in 49 nations during that time.

Q: How would you grade its effectiveness?

A. Although a preparatory commission for the treaty began working nearly a decade ago, the OPCW itself only came into existence after the CWC entered into force, in April 1997. The OPCW's responsibilities are unprecedented in the history of arms control, in that it must not only ensure the elimination of weapons themselves but also monitor government and commercial facilities to verify that countries are abiding by their

obligations. This entirely new multilateral organization has accomplished a great deal since its creation nearly five years ago.

Q: What have been the most significant obstacles facing the OPCW in accomplishing it mission?

A. One of the most significant obstacles facing the OPCW has been the lack of financial support from States Parties. For the past two year, the OPCW has experienced a financial crisis, requiring significant cuts in inspections and other activities relevant to treaty implementation. This financial crisis is the product of a number of factors, including the nominal growth budget policy insisted upon by the United States and other major OPCW funders. According to figures released by the OPCW last year, because of this budget cap, the total number of inspections in 2002 is unlikely to be higher than 2000, even though the number of inspectable facilities is likely to rise from 600 to more than 4,600.

Q: Are CWC member's support adequate? What steps other than better financial support would you recommend?

A. In addition to bolstering their political and financial support to the OPCW, CWC States Parties must also make every effort to meet the treaty's destruction deadlines. The U.S. must ensure that its technology and funding decisions will enable destruction operations to be completed safely and in time to meet the 2012 extension deadline. Both Russia and the international community must expand their efforts to eliminate Moscow's chemical weapons stocks. The U.S. and other States Parties should consider creating an international consortium to work with Russia to complete the Shchuch'ye and Kambarka destruction facilities. To encourage continued Russian investment, the consortium could offer to match the funds provided by Moscow.

5. Additional mechanisms for controlling biological weapons include global surveillance and control of emerging diseases, ethics education of biological scientists, and international self-monitoring of bioscience.

Q: Is the Administration supporting such activities?

A. At the Biological Weapons Convention Review Conference last November, the Bush administration reaffirmed its opposition to a legally binding protocol to enforce the Convention. In its place, the administration proposed a number of voluntary measures, including enhanced disease surveillance and a code of conduct for and self-monitoring by biological scientists. The administration did, not, however, elaborate on these proposals. Moreover, it opposed efforts at the Review Conference to establish a multilateral process whereby the U.S. and other proposals related to the BWC could be considered.

6. The BWC and the CWC were established to stem proliferation among states.

Q: What steps do you believe could be taken to increase their effectiveness against non-state actors? Would there be sufficient support among CWC/BWC and Australia Group members to effect these changes?

A. In view of the fact that the CWC and the BWC impose legally-binding obligations on governments but not on individuals, both treaties could be further strengthened and reinforced by the conclusion of an international treaty making it a crime for individuals to develop, possess or use chemical or biological weapons or to knowingly assist others in doing so. The Harvard-Sussex Program has developed a proposal for such a treaty.

Questions for Ms. Elisa D. Harris
From Senator Max Cleland

1. In your opening testimony, you state that support from national programs will likely be crucial if terrorist groups are to acquire chemical or biological weapons. Do you believe that arms control treaties such as the Biological and Toxin Weapons Convention (BWC) and the Chemical Weapons Convention (CWC) will be effective in preventing state sponsors from assisting terrorists networks in developing weapons of mass destruction? What can/should the United States do to increase the authority and effectiveness of these treaties?

A. The BWC and the CWC can help impede terrorist efforts to acquire chemical and biological weapons by limiting the number of countries from which CBW materials and expertise are available. More broadly, these treaties establish important norms outlawing chemical and biological weapons, thus making clear the illegitimacy of assisting others, including terrorists, in acquiring such weapons.

The United States should take the lead in increasing the authority and effectiveness of these treaties. With respect to the BWC, we should resume multilateral discussions on measures to strengthen the BWC. Pending international agreement on legally binding enforcement measures for the Convention, the U.S. should support efforts to expand the UN Secretary General's authority to include allegations of the development, production or possession of biological weapons. We should also strengthen international controls over dangerous pathogens and enhance oversight of the U.S biodefense program.

With respect to the CWC, we should ensure that CWC adherence is a prominent issue in our foreign policy toward the key holdout countries and should be prepared to use challenge inspections to pursue concerns about noncompliance by existing States Parties. We should also devote the resources necessary to meet the treaty's destruction deadlines and rectify the OPCW's budget problems.

Governmental Affairs Subcommittee
On International Security, Proliferation
And Federal Services Hearing on
Multilateral Non-Proliferation Regimes
February 12, 2002

Questions for Dr. Amy Smithson
From Senator Daniel K. Akaka

1. You have testified that previous chemical and biological attacks suggest assistance from national programs is likely to be key for terrorists in obtaining chemical and biological weapons.

Q: How important is the commercial availability of some chemical and biological agents or is government assistance the critical part?

As one might have expected given how widely certain items are used to make commercial products, terrorists have indeed been able to acquire key chemical and biological weapons ingredients in the marketplace. Chemical agent precursors, reactors and other processing equipment, as well as fermenters and biological growth media can be purchased. Under the guise of conducting legitimate research, individuals with malevolent intent can also buy deadly seed cultures from culture collections, as Iraq's bioweapons scientists did.

Just having a well-equipped, well-stocked kitchen, however, does not mean that one will turn out to be a competent cook, much less a master chef. Aum Shinrikyo's scientists looked up decades-old poison gas formulas, bought the requisite equipment and chemicals, and made beaker-sized quantities of agent. As they tried to start operating their sarin production plant, they had multiple accidents that drew the attention of authorities, which in turn caused the cult to shut down the plant before it churned out large quantities of sarin. What Aum's aspiring weapons scientists could not find in textbooks were the instructions for scaling-up production from laboratory quantities to full-scale production. That type of hands-on knowledge is something that experienced chemical weaponeers, such as those employed in a government weapons program, know.

Likewise, terrorists would be able to make some progress toward a biological weapons capability, but they would probably hit some of the numerous technical hurdles that have stymied many a government-employed scientist trying to figure out how to produce large quantities of agent and disperse it effectively. So, while I do not rule out the possibility that terrorists would make headway on their own, the technical obstacles are such that they would be unlikely to succeed in acquiring a mass casualty biological or chemical weapons capability without turning to government-sponsored weapons programs.

For their part, governments would probably think twice before cooperating with sub-national actors that they cannot control. Giving terrorists a haven, money, a place to train, and even conventional weapons capabilities is a calculated gamble, but turning over weapons of mass destruction capabilities to them is another thing entirely. Any government's decision about whether to offer this type of cooperation would be

influenced by the unacceptable level of retaliation that would result from evidence of links between a government weapons program and a terrorist organization using biological, chemical, or nuclear weapons.

Of course, there is always the possibility that weaponeers would cooperate with terrorists without their government's knowledge. This very possibility has been one of my greatest concerns because when the USSR collapsed in 1992, literally thousands of chemical and biological weapons specialists lost their job security but still needed to support their families. For this reason, I have long argued that the US government should provide additional funds for collaborative research grants that will keep the Soviet former chemical and bioweaponeers gainfully and peacefully employed, more resistant to the lucrative offers that terrorists or other governments might make.

2. The President has recently emphasized Iran's continued support of terrorist organizations and CIA Director Tenet has testified that Iran continues to maintain chemical weapons. Although Iran is a party to the CWC and is required to declare and destroy these weapons, press reports indicate that Iran's declarations have been misleading. No challenge inspections have been requested by the United States or any other CWC state party.

Q: Why have the United States or other States Parties not used the OPCW's full range of verification measures to resolve this issue?

Several possible explanations exist for why no CWC challenge inspections have been requested in Iran or in any other country almost five years after the treaty's entry into force. Specifically with regard to Iran, press reports could be inaccurate and Iran's declarations complete, although that is not what the buzz along the grapevine of CWC observers indicates. Second, Article IX affords treaty members tools short of actual challenge inspections to settle uncertainties arising from a state's declaration or other compliance concerns. Over the past few years, there has been somewhat of a rapprochement between the US and Iranian governments, so it is not inconceivable that bilateral exchanges have taken place to address US concerns about Iran's CWC compliance. Under Secretary of State John Bolton said on 24 January 2002 that in "many cases, this has proven to be highly successful." Finally, Iran could fall into the ranks of nations that Bolton indicated were violating the CWC, although he, unlike CIA Director George Tenet, did not name Iran as a violator.

If the US government or other CWC members believe that Iran is cheating on the treaty, then a challenge inspection should be requested. Otherwise, continued voicing of such suspicions without taking action to investigate or resolve them leads to a gradual erosion of confidence in the treaty's verification mechanisms and in the treaty regime as a whole. The whole point of the CWC's landmark verification measures—particularly of the treaty's any time, any place challenge inspections—was to avoid such circumstances wherein the CWC would be slowly undermined.

Which leads one to ask why, if evidence of noncompliance exists, no such step has been taken. Unfortunately, I believe a large share of the blame rests in Washington, DC. When the Senate and the Clinton White House worked out details of the CWC's resolution of ratification (S.Exec. Res. 75) and its implementing legislation (H.R. 4328),

the bills in draft form were laced with treaty-weakening exemptions. The first such exemption allows the President to refuse a challenge inspection on the grounds that it may threaten US national security. The second exemption states that no samples collected during an inspection can leave US territory for analysis. A third exemption narrows the number of industry facilities that declare activities involving mixtures or solutions that contain proliferation-risk chemicals.

While the US government might like to create a less stringent verification regime for itself, other members will not simply allow that to occur. The upshot of these circumstances is that a much lower international common denominator for CWC inspections is being created. When the need arises, other governments will emulate the US policies and block challenge inspections, deny inspectors permission to send chemical samples abroad for detailed analysis at independent laboratories, and decrease considerably the number of industry facilities worldwide that are declared and subsequently opened to routine inspection. The Iranian government has made public statements pointing to the detrimental effect of the US exemptions, and diplomats and treaty cognoscenti from other nations have told me that their governments will simply cite the US exemptions should their nation be challenged.

Therefore, I have consistently argued that Congress and the Executive Branch need to move swiftly to restore full challenge inspection and sampling analysis powers to the CWC's inspectors. Thus armed, the US government and other treaty members could trigger on-site investigation of suspect activities.

Q: Would you recommend that the United States request the OPCW conduct challenge inspections with Iran?

If the US government or any other CWC member has sound information indicating that the Iranians or any other member country is not abiding by the treaty's obligations, then a challenge inspection should be requested. As I noted in the answer to the previous question, to do so prior to overturning the US challenge inspection and sampling analysis exemptions would invite the failure of the process, however, since Tehran would have an out to reject the request based on the grounds that it might threaten Iran's national security or be able to block the inspectors from conducting thorough off-site analysis of samples, if needed.

3. One of the reasons the Administration rejected the BWC protocol was to protect U.S. industry. The Chemical industry supported ratification of the CWC.

Q: What accounts for these differing industry reactions to the BWC and CWC?

In a word, education. In the late 1970s, the US chemical industry, led principally by the Chemical Manufacturers Association (now the American Chemical Council), initiated a series of activities to become more familiar with the goals of the negotiations underway to ban the development, production, storage, and use of poison gas. Over the years, the US industry consulted with the US government and sister trade organizations overseas, offered technical advice about how to meet the treaty's objectives without compromising trade secrets, and opened its doors to trial inspections to give monitoring concepts a realistic test. Step by step, the industry as a whole learned that the CWC

monitoring and the ability to maintain confidential business data were indeed compatible activities. The US industry's technical advice and cooperation with this process was integral to the achievement of a workable CWC verification regime.

In contrast to this willingness to learn and participate, the US pharmaceutical industry, as led by the Pharmaceutical Manufacturers of America, has said some of the right things but not backed its words up with trial inspections or other activities that might indicate a genuine desire to search for technical solutions to the very difficult challenges facing BWC protocol negotiators. The difference between the attitude and actions of the two industries could not be more clear--- the US chemical industry set out to help the negotiations succeed, while the US pharmaceutical industry has to date sat on the sidelines of the process, offering the occasional perfunctory statement.

4. In light of current efforts against terrorism, the administration has stated that we need to move beyond traditional arms control measures. It recently submitted an alternative proposal to the BWC Protocol.

Q: How does the administration's proposal help us move beyond traditional arms control?

The Bush administration's proposal rightfully recognizes that monitoring the BWC is so innately difficult that so-called non-traditional approaches need to be taken. Both the traditional and non-traditional initiatives that the Bush administration has tabled could be greatly improved. In the traditional vein, the administration would place the United Nations (UN) Secretary General in charge of challenge investigations or inspections. This approach would not be nearly as productive as one that established a more automatic challenge inspection mechanism, one distanced considerably from the politics that can influence UN decision making. Consider, for instance, that since the BWC's 1975 inauguration, the UN's Security Council has had the authority to investigate allegations of cheating, but no such inspections have been conducted despite the flagrant nature of Soviet treaty violations and widely held suspicions of cheating elsewhere. The second traditional arms control proposal that has dim prospects is one that would rely upon nations volunteering for non-challenge inspections. The monitoring value behind this particular concept continues to elude me. In fact, such voluntary inspections could give possible treaty violators grounds to argue that they had opened their doors to inspectors, even if these voluntary inspections were nothing more than charades.

In the nontraditional area, the Bush administration advanced several initiatives that have conceptual merit but share a common weakness in the manner in which the Bush administration proposes they be implemented. The idea that nations should pass domestic laws criminalizing offensive bioweapons activities is one deserving full support. Likewise, the United States and the international community as a whole would be well-served if disease surveillance were strengthened. Similarly, regulations governing the transfer of dangerous pathogens should be stiffened, and scientists should be instructed in and held to the ethics of their discipline regarding work with dangerous pathogens. All of these ideas are worthwhile, but the current Bush administration proposal framework would have nations decide for themselves exactly how to implement

these initiatives. Otherwise, one country could pass extensive pathogens transfer regulations while a second could enact a flimsy law, but still get "credit" for having done its part to restrain the proliferation of biological weapons. To make this series of non-traditional initiatives truly worthwhile, the Bush administration needs to work with other nations to draft and push for the international adoption of such standards in each particular area. Absent such a policy change and the hard work that would be required to see it through, the likely fluctuations in how countries will implement these non-traditional proposals probably will not ameliorate the problems that the proposals seek to address in the first place. The need to enact strong measures to thwart the proliferation of biological weapons is so pressing that the Bush administration cannot afford to just fire off these initiatives and then forget that their true value lies in how well they are implemented.

Questions for Dr. Amy Smithson
from Senator Max Cleland

1) According to your testimony, the BWC is much less effective than the CWC in monitoring and verification of treaty compliance. In your opinion, what is the most critical action needed in order to strengthen the effectiveness of the BWC? Does this action mean simply more funding for the BWC or will it involve increased resources, such as personnel and equipment? How can the United States best usurp its vast resources and technical experts to aid in the effectiveness of the BWC?

The fundamental reason why the BWC cannot at present be monitored as effectively as the CWC is that the former treaty lacks meaningful monitoring provisions. The BWC was negotiated in the early 1970s, when on-site inspections were little more than a pipedream. In contrast, the final touches were put on the CWC in the early 1990s, after the superpowers and other nations had come to accept the benefits of on-site inspections for treaty monitoring purposes. To the best of my knowledge, the US government does not currently provide any funds to an international organization for the purposes of monitoring the BWC, since no international organization dedicated to BWC inspections exists. A query of the US government may reveal that at some point in the past 27 years the US government has given funds to the United Nations (UN) for BWC inspection activities, but I am unaware of any BWC inspections launched via the existing structure wherein the UN Security Council would investigate allegations of cheating.

The purpose of the ad hoc negotiations that have been underway for roughly seven years is to strengthen the BWC by adding monitoring and compliance procedures to a treaty that at present lacks viable mechanisms for that purpose. Last year, the US government rejected the draft BWC monitoring protocol that was under consideration, a decision with which I agree for reasons outlined in my written testimony and explained also in the May 2001 Stimson Center report entitled *House of Cards: The Pivotal Importance of a Technically Sound BWC Monitoring Protocol*. Rather than abandon these negotiations altogether, the US government should muster its technical expertise to fulfill the requirements of public law 106-113 and conduct monitoring trials at the various types of sites that could fall under a BWC monitoring regime. Only two such trial inspections have been held to date, and the outcome of both was indeterminate. For that reason, public law 106-113 was passed to examine more thoroughly whether on-site inspections could produce meaningful BWC monitoring results and if the costs of such inspections outweighed their possible benefits. Until the US government does the necessary technical and field research, as *House of Cards* recommends, its position on how to improve compliance with the BWC will be less than fully informed.

Also as noted in my written testimony, the Bush administration tabled several initiatives in November 2001 that would endeavor to strengthen the security of access to pathogenic microorganisms, have governments more closely oversee high-risk experiments with pathogens, establish professional scientific codes of conduct for those working with dangerous pathogens, and improve disease surveillance. These good ideas are not likely to be thoroughly implemented, however, unless the Bush administration or another government pushes for the adoption of international standards in each of these areas. Finally, I would encourage the Bush administration to solicit and heed outside, nongovernmental technical advice on all of these matters, since some of this nation's most stellar technical expertise resides within the pharmaceutical industry, independent research institutes, and universities.

GOVERNMENTAL AFFAIRS SUBCOMMITTEE
ON INTERNATIONAL SECURITY, PROLIFERATION
AND FEDERAL SERVICES HEARING ON
MULTILATERAL NON-PROLIFERATION REGIMES
FEBRUARY 12, 2002

RESPONSES FROM DR. JIM WALSH
TO QUESTIONS FROM CHAIRMAN DANIEL K. AKAKA

1. The IAEA Director General has stated that suicide terrorists make nuclear terrorism more likely than before September 11. Recent attention has been paid to the threat of so called "dirty bombs" made from conventional explosives and radiological waste. Some fear radiological material could fall into the wrong hands since it is often used for commercial purposes such as medical treatment.

Do the NPT and the IAEA sufficiently address this threat? If not, how can they better do so?

I. Radiological Material and Dirty Bombs

The vulnerability of radiological materials and their potential use in so-called "dirty bombs" is a danger that requires immediate action by the government of the United States. To date, no terrorist or country has employed radiological weapons, but from a technological standpoint, dirty bombs pose far fewer obstacles that do other weapons of mass destruction (nuclear, chemical, and biological weapons). There are also indications that al Qaeda may have attempted to acquire radiological materials.

The Treaty on the Nonproliferation of Nuclear Weapons (NPT) and the International Atomic Energy Agency (IAEA) are the most important international policy instruments available today for combating the threat of dirty bombs and nuclear terrorism. Together, the NPT and the IAEA provide the core of the only existing system of protection and accountability for the world's radiological material. Much of that effort focuses on plutonium and highly enriched uranium -- materials that are used to construct nuclear weapons. Recently, however, the IAEA has also intervened to help countries with other material emergencies. In the last year, the agency has sent teams to Georgia, Uganda, and Afghanistan to secure orphaned material that could have ended up in a dirty bomb.

The next few sections describe in greater detail how the NPT and IAEA reduce the risk of nuclear terrorism. The concluding paragraphs look at how the US government can help these institutions more effectively protect the world's nuclear material.

II. The NPT and Nuclear Materials

When most people think of the NPT, they think of proliferation and inspections, not nuclear or radiological terrorism. It turns out, however, that the NPT is critical to preventing nuclear terrorism. Its effect is felt in two ways. First, preventing nuclear proliferation reduces the odds that terrorists will be able to acquire nuclear weapons or nuclear materials. The fewer the

number of nuclear weapons states, the fewer the opportunities there will be for a Bin Laden to acquire nuclear assets -- whether by thievery or with the blessings of the weapons state. By contrast, in a world that is highly proliferated, in would be very difficult to prevent the transfer of nuclear weapons or nuclear material.

The NPT makes a second, equally important but less obvious contribution. Inspections. What do safeguards or inspections have to do with nuclear terrorism? The answer is material accountancy. In effect, the NPT requires that countries develop a system for tracking their nuclear materials, a system that allows IAEA "auditors" to confirm that every member can account for its nuclear holdings. More countries provide information about their nuclear materials and facilities through NPT safeguards agreements than any other single mechanism.

The *purpose* of the safeguards system is to prevent proliferation -- to deter a country from diverting material to a nuclear weapons program. The *effect* of safeguards, however, is improved control over nuclear materials, which reduces the chances that it will end up in the hands of terrorists.

III. IAEA and Radiological Materials

The IAEA administers the NPT inspections system, but that is just one of a number of IAEA activities that contribute to the security of radiological materials. This section focuses on four IAEA program areas: physical protection, assistance to the countries of the former Soviet Union, nuclear trafficking, and orphaned sources. In each of these areas -- as with the safeguards system-- the IAEA's primary goal is to help member states upgrade and manage their own national systems.

A. Physical Protection

The IAEA's efforts to improve the security of nuclear material are based, in part, on an international treaty -- the Convention on the Physical Protection of Nuclear Material. This international treaty is a younger and less developed cousin of the NPT. Membership in the Convention on the Physical Protection is not much more than a promise to try to meet international standards, not a regime based on inspection. Nevertheless, it provides one of the few mechanisms available for addressing the vulnerability of nuclear facilities and transportation.

The agency's efforts to promote physical protection have two core elements. The first is developing a set of universal standards, norms, and guides for physical protection. The second is providing direct assistance to member states to help them meet those standards. The IAEA works with countries to deploy intrusion detection sensors, radiation monitors, access control systems, and other components required for physical protection. Assistance can also take the form of peer review. The agency has established an International Physical Protection Advisory Service (IPPAS) which can be sent to evaluate a country's system of physical protection.

B. Assistance to the Countries of the Former Soviet Union

The collapse of the Soviet Union created new nations with nuclear material but without any system for protecting or safeguarding it. The IAEA responded by developing a Coordinated Technical Support Programme (CTSPs) to assist the newly independent states with establishing

a system of accountancy and control. The IAEA has also acted as a coordinator for the sixteen countries (including the US) that have nuclear assistance projects with countries of the former Soviet Union.

C. Nuclear Trafficking

Following reports of the nuclear smuggling in the early 1990s, the IAEA pursued a number of initiatives. It established a new working relationship with INTERPOL, the World Customs Organization, and European police agencies on nuclear trafficking. It also created the Illicit Trafficking Database Program, which today has sixty-nine members. Since its inception in 1993, the database has collected reports on hundreds of incidents of trafficking, about half of which have been confirmed by member governments. The agency also developed the Illicit Trafficking Radiation Detection Assessment Programme (ITRAP), an effort to help member states improve their border controls and detection systems. On the technological front, the agency started the Coordinated Research Project (CRP), a cooperative project aimed at improving detection systems.

D. Securing Orphaned Material

Much of the IAEA's focus involves materials that could be used in nuclear weapons -- materials that are subject to the NPT and the Convention on Physical Protection. These treaties do not cover most of the radiological materials that are found in medical or industrial applications. Unfortunately, some of these materials are sufficiently deadly that their leakage would pose a serious environmental or even terrorist threat. One treaty that does cover these materials is the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency. Under the convention, member countries can request that the agency intervene and secure a radiological source before it is stolen by terrorists or traffickers.

Several countries have requested IAEA assistance. In March of this year, for example, an IAEA team went to Kabul to secure several radiological sources including a unit of Cobalt-60 that was found in an abandoned wing of a former hospital.

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In short, the NPT and the IAEA provide the first line of defense against nuclear terrorism: stopping terrorists from acquiring radiological materials in the first place. This strategy is less expensive and more effective than trying to stop terrorists after they have acquired prohibited materials.

Box 1. Preventing Nuclear Terrorism:

The Role of NPT and IAEA

NPT

- Prevents proliferation (proliferation -> material vulnerability)
- NPT safeguards require systems of material accountancy

IAEA
• Programs to improve the physical protection of nuclear facilities • Assistance to countries of the former Soviet Union • Programs to combat nuclear trafficking • Initiatives to secure orphaned radiological sources and material

Table 1. summarizes the ways that the NPT and IAEA reduce the risk of nuclear terrorism. These are welcome contributions, but are they enough? Is there more that the IAEA or the NPT membership should be doing to reduce the risk of nuclear terrorism? Are there steps the US government can take that would improve the effectiveness of the NPT and IAEA? The next section briefly considers those questions.

IV. Building a More Effective NPT and IAEA

The United States had a strong hand in creating both the NPT and IAEA, and over the years, the US has consistently supported both institutions. In the larger scheme of things, however, neither institution has been a high priority for US governments. There are a number of measures that the IAEA could pursue that would significantly reduce the danger of nuclear terrorism, and there are actions that the US government can take -- both financially and politically -- that would increase the IAEA's effectiveness. Since these steps are described in detail in responses to two other questions,[1] I want to briefly address how the US can strengthen the NPT.

There is little the US can do to change the actual provisions of the NPT. The amendment process is onerous and probably ill-advised. Opening a discussion on treaty amendments might very well result in a weaker regime. That leaves two other possibilities. One is to strengthen IAEA safeguards, a topic that is explored in the answer to the next question. The other is important as it is simple: do no harm.

At the very least, US governments should avoid actions that weaken the NPT. A recent example might be the controversy over plans to develop new nuclear weapons. Proponents have argued that the US needs new nuclear weapons so that it can threaten the hardened underground bunkers of an adversary. Without these weapons, the argument goes, it will be difficult to deter evil leaders, who like Saddam Hussein, do not care about the lives of their citizens. Several analysts question the assumptions of this theory, but what is not in question is the effect such a move would have on the NPT. Building and testing new nuclear weapons would weaken the treaty and simultaneously boost the standing of bomb advocates in other countries.

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[1] My answer Senator Akaka's second question provides a detailed list of new measures the IAEA could pursue, and my answer to Senator Cleland's second question offers a closer examination of the IAEA budget and ways that it could be restructured.

In nonproliferation terms, that is the equivalent of destroying the village in order to save it. The treaty is a bargain. If we break that bargain, even in the name of nonproliferation, we could wreck the one instrument that has done more than anything else to prevent a deadly spiral into nuclear anarchy.

No country benefits more from the NPT than the United States. Given the documented effectiveness of the treaty, the US should do everything it can to assure its continued success. That means a) refraining from actions that will be perceived as undermining the treaty and b) living up to our obligations under the treaty . A strong treaty backed by an effective IAEA can prevent the proliferation of nuclear weapons and can provide the centerpiece for new efforts to secure the world's radiological material. Absent a strong NPT and IAEA, it will be virtually impossible to prevent terrorists from acquiring material for dirty bombs -- bombs that will likely be directed at Americans.

2. The IAEA has operated under severe budget constraints. The IAEA estimated that it will need $30-50 million annually to strengthen and expand programs to meet the terrorist threat.

What measures are needed to make the IAEA better able to respond to nuclear terrorism?

I. IAEA, Nuclear Terrorism, and Budget Constraints

IAEA is the single most important international mechanism for addressing the dangers posed by nuclear proliferation and unprotected nuclear material. No other agency in the world has the equivalent experience, technical expertise, or statutory authority. President Bush has described IAEA as "central to the world's efforts to prevent" proliferation. Secretary of Energy Abraham, commenting on the problem of nuclear materials, declared that "our security, and that of nations around the world, largely depends upon what this Agency does."

The importance of IAEA is widely recognized. Less appreciated is the fact that this one agency has numerous other responsibilities. Over the years, IAEA's burdens have grown at a dizzying pace: more facilities to inspect, more nuclear material to track, more treaties to implement, and more countries to crisis. Responsibilities and expectations have grown, but resources have not. In most years, the agency has been level funded. Unless rectified, the growing gap between expectations and resources may undermine the agency at a time when challenges to nuclear security have never been greater.

In my answer to Senator Cleland's second question concerning IAEA, I address the question of budgets in greater detail. Here, I want to focus on the measures that will strengthen IAEA's ability to prevent nuclear terrorism.

II. Strengthening IAEA's Ability to Prevent Terrorism

One way to bolster the agency's efforts against nuclear terrorism is to upgrade IAEA's programming in four core areas: 1) inspections and agreements, 2) assistance to member states, 3) information collection, and 4) emergency response.

A. Inspections and Agreements

The single most important action that can be taken to improve the effectiveness of IAEA safeguards and inspections is the widespread adoption of the so-called Additional Protocol. The Additional Protocol is an upgrade to the safeguards and inspections system. It enables IAEA to address the problem of undeclared or secret nuclear facilities. This was a key issue regarding the Iraqi nuclear program. Today, more than 60 countries that have signed on to the protocol, but only 25 countries have implemented it. (The US signed the protocol but has not acted to bring it into force.)

The US government launched a major campaign to persuade other governments to indefinitely extend the NPT. It should put that same level of effort into seeing that governments adopt the protocols that turn the NPT commitment a reality. Congress should ask the President to adopt the Additional Protocol and might consider using certification, incentives, or other instruments to encourage other countries to join the new safeguards program.

Second, IAEA's safeguards budget should be increased $30 million to meet current safeguards objectives. As it stands, the IAEA does not have the resources to carry out its existing inspections program, let alone expanded or improved safeguards. Strengthening the inspection system will require additional funds, but in the mean time, the agency should be given the resources it needs to meet its extant obligations.

Third, IAEA should expand its collaborative efforts in the development and field testing of verification technologies. The IAEA's technological advantage proved to be valuable in the North Korean case and will likely pay off in the future. Many countries that are considered potential proliferators are developing states that lack sophisticated technology. If IAEA maintains an aggressive program of verification technology development and field testing, it can maintain a technological advantage over most proliferators -- an advantage that may deter some countries from starting down the nuclear path.

Fourth, in the area of physical protection, the US should support amendments to strengthen the Convention on the Physical Protection of Nuclear Material.[2] The likely changes to the protocol are modest, and even after amendment, the convention will still be far less demanding than the NPT. Nevertheless, amendment will give the convention new political momentum and enable the IAEA to do a better job of protecting nuclear facilities and material.

B. Assistance to Member States

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[2] IAEA officials have stressed that the widespread adoption of two other agreements would improve the agency's ability to prevent proliferation and terrorism -- the Comprehensive Test Ban Treaty and a international ban on the production of fissile material. In the current climate, however, neither agreement is likely to make much headway.

Inspections and international agreements are absolutely essential in the fight against terrorism, but to be effective, national governments have to possess the capacity to follow through on their commitments. Nuclear material is spread across more than 70 countries. Most of these countries have the resources and political will to establish national systems of accountancy and control, but some countries are too new, too poor, or too wracked with problems to accomplish the job without help from the IAEA.

IAEA assistance typically takes the form of equipment and training, but the scale of the agency's efforts -- particularly in the areas of physical protection and trafficking -- is quite small. The latest annual report indicates that the agency sponsored over 75 field visits involving nuclear safety.[3] By contrast, no more than 3 visits were made in support of physical protection, a fact that the agency attributes to budget constraints. Similarly, the agency sponsors scores of training courses but only two on the topic of nuclear trafficking.

Security from nuclear terrorism is only as strong as the weakest link. Protecting radiological material will depend on IAEA's ability to help weak states build and maintain a system of nuclear protection. The IAEA can do much more to help these countries with their safeguards, physical protection, and border detection. It can provide training, peer review, testing, and support services to countries that would otherwise be unable to meet international standards.

The IAEA should also experiment on a pilot basis with developing a new programming element: incentives. Inspections may deter, and physical protection might improve security, but in the end, nuclear security will depend on the commitment of facility operators, employees, and the national regulatory authority. Performance incentives and other tactics can help build the local constituency for nuclear protection that will be necessary for security in the long-term.

Table 1. Recommended Measures to Strengthen IAEA

A. Inspections and Agreements
- Adoption of the Additional Protocol
- Contribute $30 million to meet *current* safeguards objectives
- Expand agency development and testing of verification technologies
- Support amendment of the CPPNM

B. Assistance to Member States
- Increased support for safeguards, physical protection, & anti-trafficking programs including...

[3] These include visits of the International Problem Safety Assessment Review Team (IPSART), Operational Safety Review Team (OSART), the Peer Review of Operational Safety Perform Experience (PROSPER), the Safety Culture Enhancement Program (SCEP), the Engineering Safety Review (ERS), the Integrated Safety Research Reactors (INSARR), the Safety Review missions, the Internal Regulatory Review Team (IRRT), and the Peer Review of Radiation Safety.

Training/courses
Peer review
Testing
Support services
Technology transfer
- Incentives for participation and performance

C. Information Collection
- Improve access to states and their facilities
- Design information on every safeguarded facility
- Improve information about stored radiological material
- Improve information about nuclear imports and exports
- Expand trafficking database
- Establish of Nuclear Trafficking Documentation Teams (NTDT)
- Establish laboratory network for forensic analysis

D. Emergency Response
- Expand ability to secure, remove, and store orphaned sources

C. Information Collection

Another way to strengthen IAEA is improve its ability to collect information. This is one of the agency's core functions, and in virtually every area, there is more that the agency can do to help combat proliferation and terrorism. In general, the agency needs better access to states and their facilities. It would also benefit from having member states provide design information on every safeguarded facility, information about the character of radiological material housed at facilities, and better information about nuclear imports and exports.

The agency also needs to expand the scope and detail of the nuclear trafficking database. As it stands, the database depends on a country reporting information to the agency. As one might expect, the quality of that reporting varies. Fighting nuclear terrorism requires, however, that the international community collect every available fact about any incident of nuclear smuggling. The information is too valuable to lose. One solution is for IAEA to send a documentation team any time there is a report of smuggling. The Nuclear Trafficking Documentation Team, or NTDT, could collect public domain information, review court records, and interview officials. The team would not issue a report but instead simply collect information for use in IAEA's confidential database.

On the technical side, the agency should be allowed to establish a network of laboratories in nuclear forensic analysis. The network would enable the agency to analyze and trace radiological materials that were orphaned or captured from traffickers.

III. What Congress Can Do

These initiatives would significantly strengthen the IAEA and reduce the risk that a terrorist would acquire the materials for a nuclear or radiological attack. The IAEA cannot act on any of these recommendations, however, unless it has the financial and political support of its member states, particularly the United States.

The Congress has the power to substantially upgrade the IAEA's effectiveness by providing financial resources to redress past budget shortfalls and to support new measures to combat terrorism. Other governments can be called upon to foot the bill, and they should, but there is no avoiding the fact that the US is the most important player here. It is the country that created the IAEA and it benefits the most from IAEA efforts to stop proliferation and prevent terrorism. US leadership, especially US financial leadership, is a prerequisite for strengthening the IAEA.

How much money is needed beyond the $30 million recommended to cover current safeguards? In response to Senator Cleland's second question, I review the agency's budget and present three funding alternatives.

3. As you state in your testimony, the number of nuclear states has not grown to the degree predicted 20 or 30 years ago.

How effective is the NPT today in addressing emerging nuclear states?

The NPT has been one of the greatest public policy successes of the 20th century. For over three decades, the treaty has worked to prevent the spread of nuclear weapons. In the years to come, the NPT will likely prove to be even more important. The next section looks at NPT's previous success, and the relevance of that success to today's proliferation challenges. The concluding sections look at two common criticisms of the treaty ("countries will cheat" and "inspections can be beaten").

I. NPT: Explaining Past Success

The NPT has been an unheralded success in preventing the widespread proliferation of nuclear weapons. Despite every prediction by experts and policy makers, nuclear weapons did not proliferate rapidly. We do not yet live in a world with 30 or 20 or even 10 nuclear weapons states. In fact, over time, the rate of proliferation has actually *declined.*

The rate of proliferation hit its peak in the 1960s, when three countries joined the nuclear club (France, China, Israel). Since then, the number of new countries acquiring nuclear weapons has decreased.[4] There are many reasons for this unexpected success, but one of the most important causes was the NPT.

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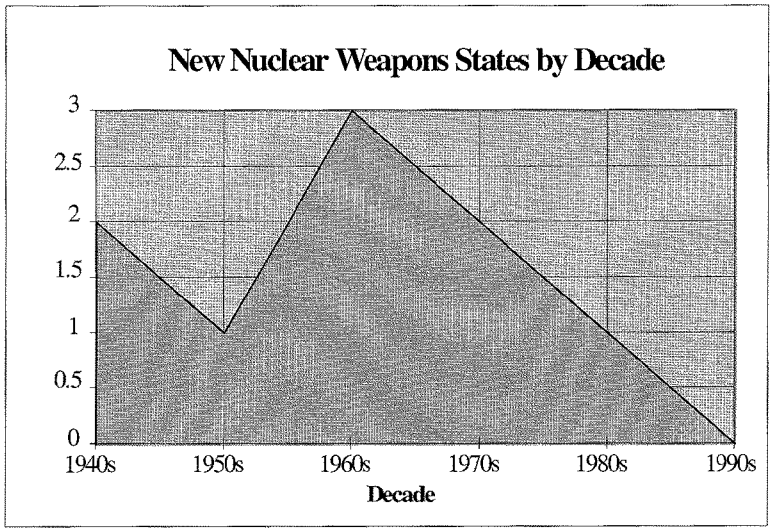
[4] There is some dispute over North Korea's nuclear status, with some intelligence estimates reportedly suggesting that North Korea has one or two nuclear devices. Other estimates reject that claim.



It is no coincidence that NPT came into force in 1970, the very point at which the rate of proliferation begins its descent. Evidence from a variety of sources -- declassified documents, interviews, statistical data -- suggests that the treaty had a powerful impact on nuclear decision making, especially on countries that had nuclear weapons aspirations. In the absence of the treaty, the problem of proliferation -- and the danger posed by nuclear terrorism -- would be far worse.

How did the NPT achieve this success? Many commentators associate the success of the NPT with the development of an international norm. My research, however, suggests that the effect of norms is a positive but secondary factor. Instead, the NPT's real influence has more to do with its ability to shape the internal political debates and bureaucratic battles of countries that consider going for the bomb.[5]

Once a country joins the treaty, the pro-bomb forces within that country face an uphill political struggle. They have to persuade the country's leadership to either withdraw from the treaty or to

[5] The treaty drew a line in time and required that countries openly declare their nuclear intentions. It reframed the debate over nuclear weapons from a purely "defense issue" to a broader "foreign policy issue" and in doing so, reshaped the the composition of the decision group. In short, the NPT defined the issue, influenced who got to sit at the table, and created a deadline for action. It also created political and bureaucratic winners and losers. Once a country ratified the treaty, the pro-nuclear constitiuency that had been pushing for the bomb often broke up and moved on to other issues.

cheat. Both choices have obvious downsides. Withdrawing from the treaty will be correctly interpreted by other countries as a signal that the country is seeking nuclear weapons. Cheating carries its own risks. Both strategies require a major political commitment. In short, pro-bomb forces in NPT countries face numerous political and technical obstacles that make establishing a bomb program very difficult.[6]

II. NPT Today: Preventing Future Proliferators

The treaty has been remarkably successful, but it also provides an invaluable tool for addressing today's proliferation threats. NPT-related safeguards are the largest element in the world's only existing system of nuclear accountancy. Virtually all states participate in an NPT or IAEA-based safeguards system. These safeguards are critical to the any future nonproliferation success, and as was discussed in Question 1, they are just as important from the standpoint of terrorism and material security.

Even without safeguards, a healthy treaty acts as a constraint, making it difficult for nations to go back and reconsider their nuclear posture. There are many countries that do not have nuclear weapons programs now, but that fifty years down the line, may be tempted. It could be Germany, Japan, Taiwan, South Korea-- or a country we cannot today imagine.[7] A robust NPT makes backsliding or a reversal less likely.

The NPT also provides countries with a *non-military option* for responding to the threats posed by other nuclear weapons states. Egypt provides an especially good example. Egypt faces a potential nuclear threat from Israel. Countries in Egypt's position have a strong incentive to balance against the forces of their prospective enemy -- matching the adversary weapon for weapon. The NPT has given Egypt another alternative. It has provided Egyptian leaders with a *political* strategy for dealing with a military problem. By embracing the NPT and using it to press for Israel's denuclearization, Egypt has found a way to counter the threat it faces without having to build its own nuclear weapon. Iran may find itself in a similar situation if Iraq acquires nuclear weapons, as could various countries in East Asia if there is an outbreak of proliferation in that region.

Finally, the NPT provides instrumentalities for countering countries that act on their nuclear ambitions. Together with UN Security Council resolutions on Iraq, the NPT provides the chief legal and political basis for action against a non-nuclear member state that has an active weapons program.

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[6] One problem for bomb advocates is that the treaty's effect is "asymetrically progressive." Once a country is in the treaty, the tendency is for the country to make progressively stronger commitments to nonprolferation (e.g., agreeing to stronger safeguards over time). The result is that officals who want a bomb program find themselves in an ever tighening straight jacket.

[7] Thirty years ago, North Korea and Iraq were not of the lists of countries that were considered proliferation dangers. Twenty years ago, no one considered the possibility that the Soviet Union would break up and that Ukraine would have to decide whether to keep or renounce its inherited nuclear weapons.

Table. 1How The NPT Prevents Proliferation

- Influences internal political and bureaucratic battles over nuclear weapons. Creates obstacles for bomb advocates.
- Makes it difficult for governments to reconsider their nuclear posture at a later point, i.e. it helps lock in the commitment.
- System of inspections deters cheating.
- Provides countries a way to respond to nuclear threats without building their own nuclear weapon.
- Provides instrumentality and political basis for acting against illicit nuclear programs.

III. Criticisms of the NPT

Of course, no policy instrument is perfect, and the NPT is no exception. Critics of the NPT, complain that the treaty is flawed. They contend, first, that nations will cheat. The treaty, they maintain, limits the actions of the law abiding countries to the advantage of states that are willing to ignore international niceties. Second, they argue that inspections do not work -- that countries with a nuclear program can beat the system of international safeguards.

Let's consider each criticism.

A. Nations will cheat

Critics point to Iraq and North Korea as examples of countries that were willing to break their treaty commitments. Others point to Chinese nuclear assistance to Pakistan and Russian technology transfers to Iran as additional cases of cheating. Why should we rely on a treaty, they ask, when others do not live up to their obligations?

1. There have been very few cheaters.

The NPT is over three decades old and has 189 members. The surprise is not that there have been governments that cheated. No, the surprise is that there have been so few. The treaty promised prospective members that if they joined, they would enjoy broader access to nuclear technology. One might have expected therefore, that countries with clever leaders and bad intentions might join the treaty in order to gain access to nuclear assistance and then use this help to develop a bomb in secret. The historical evidence indicates, however, that countries that wanted and later developed nuclear weapons -- South Africa, India, Pakistan, Israel -- stayed out of the treaty. Moreover, countries that where unsure about their nuclear plans did not ratify the

treaty until after they decided to renounce nuclear weapons. They did not join first and decide later. In short, even countries that wanted nuclear weapons took the treaty seriously, more seriously than most international agreements. They went out of their way to avoid cheating. Iraq and North Korea represent extreme cases that are singularly rare.

2. Without a treaty, there are no cheaters, but lots of proliferators.
In the absence of any international restriction on nuclear behavior, countries are free to do what they like, including building nuclear weapons. In an "anything goes" environment, it is far easier for countries with nuclear weapons programs to acquire technology and materials and do so in secret.

3. Compared to what?
Public policy requires that one compare the costs and benefits of different options. Most policy instruments have limits or costs. The NPT is no exception, but it can boast an exceptionally high rate of compliance. What competing policy alternatives perform as well? Both counter-proliferation and missile defense, for example, cost more and have higher failure rates. That is not to suggest that counter-proliferation and missile defense have no place, but rather a way of highlighting the fact that critics of the treaty need to employ a consistent baseline or yardstick when evaluating policy alternatives.

4. Allegations that China and Russia have cheated are simply that: allegations.
Longtime students of proliferation have learned to be rather skeptical about the spectacular, press grabbing claims that are a prominent feature of nuclear affairs. Consider the China-Pakistan case. Historians of the Pakistani nuclear program point out that the program began in the early 1970s, and that the path to the Pakistani bomb was not through China but through Europe. Pakistan learn howed to produce enriched uranium by sending a spy to work at URENCO, the European enrichment consortium. Allegations concerning Chinese assistance come much later chronologically and focus on warhead design. The issue is not whether China "gave" the bomb to Pakistan. Pakistan gave Pakistan the bomb. The only issue is whether China helped Pakistan build a more advanced version of a weapon it already possessed. Still, if such information was transferred, it would constitute a violation of the NPT.

So, are these allegations true? It is difficult to say. Certainly there is no public domain evidence that would prove such a transfer. If it did happen, it flies in the face of a thirty year trend in Chinese nonproliferation policy. In the 1960s, Mao was one of the few leaders in the world who openly advocated *more* proliferation. He even offered to share China's nuclear weapons technology with other countries.[8] The policy did not last long, however. Beginning in the 1970s, China adopted an increasingly mainstream policy of nonproliferation. This evolution in Chinese nonproliferation policy culminated in 1990s, when China joined the NPT.

The case against Russia is weaker. Minatom and the Russian nuclear industry certainly suffered following the collapse of the USSR. Both have an incentive to export, and there are Iranian officials who want to expand their nuclear infrastructure. What is lacking, however, is evidence

[8] The two cases where there is the strongest evidence that China at least entertained the idea of transfering nuclear technology are Egypt and Indonesia -- both in the 1960s.

that the Russian government has knowingly transferred bomb-related technology. The Russians are helping build nuclear power reactors at Busheer, but these are light water reactors. They are of little use to a weapons program. Indeed, it is light water reactors that are being *given* to North Korea as part of the agreement to rollback its nuclear program.

Another area of concern is laser enrichment technology, but Russia's transfers have only involved "lab" level technology -- not technology that can be used to build nuclear weapons. American officials upset with the transfers have conceded as much but complain that any help to Iran's nuclear program -- even if it is not bomb related -- helps Iran build its general expertise in the field. This, however, is not a violation of the NPT. In fact, the NPT establishes that countries are entitled to access to civilian nuclear technology.

B. Inspections are flawed

Critics of inspection cite the failure of IAEA inspections to detect Iraq's clandestine program. They argue that governments guilty of cheating will not invite or allow inspections, and that inspectors can be fooled.

1. Proliferators do submit to inspection, and they get caught.

It is said that guilty parties will not invite or allow inspection, and yet that is precisely what happened in the case of North Korea. It was IAEA inspections that led to the North Korean nuclear crisis in the first place.[9] In the case of Iraq, IAEA failed to identify Iraq's weapons program, which relied on undeclared facilities. An inspection is only as strong as its requirements, and up until the 1990s, most nations wanted IAEA to restrict itself to declared facilities. After the Gulf War, the inspections regime was strengthened. Now, under the Additional Protocol, IAEA will have the ability to identify illicit, undeclared activities.

2. Inspections are designed to deter, not defend.

There is a common misconception about inspections. It portrays the inspection regime as defense. According to this view, safeguards are a kind of wall that protects nuclear material from being siphoned off for a bomb program. Proliferators search the wall for a hole or a weak spot. When they find one, they exploit it and become a nuclear weapons state. This concept of safeguards is intuitively appealing. Unfortunately, it is just plain wrong.

The safeguards system is not designed to defend, but to deter. The question is not whether an inspection system is perfect. Rather, the question is how much risk a proliferator is willing to take that he or she will be caught. Say, for example, that there is a 10% chance that a country could beat an inspection system. One in ten sounds uncomfortably high, but one must look at it from the perspective of the proliferator. Governments, even "rogue" dictators, will not cheat when the odds of getting caught are 90%. Quite the contrary, proliferators need a high level of

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[9] Why would North Korea allow inspectors in if it had issued false declarations? It is curious just in the way that it is curious that crimnals will voluntarily submit to searches or disclose information that incriminates them. It may be that the guilty overestimate their ability to beat the system or that North Korea did not realize that the inspectors had better technology. In principle, this is an advantage that IAEA should have if the prolifertor is either a developing country (e.g., Iraq) or an isolated state (e.g., North Korea).

confidence that they will succeed. The safeguards systems deters proliferators, because they know that if they cheat, they will get caught.

3. The inspection system is dynamic: it has gotten stronger and stronger over time.
The fixed principles of nonproliferation are set out in the NPT, but the system for implementing them -- the safeguards system -- has evolved over time. Safeguards are far more sophisticated today than when they began in the 1950s. When they started safeguards were limited to research reactors. They were expanded to include nuclear facilities of all kinds, and continue to be updated today, as in the case of the Additional Protocol.[10] If the trend of the past four decades holds true, then one can expect the safeguards system to grow stronger and more robust as additional improvements are made.[11]

4. Inspections have been effective.
The fact of the matter is that IAEA inspections did identify problems with the North Korea declaration. In addition, UNSCOM inspections repeatedly forced Iraq to amend its declarations and admit that it had a larger WMD program that it had claimed. Indeed, the UNSCOM/IAEA process in Iraq resulted in the destruction of more weapons than all the bombing during the Gulf War.

Table 2. Criticisms of the NPT

Criticism of NPT	Response to Criticism
Nations will cheat	1. Cheating is extremely rare; fewer cheaters than expected 2. W/o a treaty, there are no cheaters, only proliferators 3. Compared to what? What alternative performs better? 4. Allegations concerning China and Russia are unproven
Inspections are flawed	1. Proliferators submit to inspection, and they get caught 2. Inspections are designed to deter, not defend 3. Inspection are dynamic: having gotten stronger over time 4. Inspections have been effective: more Iraqi weapons destroyed by inspection than by bombing

[10] The formal modifications include the move from INFCIRC/26 to INFCIRC/66/Rev 2, Tlatelolco Treaty (GOV/INF/179), INFCIRC/153 (Corrected), and INFCIRC/540 (Corrected). Other important but less formal changes have also taken place, including the use of challenge inspections, the widespread acceptance of the Fullscope Safeguards concept, and the agency's nuclear trafficking initiatives, to name just three.

[11] IAEA officials have suggested, for example, that innovations in inspections developed in other treaties, like the Chemical Wepaons Convention, could be incorpated into future IAEA procedures.

IV. Conclusion: The NPT Paradox

I have spent over a decade conducting interviews and collecting evidence on proliferation and nuclear decision making. Over the years, that research has uncovered a number of surprises and ironies. One of the most striking concerns the role of the NPT.

Today, there is deep skepticism about the value of multi-lateral treaties. Even supporters of treaties are defensive -- first qualifying their statements with the admission that treaties are flawed. This seems particularly striking given the role and history of the NPT. The NPT turned out to be have a more profound effect than anyone anticipated, but like Rodney Dangerfield, it gets no respect.

Certainly one irony is that the NPT and IAEA would probably not exist if today's pessimism about multi-lateral treaties had been in vogue during the 1950s and 1960s. Both the NPT and IAEA were conceived during the Cold War, prior to detente. It was a time characterized by competition and suspicion. Still, these leaders of that era found the imagination and courage to do what had never been done before. At no point in history had the nations of the world gotten together and agreed to renounce the most powerful weapon in existence, complete a system for verifying compliance, but president Eisenhower and his successors did just that.

Today, it is unlikely that an NPT would pass. Treaties that demand less than the NPT -- the Comprehensive Test Ban Treaty being one example -- have not fared well in recent years. One is left to conclude that the leaders of decades past, people who lived in what is usually considered a more dangerous period in American history, saved the world from proliferation by doing what people today would not do. The added paradox is that the new skepticism of treaties comes <u>after</u> the NPT proved itself to be so effective.

How can this be? How can there be such pessimism about proliferation and the nonproliferation regime, when the NPT and the IAEA enjoyed such success? One reason may be that the benefits of the treaty are taken for granted. Let us hope not. If leaders fail to recognize the value of the treaty, they may take actions in the name of nonproliferation that undermine the very system upon which nuclear restraint has been achieved.

Wise leaders will instead ask themselves how they can build on past success -- how can they learn from and leverage previous nonproliferation accomplishments. In many ways, the most difficult task has already been completed. Most of the world's states have agreed to renounce nuclear weapons. The objective now is to make sure that countries maintain those commitments. A strong treaty with robust programs of safeguards and technical assistance will do just that. It is the first, best hope for preventing a nuclear nightmare.

February 12, 2002, ISPFS Hearing
on
"Multilateral Non-proliferation Regimes, Weapons of Mass Destruction Technologies, and the War on Terrorism."
Questions for the Record

Mr. Dennis Gormley
Senior Fellow, International Institute for Strategic Studies

Response to Questions from Senator Max Cleland

1. In your testimony you state that the Missile Technology Control Regime (MTCR) is much more effective in controlling ballistic missiles than cruise missiles.

Do you believe that the MTCR can be made more effective in controlling the spread of cruise missile technologies to rogue states and terrorist organizations?

Yes, I certainly do, Senator. My prepared statement makes five proposals to reform the provisions of the MTCR to improve the effectiveness of the regime in hindering the spread of cruise missiles. They include more uniform standards for determining cruise-missile range and payload; tighter controls on stealthy cruise missiles; controls on UAV flight management systems; controls on specially designed countermeasure equipment; and broadened parameters covering jet engines.

2. If so, what can the United States do to enhance this effectiveness?

None of the above changes is conceivable without determined U.S. leadership. Senior executive-branch decision-makers must be engaged in working with their counterparts in key MTCR states. This is because consensus is needed among 33 partner states to achieve these reforms. Key MTCR states, led by the U.S., must come together to convince the broad partnership of the benefits of enhanced MTCR controls on cruise-missile proliferation. If regime partners can be convinced that the spread of these missiles to regions of common vital interest is undesirable, efforts to strengthen the MTCR will be feasible. Without these changes, an uncertain proliferation setting could greatly increase the WMD threat to the United States, its allies, and its friends.

3. Do you feel that the threat of cruise missile attack by a terrorist organization is a reality?

Yes, I do. I concur with the recently released National Intelligence Estimate on the Ballistic Missile Threat, which states that from a technical standpoint, cruise missiles are a better alternative than ballistic missiles in launching from forward areas. I also agree that the most likely alternative for such forward-based launching would be a covertly equipped commercial vessel. That said, I believe an even more attractive launch option would entail use of a simple

manned kit airplane, converted into an unmanned but armed cruise missile. Thousands of these cheap airplanes are readily available in the open market place. They could be converted from manned to unmanned air vehicles and used to deliver several hundred pounds of payload, or equipped with a modified agricultural sprayer to disseminate a biological payload. What makes such an option far more attractive than acquiring ballistic or cruise missiles is that a converted kit airplane would be very inexpensive to build, simple technically to develop, more reliable in doing its job, and virtually impossible to detect. And such threat vehicles in the hand of domestic terrorists could be launched from hidden locations quite close to their intended targets.

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"Multilateral Non-proliferation Regimes, Weapons of Mass Destruction Technologies, and the War on Terrorism."
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Mr. Dennis Gormley
Senior Fellow, International Institute for Strategic Studies

Response to Questions from Senator Daniel Akaka

1. Some suggest the MTCR can only be effective while key technology remains in the hands of member states. This is no longer the case and has not been for some time. There is also the possibility of emerging missile states like Iran, Iraq and Syria becoming supplier as well as consumers of missile technology.

What measures can be take to address this problem?

The MTCR is an imperfect mechanism, but it's important to recall the important successes it has achieved since 1987. According to those who have worked behind the scenes, the MTCR has blocked the export of hundreds of components, technologies, and production capabilities for missiles. Such successes contribute to delaying, deferring, and in some cases preventing more sophisticated missile threats from emerging. As I noted in my opening statement, the MTCR succeeded in dismantling the *Condor* ballistic missile sought by Argentina and Iraq—a missile that reportedly included sophisticated Pershing II-level technology. So the most effective measures in dealing with emerging missile states would entail a two-pronged effort. First, the use by MTCR member states of existing provisions to hinder the spread of both component technologies and complete systems. For ballistic missiles, the MTCR's current provisions (with the exception of its failure to deal with ballistic missile countermeasures technologies) are quite adequate. That is not the case for land-attack cruise missiles and unmanned aerial vehicles (UAVs), where reforms are needed to prevent the spread of such delivery systems. My opening and full statements recommend specific changes to address shortcomings regarding cruise missiles and UAVs. The least effective multilateral measures include spending valuable time writing and negotiating the implementation of a politically binding international code of conduct for ballistic missiles, which doesn't even mention cruise missiles and UAVs in its language. Second, when multilateral measures by MTCR member states fail, the US should employ targeted and calibrated sanctions against those entities identified as involved in sanctionable transfers of technology or systems. The goal should be to take the profit out of such behavior.

2. Should we be concerned that terrorists may obtain missiles?

Given the determination and sophistication evident in the terrorist attack of September 11, I would be very reluctant to suggest that terrorist groups were not capable of obtaining and using missiles to threaten the US homeland. Of course, if there's a lesson from the horrible events of September 11, it's that relatively simple means of attack (commandeered jumbo jets using fuel and impact as a damage mechanism) are available. But as we make efforts to reduce our vulnerabilities against such simpler forms of attack, it's important that we also give equal attention to other plausible means of attack, including missiles. As my prepared statement indicates, my view is that simple kit airplanes, thousands of which are readily attainable in the open market place, could be converted from manned to unmanned air vehicles and used to deliver several hundred pounds of payload, or equipped with a modified agricultural sprayer to disseminate a biological payload. What makes such a terrorist option far more attractive compared with ballistic and cruise missiles is that a converted kit airplane would be very inexpensive to accomplish, simple technically to achieve, more reliable in doing its job, and its development would be virtually impossible to detect. And such threat systems in the hand of domestic terrorists could be launched from hidden locations quite close to their intended targets, not from hundreds or thousands of miles away.

3. We have seen how effective unmanned aerial vehicles were during our military campaign in Afghanistan and the importance placed on research and development of new UAVs in President Bush's budget.

Do you feel that the Administration is equally impressed with the threat posed by proliferation of UAV technology and systems?

I have seen no solid evidence that the Administration fully appreciates the long-term implications of the spread of UAV technology and systems into the hands of terrorist groups or state actors. Explosive growth in these systems will take place over the next two decades and I predict there will be ever-increasing pressure from the UAV industry to create even more flexible rules than exist today to govern their export. This is a serious long-term problem that demands systematic and careful study.

4. Is the Administration moving towards strengthening the MTCR regulations regarding UAVs?

I have seen no indication that the Administration seriously intends to devote the necessary political and bureaucratic capital to strengthen the MTCR regarding cruise missiles and UAVs. If anything, my understanding is that among the array of multilateral mechanisms the US participates in, the MTCR falls below the line in terms of Administration attention and commitment.

5. You have mentioned how the equipment and technology annex to the MTCR has not kept pace with advances in commercially available missile technologies.

How can the MTCR better account for the rapid expansion of commercially available technologies?

First, I would increase the resources and personnel available within the appropriate departments of the executive branch so that they can monitor more effectively important commercial technology developments in missile-related fields. At present, nonproliferation staffs may have two or three people, at most, to monitor not just MTCR developments but other multilateral mechanisms as well. More intelligence community resources devoted to backstopping the MTCR would also aid in the challenge of effective monitoring. Second, the MTCR is only as good as the effectiveness of its provisions for handling emerging technologies. The simple fact is, for those technologies needed for cruise missile and UAV development and advancement, current provisions are woefully inadequate. As I argue in my prepared statement, revisions are needed to handle UAV flight management technologies, specially designed countermeasure equipment, jet engines that just exceed current thrust provisions, and stealth treatments for UAVs and cruise missiles.

6. According to your testimony, there are 40 nations indigenously producing UAVs and 22 are members of the MTCR.

What are the prospects for membership among these non-MTCR nations?

My own view is that far less time should be spent expanding MTCR membership and much more time devoted to reforming the MTCR's existing provisions, especially as they relate to handling cruise missile and UAV transfers of systems and technology. The danger in expanding the membership is that we may facilitate the transfer of technology as an incentive for joining the regime.

7. How do you recommend non-proliferation efforts account for these nations?

Of the list of UAV/cruise missile producers not currently full members of the MTCR, the one I think we should worry about most is China. China's relationship with the MTCR is problematic. In becoming an "adherent" to the MTCR's guidelines in October 1994, China took the unusual step of formulating its own version of precisely what adherence meant. China agreed to "not export ground-to-ground missiles featuring the primary parameters of the MTCR." This formulation suggests that its adherence applies only to complete Category I ground-to-ground ballistic missiles, and not to air-to-ground cruise missiles. Moreover, this formulation does not acknowledge adherence to the MTCR's extensive annex of Category II items. In effect, China has explicitly rejected all revisions to the original 1987 version of the MTCR, most importantly those made in 1993 to deal with controls over BW and CW delivery systems. Clearly, this formulation excludes many cruise missiles and other UAV from any controls. Moreover, in a deal announced by the Clinton Administration in late November 2000, China agreed to publish a specific export control list, which has not been achieved to date. As for other producer countries that are not members of the MTCR, the current MTCR membership should be especially vigilant with

respect to transfers of Category I and Category II items to these countries. They have already demonstrated a capacity to produce UAVs, so any additional transfers could very well lead to more sophisticated UAVs not subject to the constraints of the MTCR.

8. How can the MTCR best address the threat of kit airplanes?

Manned aircraft are not subject to MTCR controls. However, flight management systems are covered under Category II, Item 10. The most challenging engineering requirement to transform a manned kit airplane into an unmanned cruise missile entails design and integration of a flight management system for unmanned flight. Unfortunately, Item 10 is currently written only to constrain flight management systems "designed or modified for the systems in Item I" (namely missiles designed to carry a 500kg payload to 300km or more). The original 1987 version of Item 10 applied language—"usable in the systems in Item I"—which would capture such flight management systems for case-by-case review before transfers were approved. This is particularly important now that several small firms have gotten into the business of selling variable autonomy flight management systems that permit the conversion of manned aircraft into unmanned flight vehicles. The MTCR membership should immediately consider changing Item 10's language so as to make it more difficult for potential terrorist groups or intermediaries to acquire such an important enabling technology.

9. The MTCR is a politically binding agreement to restrict missile proliferation.

Are there prospects for the establishment of legal norms for missile technology?

Formal and informal calls to turn the MTCR from a voluntary supplier's regime into a universal, legally binding treaty have persisted since the regime's creation in 1987. The most recent formal example was a Canadian proposal to MTCR members for a global ban on all ground-launched ballistic missiles with ranges of 300–5,500km; in an *ad hoc* meeting of MTCR members in 1995, this attracted little support and collapsed. Non-governmental experts have called for a zero ballistic missile treaty, banning all ballistic missiles everywhere. The most promising arms-control proposal is to widen the US–Soviet Intermediate-range Nuclear Forces (INF) treaty into a global pact. Proponents of such a treaty see the INF treaty's simplicity and clarity of purpose as especially appealing. They argue that, by taking an existing bilateral treaty banning all land-based ballistic and cruise missiles with ranges of 500–5,500km and transforming it into a global regime, the US and Russia could capture the moral high ground on missile proliferation. But whatever good might result from establishing a legal norm would be more than offset by several conspicuous shortcomings. Two stand out.

First, the INF treaty's lower range limit of 500km is too high to be helpful. It would fail to capture strategically significant cruise missiles with biological and chemical payloads, as well as tactical ballistic missiles of many varieties.

Second, the treaty bans only ground-launched ballistic or cruise missiles tested or deployed for weapons delivery, and so would leave out, *inter alia*, air- and sea-launched missiles, unarmed UAV and cruise missiles easily capable of exceeding the stipulation of "standard design mode" range.

Third, upgrading the INF treaty's role would probably damage the MTCR's effectiveness. If the INF treaty were made into a global regime, it would become the premier missile non-

proliferation instrument, thereby making the MTCR at best merely a supplementary tool for combating missile proliferation. Worse, precious years spent on turning the INF treaty into an effective global instrument would sap the intensity of the effort that is needed now to strengthen and forcefully implement the MTCR's existing provisions—particularly those pertaining to advanced cruise missiles. Because only a handful of major industrial states are capable of facilitating the proliferation of these missiles, it would be better if they invested their finite diplomatic capital in efforts that are more likely to bear fruit. Finally, there is the danger that in order to create incentives for states to join a universal regime, too many concessions would be made in sharing technology, particularly space-launch vehicle technology.

However useful legally binding norms against missile proliferation may be, it is difficult to conceive of one that could adequately address the problem of cruise-missile proliferation. The very features of cruise missiles and UAV (small size, conversion potential, multiple uses, etc.) that make them difficult to manage under the MTCR virtually preclude satisfactory treaty negotiation, let alone verification. Enhancing the MTCR remains the best option for thwarting the proliferation of both cruise and ballistic missiles.

9. In August 2001, a planned Russia-India joint venture cruise missile program was amended because of Western criticism of potential MTCR violations by Russia.

Does this episode represent an MTCR success?

I am unaware of any intervention made by one or more MTCR members to convince Russia of its MTCR obligations. But as I noted before, there are numerous behind-the-scenes diplomatic interventions, some successful, some not, designed to persuade states to behave according to the MTCR's provisions. I believe the particular missile in question is called the *Brahmos*, a joint Russian-India supersonic anti-ship cruise missile capable of a range of 290km, carrying a payload of 200kg. I understand that the *Brahmos* missile is also capable of undertaking land-attack missions as well. Given the reported range and payload, it would appear at the very least that the missile would be subject to Category II restrictions in that by reducing the payload the missile could easily fly to 300km or more. According to the MTCR, Russia would have to undertake an internal, engineering-based finding that the missile is not usable in a missile for delivery of weapons of mass destruction (WMD), or in one captured by the MTCR Category I, 300km-500kg threshold. If, on the other hand, the internal finding is positive for either, Russia would have to obtain end-use and end-user assurances that the system would not contribute to the delivery of WMD.

10. An unclassified summary report from the National Intelligence Council Report of December 2001, Foreign Missile Development and the Ballistic Missile Threat Through 2015 noted numerous developments that would seem to lend new urgency to non-proliferation efforts. It states that the proliferation of ballistic missile related technologies, materials and expertise by Russian, Chinese and North Korean entities have enabled emerging missile states to accelerate missile development.

What steps are needed for an all-out diplomatic effort to rein in worldwide missile proliferation?

It seems to me that what we need is a more serious Administration effort to use existing regimes like the MTCR in combination with targeted and calibrated sanctions aimed precisely at those entities involved in sanctionable transactions. Although I'm a strong supporter of the use of sanctions law in such cases, I believe we haven't devoted the necessary political and bureaucratic capital to improving the effectiveness of multilateral regimes like the MTCR. The MTCR's effectiveness will be problematical unless this Administration employs its determination and leverage to lead other key MTCR states in developing the necessary consensus to strengthen the regime as a non-proliferation mechanism.

11. Propeller-driven UAVs, as compared to rocket-powered or gas-turbine engines, have become the system of choice by consumer nations and groups not controlled by the MTCR.

First, do you feel that it is realistic to place propeller-driven UAV components on the MTCR?

Currently, I believe propeller-driven UAVs—considered as complete UAV systems—are covered under the MTCR's provisions as long as they meet Category I or Category II criteria for coverage. However, in discussions with former officials familiar with licensing procedures, they indicate that licensing officers tend not to take propeller-drive UAVs as seriously as turbojet-driven systems, largely because the former generally have larger radar-cross sections and are much slower in flight. If such a shortcoming does indeed exist, it should be corrected for several reasons, not least the fact that UAVs flying at speeds slower than 80 knots cannot be detected by existing airborne and some ground-based radars. Therefore, their slow speed can be an asset in successfully penetrating sophisticated legacy air defense systems. As far as reciprocating engines and turboprop engines for UAVs, they are currently not covered under the MTCR's Category II provisions, and it would seem unrealistic that they be designated as covered equipment and technology.

12. Second, do you feel that inclusion on the MTCR will lead to less interest in such systems?

The fact that propeller-driven UAVs are covered under the MTCR hasn't seemed to have affected consumer interest in their acquisition. But I would also venture a guess that many UAVs capable of exceeding a range of 300km are transferred without being subjected to MTCR end-use or end-user assurances. This is because of the inherent difficulty of determining the true range of such systems. Some manufacturers present the range of their UAVs as a figure limited by the line-of-sight radio data link that controls the vehicle's flight activities; others as a product of a loitering and return-to-base calculation. Neither translates easily into the practical range of an armed UAV on a one-way mission. This difficulty underscores the point I've made before about the need to study the UAV/MTCR problem, particularly in light of growing interest in UAVs for a variety of military and civil uses.

13. Your testimony makes some strong points about the relatively low cost of cruise missiles and kit airplanes and how this poses serious challenges for cruise missile defense. Ballistic and cruise missile defenses rely largely on the same high-cost air defense

interceptors.

What implications does this have for current non-proliferation efforts?

Perhaps the most dramatic effect of the widespread proliferation of cheap cruise missiles would be to create unaffordable cost-exchange ratios for the defender. The increasing unit cost of the *Patriot* PAC-3 missile, for instance, may be so high that missile inventories must be kept to a minimum. Consequently, large raids or saturation attacks with cheap cruise missiles could easily draw critically valuable (and expensive) defenses away from still more important missions, like defending against ballistic or stealthy cruise missiles. So the bitter irony is that if current non-proliferation efforts are unsuccessful in hindering the spread of cruise missiles, not only will cruise missile defenses be more expensive and increasingly challenging, but effective ballistic missile defense will as well. If cruise missile proliferation proceeds unimpeded and becomes widespread over the long run, it may combine with the further spread of ballistic missiles to give multidimensional offense a distinct advantage over layered missile defenses—no matter how much is invested in such defenses. Seriously pursued non-proliferation efforts can adversely affect such an unfavourable development and make missile defenses more effective and less costly.

Questions for the Record Submitted to
Mr. Vann Van Diepen
by Senator Daniel K. Akaka
Governmental Affairs SubCommittee on
International Security, Proliferation and Federal Services
July 29, 2002

Question 1: Last year the GAO produced a report that showed minimal emphasis by the State Department in recruiting and placing Americans in international organizations. The State Department's report to Congress on, "U.S. Representation in United Nations Agencies and Efforts Made to Employ U.S. Citizens - 2001," shows that the number of American (sic) employed by the IAEA and other international organizations is decreasing. Please describe for the Record efforts by the State Department to increase the number of Americans employed by the IAEA.

Answer:

For many years the State Department has led a coordinated interagency effort to recruit and place highly qualified Americans in the Secretariat of the International Atomic Energy Agency (IAEA). This involves working with our Mission in Vienna to identify upcoming vacancies that are of particular interest to the U.S. and coordinating within the Department and with other pertinent USG agencies (e.g., DOE, NRC). When vacancies arise, strategies are developed and executed for specific recruitment efforts (e.g., selected advertising, internet postings, targeted agency searches). In recent years, however, these efforts have been hampered by the steadily shrinking pool of Americans trained in nuclear science and technology. The

U.S. Ambassador to the IAEA has been forcefully expressing U.S. concern over the recent decline of American citizens employed in IAEA professional posts, which dropped in 2001 from its historical level of around 16% to 14.5%. (The IAEA has no official "target" for geographic distribution of its staff.) The Ambassador will be following up on this high priority matter to ensure that the IAEA is aware that we are following its progress on this issue.

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Questions for the Record Submitted to
Mr. Vann Van Diepen
by Senator Daniel K. Akaka
Governmental Affairs SubCommittee on
International Security, Proliferation and Federal Services
July 29, 2002

Question 2: Please provide for the Record the amount requested by the State Department in the Emergency Appropriations Supplement (sic) FY2002 for IAEA programs to protect against nuclear terrorism. Please provide the amount provided in the Emergency Appropriations Supplemental to other agencies for nuclear terrorism protection and how the use of these funds is coordinated with State Department activities.

Answer:

The State Department did not include any request for funding IAEA programs to protect against nuclear terrorism in the Emergency Appropriations Supplemental for FY2002. We are not aware of such a request by any other Federal agency.

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Questions for the Record Submitted to
Mr. Vann Van Diepen
by Senator Daniel K. Akaka
Governmental Affairs SubCommittee on
International Security, Proliferation and Federal Services
July 29, 2002

Question 3: Please provide for the Record the amount of funding the State Department is providing to the IAEA to accomplish its new and expanded safeguarding duties.

Answer:

For many years the State Department has provided financial support for IAEA safeguards. Notwithstanding this support, longstanding constraints on the IAEA's regular budget have rendered the safeguards program increasingly under-funded. Current estimates are that the safeguards system requires an additional $25-30M/year to be adequately supported. To help address safeguards requirements, the State Department provided approximately $24.35M in safeguards support during FY 2002. Much of this funding is not transferred to IAEA as a cash contribution but rather is spent directly in the United States for expert services and equipment.

Questions for the Record Submitted Mr. Vann H. Van Diepen
by Senator Daniel K. Akaka
Governmental Affairs Subcommittee on International
Security, Proliferation and Federal Services

Question: 4. What are the key nations with biotechnology and chemical industries that are not part of the Australia Group?

Answer:

In terms of trade, non-AG members' biotechnology industries remain far behind those of AG members. The three main non-AG members with highly developed chemical industries are, in order of size, China, India, and South Africa.

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Questions for the Record Submitted Mr. Vann H. Van Diepen
by Senator Daniel K. Akaka
Governmental Affairs Subcommittee on International
Security, Proliferation and Federal Services

Question 5: In your testimony, you state that Bulgaria is eliminating its missile program. Will the MTCR verify that Bulgaria has eliminated its missile program? If not, how will verification be done? Is Bulgaria abandoning its missile program to gain membership into the MTCR or another regime?

Answer:

Bulgaria has committed to destroy its SS-23 and Scud ballistic missile systems and its Frog rocket system, with U.S. technical and financial assistance from the Nonproliferation and Disarmament Fund. U.S. participation in the destruction of these systems will ensure the process is transparent and that the systems are completely eliminated.

Bulgaria is eliminating its SS-23, Scud, and Frog systems because it realizes that they have no utility in post-Cold War Central Europe and only divert resources from worthwhile defense programs.

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Questions for the Record Submitted Mr. Vann H. Van Diepen by
Senator Fred Thompson
Governmental Affairs Subcommittee on International Security,
Proliferation and Federal Services

Question 1: Assistant Secretary for Nonproliferation John Wolf testified before this subcommittee in June that "Russian export control policy is contributing to the proliferation threat" and that "Russian implementation and enforcement of its export controls remain insufficient."

- Please explain how Russia gained admittance to three of the four multilateral export control regimes when one of the key membership criteria is to have an effective and legally based export control system in place.

- Which other regime members have gained admittance to the regimes without fulfilling basic membership criteria?

Answer:

Russia became a member of the Missile Technology Control Regime (MTCR) in 1995. At that time, it had assumed the same responsibilities for controlling missiles and related equipment and technology adopted by other MTCR members. It also had taken steps to enhance and improve its export control system to restrict the unauthorized transfer of missile-related equipment and technology. The insufficient implementation and enforcement of export controls regarding Iran with which we are now dealing did not begin to become apparent until 1997. This was the same situation concerning Russia's participation in the Wassenaar Arrangement. While Russia has made progress in recent years in strengthening its export control legislation, enforcement of this legislation remains weak.

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From the Nuclear Suppliers Group (NSG) perspective, Russian Government export policy, rather than its national export control system, is the most serious problem. This is a problem that long post-dates Russian membership in the NSG. The former Soviet Union was a founding member of the NSG in the mid-1970s. Because authority was centralized under the USSR, its nuclear export controls were probably tighter than those of the current Russian Federation.

Admission to any of the multilateral export regimes is decided by a consensus of all the current members, none of whom would agree to admit a country believed to have not fulfilled basic membership requirements.

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Questions for the Record Submitted Mr. Vann H. Van Diepen by
Senator Fred Thompson
Governmental Affairs Subcommittee on International Security,
Proliferation and Federal Services

Question 2: As you know, the MTCR controls not only ballistic missiles, but also cruise missiles and unmanned aerial vehicles (UAVs). Missile expert Dennis Gormley testified before ISPFS subcommittee in February that the MTCR has failed to achieve consensus on determining the true range and capability of cruise missiles and other UAVs. He pointed to the UK and French decision to transfer the Black Shaheen cruise missile to the United Arab Emirates.

- If the regime cannot reach consensus on payload and range definitions with out closest allies, how does this impact the effectiveness of the regime?
- Would the Black Shaheen transfer signal to other MTCR members and adherents, such as Russia and China, that a Category I transfer to volatile regions such as the Middle East is MTCR compliant?
- Does this proposed transfer undermine the credibility and purpose of the MTCR?

Answer:

The MTCR is a voluntary arrangement among like-minded member countries sharing a common interest in controlling missile proliferation. While the principle of range/payload tradeoff is codified in the MTCR Annex, decisions about such tradeoffs are made by each MTCR country, according to its national legislation and discretion, as is the case with all matters of MTCR implementation. The United States encourages MTCR members to make all such decisions responsibly.

If the U.S. was concerned about how an MTCR member made such a decision, the U.S. would first consult that nation

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bilaterally. If the matter could not be resolved constructively on a bilateral basis, then the U.S. would consider bringing the matter to the attention of all the MTCR Partners.

Black Shaheen has not been transferred to the United Arab Emirates; indeed the system is still in the development phase. Therefore, it would be premature to speculate on the potential impact of a possible future transfer. The U.S. insists that MTCR members fully abide by their commitments under the MTCR Guidelines.

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Questions for the Record Submitted Mr. Vann H. Van Diepen by
Senator Fred Thompson
Governmental Affairs Subcommittee on International Security,
Proliferation and Federal Services

Question 3: Annual arms control compliance reports are important tools that address member compliance with the MTCR as well as other arms control treaties. However, I understand that Administration did not submit a report to Congress for 2000 or 2001 as required by Public Law 106-113. Does the Administration plan to submit this report for 2002?

Answer:

As required by Public Law 106-113, the Assistant Secretary of State for Verification and Compliance will prepare the 2002 report for submission by the President to Congress.

Questions for the Record Submitted Mr. Vann H. Van Diepen by
Senator Fred Thompson
Governmental Affairs Subcommittee on International Security,
Proliferation and Federal Services

Question 4: According to Michael Beck, Assistant Director of the Center for International Trade and Security at the University of Georgia, "a regime is effective to the extent that its members comply or abide by regime provisions. However, in the case of the export control regimes, regime guidelines are often so vague that disputes can arise over what exports are contrary to regime provisions."

- Do you agree that regime guidelines are so vague that it is very difficult if not impossible to assess regime compliance?
- Do you agree that Russia's transfer of nuclear fuel to Tarpur India is inconsistent with Russia's NSG commitments?

Answer:

The question of "compliance" is drawn from legally binding arms control treaties; it is difficult to apply to informal political commitments among like-minded countries such as the nonproliferation regimes. The regime guidelines are intended to provide broad common guidance for like-minded countries to apply in the case-by-case implementation via national legislation of the regimes, not a set of yes/no legal obligations. This said, the best indicator of consistency with regime commitments is output – the extent to which regime members are making problematic exports of regime-controlled items. Other than the well-known problems since about 1997 involving Russia, the U.S. and its partners in the nonproliferation regimes have been

overwhelmingly responsible in their exports or regime-controlled items.

We agree that Russia's insistence on supplying nuclear fuel to the Tarapur reactors in India is inconsistent with Russia's Nuclear Suppliers Group (NSG) commitments. This insistence comes in spite of strong expressions of concern by virtually every other member that such supply was inconsistent with the NSG full-scope safeguards principle.

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Questions for the Record Submitted Mr. Vann H. Van Diepen by
Senator Fred Thompson
Governmental Affairs Subcommittee on International Security,
Proliferation and Federal Services

Question 5: Press reports indicate that the United States would like American companies to be able to export the Global Hawk and Predator long-range UAVs. The chairmen and ranking member of both the Senate Foreign Relations and House International Relations Committees have written to the Secretary of State urging that sales of these systems be restricted to only the closest U.S. allies.

- What is the position of the State Department on sales of these weapons?
- To what extent to US actions on this issue undermine our credibility and leadership in the regime?
- To what extent is U.S. action on this issues inconsistent with our MTCR commitments?
- What impact might this have on the desires of other MTCR members to export such system?

Answer:

The U.S. remains fully committed to the MTCR Guidelines -- including the unconditional "strong presumption of denial" for all Category I exports and the Regime's ban on the export of Category I production facilities. U.S. UAV export policy is, and will remain, fully consistent with our MTCR commitments and our decision under this policy will be responsible.

The Department of State recently briefed committee staffs at a classified level on policy considerations regarding UAV exports, and discussed certain related issues. If additional discussions would be useful, we will be happy to arrange them.

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Questions for the Record Submitted Mr. Vann H. Van Diepen by
Senator Fred Thompson
Governmental Affairs Subcommittee on International Security,
Proliferation and Federal Services

Question 6: Three regimes– Australia Group, Missile Technology Control Regime, and Nuclear Suppliers Group– have a "no undercut" policy; that is, when one member reports an export license denial for a particular controlled item, another member is required to consult with the denying member before approving the export of a similar item.

- Does the U.S. have a systematic process in place to ensure that other members do not "undercut" its export denials? If so please describe.
- How confident are you that other regimes members are not undercutting U.S. export denials and why?
- How confident are you that the United States does not undercut denials of other regime members and why?

Answer:

In the U.S. license review process, incoming export licenses are screened against regime denials in order to uphold U.S. commitments under the no "undercut" policy. We are as confident as we can be that U.S. denials are not being undercut, and vice-versa, given the inherent limitations of intelligence information.

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Questions for the Record Submitted Mr. Vann H. Van Diepen by
Senator Fred Thompson
Governmental Affairs Subcommittee on International Security,
Proliferation and Federal Services

Question 7: What are the most important accomplishments of each of the four regimes? What are the areas that most need improvement for the regimes to remain effective in confronting proliferation?

Answer:

As part of our overall broad nonproliferation strategy, the regimes have made important contributions in slowing WMD, missile, and conventional weapons proliferation worldwide. They have induced most major suppliers to responsibly control their exports and thereby have significantly reduced the availability of technology and equipment available to programs of concern. Moreover, through effective enforcement of comprehensive export controls, broad multilateral cooperation in halting shipments of proliferation concern, and active outreach to key non-members to increase their awareness of proliferation threat, regime members have made it more difficult, more costly, and more time-consuming for proliferators to obtain the expertise and material needed to advance their programs. The regimes' efforts have caused delays, forced proliferators to use elaborate procurement networks, and forced them to rely on older, less effective technology. This in turn buys us time to enhance our capabilities to defend against these threats, smoke out proliferators and terrorists, and seek to address the underlying

reasons proliferators seek these capabilities in the first place.

Despite our successes, areas for improvement do exist. We need to continue to work with our regime partners on "regional nonproliferation" – focusing on steps they can take individually or collectively to impede non-member WMD and missile programs beyond simply relying on members to effectively control their own exports. The regimes will also need to: 1) continue to update control lists to reflect technological advances and ensure they keep pace with proliferation trends; 2) work to extend export controls, in line with regime standards, to potential suppliers of items related to WMD, missiles, and advanced conventional weapons, as well as to transshipment points (including via export control assistance); and 3) increase efforts to make non-members more aware of the threat and consequences of unchecked proliferation, help them understand that responsible nonproliferation policies and practices do not hinder trade and can actually be beneficial to trade by increasing exporting-country confidence in them as reliable recipients, and urge them to adopt policies and practices consistent with regime standards.

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Questions for the Record Submitted Mr. Vann H. Van Diepen
by Senator Fred Thompson
Governmental Affairs Subcommittee on International
Security, Proliferation and Federal Services

Question 8: NSG members protested Russia's export of nuclear fuel to Tarapur in India by issuing bilateral demarches. Additionally, the US Department of State issued a strongly worded public statement protesting Russia's failure to comply with its commitments.

- Are there other instances where the United States has demarched regime members, questioning their compliance with regime commitments?

- Please provide for the Record a list of cases over the past 3 years where the United States demarched other regime members, questioned their compliance with regime commitments, or raised concern over proposed exports and identified the relevant regime.

- For each case on this list, provide the outcome of the case: whether the proposed export was stopped or whether the United States subsequently found that the case was consistent with the members regime commitments.

Answer:

- There has been only one other instance where the U.S. found it necessary to demarche another Nuclear Suppliers Group (NSG) member regarding a proposed export that was not consistent with the NSG Guidelines. That case involved a proposed export by Belgium of reactor control room instrumentation to Pakistan for the Karachi Nuclear Power Plant (KANUPP). Belgium notified the other NSG member governments in November 1996 that it intended to

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approve this export as an "exceptional case" deemed essential for safety and thus exempt from the full-scope safeguards requirement for nuclear cooperation under the Guidelines. The U.S. and other NSG member governments argued that the proposed export did not meet the standard of the 1994 "Common Understanding" on the definition of "exceptional cases." The term "exceptional cases" is generally understood to mean those cases when a transfer of a Trigger List item is "deemed to be essential in order to prevent or correct a radiological hazard posing a significant danger to public health and safety, and which cannot be realistically met by other means." The Belgian Government, after much discussion and high-level internal review, finally decided in January 2000 not to approve the export.

- There have been no other cases to our knowledge of NSG members approving or considering approval of exports that are clearly inconsistent with the NSG Guidelines.

Hearing Date: July 29, 2002
Committee: SCGA
Senator/Member: Sen Fred Thompson
Witness: Marshall Billingslea
Question #: 1

Russian Export Control Policy

Question: Assistant Secretary for Nonproliferation John Wolf testified before this subcommittee in June that "Russian export control policy is contributing to the proliferation threat" and that "Russian implementation and enforcement of its export controls remain insufficient."

Please explain how Russia gained admittance to three of the four multilateral export control regimes when one of the key membership criteria is to have an effective and legally-based export control system in place.

Which other regime members have gained admittance to the regimes without fulfilling basic membership criteria?

Answer: Admission to any of the export control regimes is decided by consensus of all members. Russia became a member of the Missile Technology Control Regime (MTCR) in 1995 and assumed MTCR obligations to control missiles, related equipment, and technology and took steps to enhance and improve its export control system to restrict the unauthorized transfer of missile-related equipment and technology. However, while Russia strengthened its export control legislation, it has insufficiently implemented those legislative improvements.

In the case of the Nuclear Suppliers Group (NSG), Russia's export policy is a serious problem. The former Soviet Union was a founding member of the NSG in the mid-1970s and implemented its controls more rigorously than is Russia today. We also have the same concerns regarding Russia's participation in the Wassenaar Arrangement.

Because there are no provisions in export control regimes to expel a member that is not following its obligations, we are pressing Russia to enforce rigorously its export control rules and legislation, but they remain weak and we continue to see problematic missile and nuclear-related trade activities.

Hearing Date: July 29, 2002
Committee: SCGA
Senator/Member: Sen Fred Thompson
Witness: Marshall Billingslea
Question #: 2

MTCR Controls

Question: As you know, the MTCR controls not only ballistic missiles, but also cruise missiles and unmanned aerial vehicles (UAVs). Missile expert Dennis Gormley testified before ISGFS subcommittee in February that the MTCR has failed to achieve consensus on determining the true range and capability of cruise missiles and other UAVs. He pointed to the UK and French decision to transfer the Black Shaheen cruise missile to the United Arab Emirates.

If the regime cannot reach consensus on payload and range definitions with our closest allies, how does this impact the effectiveness of the regime?

Would the Black Shaheen transfer signal to other MTCR members and adherents, such as Russia and China, that a Category I transfer to volatile regions such as the Middle East is MTCR compliant?

Does this proposed transfer undermine the credibility and purpose of the MTCR?

Answer: The Black Shaheen is still in the development phase and has not been transferred to the United Arab Emirates.

The principle of range/payload tradeoff is codified in the MTCR Annex and the MTCR Partners recently agreed at the 2002 MTCR Plenary to definitions for both range and payload. These definitions will provide a common base allowing Partners to arrive at similar determinations of the range/payload characteristics of individual systems. However, final determinations are made by each MTCR member, in accordance with national legislation and discretion – a fact that also works to U.S. advantage. If the U.S. is concerned about the activities of an MTCR member, the U.S. will first consult that nation bilaterally and then consider bringing the matter to the attention of all MTCR members if the matter cannot be resolved on a bilateral basis.

Hearing Date: July 29, 2002
Committee: SCGA
Senator/Member: Sen Fred Thompson
Witness: Marshall Billingslea
Question #: 3

Export Control Regimes

Question: According to Michael Beck, Assistant Director of the Center for International Trade and Security at the University of Georgia, "a regime is effective to the extent that its members comply or abide by regime provisions. However, in the case of the export control regimes, regime guidelines are often so vague that disputes can arise over what exports are contrary to regime provisions."

Do you agree that regime guidelines are so vague that it is very difficult if not impossible to assess regime compliance?

Do you agree that Russia's transfer of nuclear fuel to Tarpur India is inconsistent with Russia's NSG commitments?

Answer: "Compliance" is usually used in referring to legally-binding arms control treaties which are intended to prohibit countries from having weapons programs, such as chemical or biological weapons, or to have certain safeguards in place, such as with nuclear energy programs. Export control regimes tend to be different to the extent that they often are based on informal, politically-binding (voluntary) commitments between like-minded countries to stem proliferation of WMD and missiles by providing common guidelines to be applied in the case-by-case implementation of national export controls.

The premise underlying export control regimes has been that members are "like-minded" and would implement the voluntary controls in a like-minded fashion. Unfortunately, that has not always been the case. For instance, Russia's insistence on supplying nuclear fuel to India's Tarpur reactors is inconsistent with Russia's obligations as a member of the Nuclear Supplier Group (NSG). Virtually every other NSG member voiced strong concern that Russia's transfers was inconsistent with the NSG full-scope safeguards principle. Most export control regime members, however, have been responsible in their exports of controlled items.

But, we do not agree that it is difficult, or impossible, to assess compliance with a regime. Indeed, our ability to monitor the extent to which nations adhere to the commitments that they make to us is fundamental to our ability to place stock in those commitments in the first place.

Hearing Date: July 29, 2002
Committee: SCGA
Senator/Member: Sen Fred Thompson
Witness: Marshall Billingslea
Question #: 4

Export of the Global Hawk and Predator Long-Range UAVs

Question: Press reports indicate that the U.S. would like American companies to be able to export the Global Hawk and Predator long-range UAVs. The chairmen and ranking member of both the Senate Foreign Relations and House International Relations Committees have written to the Secretary of State urging that sales of these systems be restricted to only the closest U.S. allies.

What is the position of the Defense Department on sales of these weapons?

To what extent do U.S. actions on this issue undermine our credibility and leadership in the regime?

To what extent is U.S. action on this issue inconsistent with our MTCR commitments?

What impact might this have on the desires of other MTCR members to export such systems?

Answer: The U.S. remains fully committed to the MTCR Guidelines -- including the unconditional "strong presumption of denial" for all Category I exports and the Regime's ban on the export of Category I production facilities. At the same time, unmanned air vehicles will play a growing role in alliance modernization and interoperability initiatives. U.S. UAV export policy is, and will remain, fully consistent with our MTCR commitments, which permit the export of Category I items on "rare occasions", and our decisions under this policy will be responsible.

Hearing Date: July 29, 2002
Committee: SCGA
Senator/Member: Sen Fred Thompson
Witness: Marshall Billingslea
Question #: 5

Export Control Regimes

Question: What are the most important accomplishments of each of the four regimes? What are the areas that most need improvement for the regimes to remain effective in confronting proliferation?

Answer: The regimes have induced many major suppliers to responsibly control their exports and thereby have reduced the availability of WMD technology and equipment. Effective enforcement of export controls, multilateral cooperation in halting shipments of proliferation concern, and outreach to key non-members to increase their awareness of proliferation threats, regimes members have made it more difficult, costly, and time-consuming for proliferators to advance their WMD and missile programs. The regimes' efforts have caused delays, forced proliferators to use elaborate procurement networks, and forced them to rely on older less effective technology which buys us time to enhance our capabilities to defend against these threats.

However, despite these successes, the dangers from proliferation of weapons of mass destruction, missiles, and related technologies are growing. States of concern and terrorist organizations denied an item by one country are increasingly able to obtain the same item from sources outside the reach of traditional nonproliferation treaties and regimes. Proliferant countries have become much more sophisticated and covert in their acquisition efforts. They are getting more advanced technology from non-Western sources, diversifying their existing arsenals, improving delivery media, and becoming more self-sufficient in the development and fabrication of WMD components.

The U.S. and the international community are formulating ways to improve their ability to deal effectively with these threats. We will continue to use existing diplomatic, economic, and military tools to activities to halt or reverse proliferation activities. And we will continue to work with and assist friends and allies to develop and implement their own domestic export controls to deny proliferators access to the necessary equipment, material, or technology related to WMD. Finally, as the recently released national strategy indicates, we are prepared to take steps to intercept shipments if necessary to protect the national security.