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Regulation of Hazardous Oil-Bearing Secondary Materials From the Petroleum Refining Industry and Other Hazardous Secondary Materials Processed in a Gasification System To Produce Synthesis Gas; Proposed Rule

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 260 and 261

[FRL–7162–8]

RIN 2050–AE78

Regulation of Hazardous Oil-Bearing Secondary Materials From the Petroleum Refining Industry and Other Hazardous Secondary Materials Processed in a Gasification System To Produce Synthesis Gas

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: The EPA is proposing revisions to the RCRA hazardous waste program to allow a conditional exclusion from the definition of solid waste. This exclusion would be for hazardous oil-bearing secondary materials generated by the petroleum refinery industry when these materials are processed in a gasification system to produce synthesis gas fuel and other non-fuel chemical by-products. We are proposing this exclusion to put the gasification of these hazardous oil-bearing secondary materials on the same regulatory footing (i.e., excluded) as other hazardous secondary materials returned to a petroleum refining process. If adopted, this proposal will establish a more consistent regulatory framework for this practice, potentially enhancing the use of this technology, as well as establishing conditions on the practice to assure the legitimacy of this fuel manufacturing activity.

We are also soliciting comment on a proposal that would extend the conditional exclusion to other hazardous secondary materials generated by industries (other than the petroleum refining industry).

DATES: EPA will accept public comment on this proposed rule until June 24, 2002. Comments postmarked after the close of the comment period will be stamped ''late'' and may or may not be considered by the Agency.

ADDRESSES: Commenters should submit an original and two copies of their comments referencing Docket Number F–2002–RPRP–FFFFF to: (1) If using regular U. S. Postal Service mail: RCRA Docket Information Center, Office of Solid Waste (5305G), U.S. Environmental Protection Agency Headquarters (EPA–HQ), 1200 Pennsylvania Avenue, NW., Washington, DC 20460–0002, or (2) If using special delivery, such as overnight express service: RCRA Docket Information Center (RIC), Crystal Gateway One, 1235 Jefferson Davis Highway, First Floor, Arlington, VA 22202. The official record (i.e., public docket) for this proposed rulemaking is F–2001–RPRP–FFFFF. In addition to this official record, two additional dockets have material supporting this proposal. They are: F–98–PR2A–FFFFF and F–98–RCSF–FFFFF.

Public comments and supporting materials are available for viewing in the RCRA Docket Information Center (RIC), located at Crystal Gateway I, First Floor, 1235 Jefferson Davis Highway, Arlington, VA. The RIC is open from 9 a.m. to 4 p.m., Monday through Friday, excluding Federal holidays. To review docket materials, it is recommended that the public make an appointment by calling 703–603–9230. The public may copy a maximum of 100 pages from any regulatory docket at no charge. Additional copies cost $0.15/page. The index and some supporting materials are available electronically. See the ''Supplementary Information'' section for information on accessing them.

FOR FURTHER INFORMATION CONTACT: For general information, contact the RCRA Hotline at 1–800–424–9346 or TDD 1–800–553–7672 (hearing impaired). In the Washington, DC, metropolitan area, call 703–412–9810 or TDD 703–412–3323. The RCRA Hotline is open Monday-Friday, 9 am to 6 pm, Eastern Standard Time. For more detailed information on specific aspects of this proposed rulemaking, contact Elaine Eby at 703–308–8449 or *eby.elaine@epa.gov,* or write her at the Office of Solid Waste, 5302W, U.S. Environmental Protection Agency, Ariel Rios Building, 1200 Pennsylvania Avenue, NW., Washington, DC 20460–0002.

SUPPLEMENTARY INFORMATION:

Electronic Comment Submission

You may submit comments electronically through the Internet to: rcra-docket@epa.gov. You should identify comments in electronic format with the docket number F–2002–RPRP—FFFFF. All electronic comments must be submitted as an ASCII (text) file avoiding the use of special characters and any form of encryption. If possible, EPA's Office of Solid Waste (OSW) would also like to receive an additional copy of the comments on disk in WordPerfect 6.1 file format.

Commenters should not submit electronically any confidential business information (CBI). An original and two copies of CBI must be submitted under separate cover to: RCRA CBI Document Control Officer, Office of Solid Waste (5305W), U.S. EPA, 1200 Pennsylvania Avenue, NW., Washington, DC 20460–0002.

Availability of the Proposal on the Internet

Please follow these instructions to access the proposal: From the World Wide Web (WWW) type *http://www.epa.gov/epaoswer/hazwaste/gas.htm.*

The official record for this action will be kept in paper form. Accordingly, EPA will transfer all comments received electronically into paper form and place them in the official record, which will also include all comments submitted directly in writing. The official record is the paper record maintained at the RIC listed in the **ADDRESSES** section at the beginning of this document.

EPA responses to comments, whether the comments are written or electronic, will be published in a notice in the **Federal Register** or in a response to comments document placed in the official record for this proposed rulemaking. EPA will not immediately reply to commenters electronically other than to seek clarification of electronic comments that may be garbled in transmission or during conversion to paper form, as discussed above.

How Can I Influence EPA's Thinking on This Proposed Rule?

In developing this proposal, we tried to address the concerns of all our stakeholders. Your comments will help us improve this rule. We invite you to provide different views on options we propose, new approaches we haven't considered, new data, how this rule may effect you, or other relevant information. We welcome your views on all aspects of this proposed rule, but we request comments in particular on the items we have specifically identified throughout the proposal. Your comments will be most effective if you follow the suggestions below:

- Explain your views as clearly as possible and why you feel that way.
- Provide solid technical and cost data to support your views.
- If you estimate potential costs, explain how you arrived at the estimate.
- Tell us which parts you support, as well as those you disagree with.
- Provide specific examples to illustrate your concerns.
- Offer specific alternatives.
- Refer your comments to specific sections of the proposal, such as the units or page numbers of the preamble, or the regulatory sections.
- Make sure to submit your comments by the deadline in this document.

• Be sure to include the name, date, and docket number with your comments.

The Agency will consider the public comments during development of the final rule related to this action. The Agency urges commenters submitting data in support of their views to include evidence that appropriate quality assurance/quality control (QA/QC) procedures were followed in generating the data. Data the Agency cannot verify through QA/QC documentation may be given less consideration or disregarded in developing regulatory options for the final rule.

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I. Statutory Authority

These regulations are proposed under the authority of sections 3001, 3002, 3003, and 3004 of the Solid Waste Disposal Act of 1970, as amended by the Resource Conservation and Recovery Act of 1976 (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984 (HSWA), 42 U.S.C. 6921, 6922, 6923 and 6924.

II. Summary of Today's Proposal

The Environmental Protection Agency (EPA or the Agency) is today proposing a conditional exclusion from the definition of solid waste. This exclusion will apply to hazardous oil-bearing secondary materials (i.e., sludges, byproducts, or spent materials) generated by the petroleum refining industry (Standard Industrial Classification (SIC) 2911) when processed, either on-site or off-site, in a gasification system to produce synthesis gas fuel and other non-fuel chemical by-products. We are proposing that the exclusion be subject to a set of conditions that specify the following: (1) The system meets the definition of a gasification system; (2) the system generates a synthesis gas fuel that meets the specifications of exempted synthesis gas; (3) the materials generated by the gasification system must not be placed on the land if they exceed the nonwastewater Universal Treatment Standards (UTS) for chromium, lead, nickel, vanadium, arsenic, and antimony (found at 40 CFR 268.48); and (4) the excluded materials must not be placed on the land or speculatively accumulated prior to insertion into the gasification system.

We are also soliciting comment on a proposed option to broaden today's conditional exclusion to other generated hazardous secondary materials.

III. Why Are We Proposing This Exclusion?

We are proposing this exclusion to put gasification of hazardous oil-bearing secondary materials (i.e., sludges, byproducts, or spent materials) on the same regulatory footing, i.e., excluded—as other secondary materials returned to a petroleum refining process. We believe that such operations are better viewed as an aspect of petroleum production rather than as hazardous waste management. (See 63 FR 42110, August 6, 1998) At the present time, gasification systems processing these materials are exempt from RCRA permitting, as recycling units. While the operation itself (i.e., gasification) is exempt, there are numerous RCRA requirements that still apply to the overall operation (e.g., storage and handling). The Agency believes that gasification systems processing hazardous oil-bearing secondary materials from petroleum refineries operate as fuel manufacturing devices whether the operation takes place at a petroleum refinery or elsewhere. As such, we believe that these additional requirements present an unnecessary impediment to a fuel manufacturing activity.[1] We are therefore proposing to revise the current regulations that apply to this activity to better reflect our current way of thinking.

Today's proposal supplements the current exclusions applicable to the petroleum refining industry (found at 40 CFR 261.4(a)(12)). In fact, we are proposing this exclusion for many of the same reasons that we excluded hazardous oil-bearing secondary materials recycled through coking and quench coking processes in the petroleum refining industry. See August 6, 1998, Petroleum Listing Final Rule (see 63 FR 42110).[2] In that rule, we

[1] In a May 25, 1995 letter from Michael Shapiro, Director of the Office of Solid Waste to William Spratlin, Director, EPA Region VII Air, RCRA, and Toxics Division, we explained that our regulations classify gasification devices operating at petroleum refineries to convert waste materials into fuels as recycling devices exempt from RCRA permitting. OSWER Directive 9441.1995(18).

[2] On July 15, 1998, we published in the **Federal Register** (see 63 FR 38139) a Notice Of Data Availability (NODA). In the NODA, we requested comment on extending a then-proposed and now final solid waste exclusion applying to certain recycling activities performed at petroleum refineries (See 63 FR 42110, August 6, 1998). The Agency requested comment as to whether the exclusion should also apply to the recycling of hazardous oil-bearing secondary materials in a gasification system operating at a petroleum refinery. As a result of the comments received on the NODA, the Agency proceeded with investigating whether gasification of oil-bearing hazardous secondary materials from the petroleum industry is better regulated as a recycling waste-management activity or whether it should be excluded as a fuel manufacturing activity. The gasification industry has argued that the current regulatory process does not make sense because secondary materials from the petroleum refining

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determined that hazardous oil-bearing secondary materials returned to a petroleum refinery fuel production process need not be regarded as RCRA solid wastes, even though a fuel is ultimately produced. See 63 FR at 42127–42128. Instead, the insertion of petroleum refining residuals back into the refining process can be viewed as a production process that involves the recovery of fuel value from crude oil, which is the basic raw material used in petroleum refining.

In the case of gasification, we are proposing this exclusion because we have determined that the situation is analogous. Gasification of hazardous oil-bearing secondary materials from petroleum refineries involves the recovery of organic components from the residuals of crude oil refining to produce a gaseous fuel, which can be viewed as part of a fuel production process. Particular indicia that this is a production process are the high cost of construction a gasification unit and the exacting product specification that apply to the final product. Furthermore, the gasification process appears to provide a better and more efficient means to recover fuels from oil-bearing materials than provided by quench coking, which we already determined to be a valid process in refining operations (see 63 FR 42114).

If adopted, this exclusion will provide a more consistent regulatory framework for petroleum refineries that wish to include gasification as part of their refining configuration. We also believe it will promote the use of a fuel manufacturing process that produces marketable fuels and chemicals from materials that were otherwise destined for waste treatment, disposal, or a less environmentally benign recycling activity.

IV. What Are the Environmental Benefits of This Proposal?

There are numerous environmental benefits associated with today's proposal. First, if promulgated, the exclusion will reduce the total amount of hazardous waste sent for disposal by petroleum refineries. Based on data from the 1997 Biennial Reporting System (BRS) database, petroleum refineries operating in the United States generate approximately 130 million tons of RCRA hazardous waste annually with at least 7–10 million tons managed in RCRA units.[3] Although equal volumes of these same materials would be generated under this proposal, a large fraction of the waste materials generated by petroleum refineries would be processed into synthesis gas and other co-products reducing the amount of waste materials sent for traditional RCRA treatment and disposal.

If adopted, today's proposal also likely provides additional benefits to the environment because of the unique features of gasification, including: (1) Increased efficiency in the production of electricity; (2) reduction in emissions of acid rain causing pollutants; (3) reduction in particulate matter and pollutants implicated in global warming; (4) increased resource conservation; (5) displacement of virgin materials used in the chemical manufacturing industry by chemicals produced from gasification; and (6) reduction in energy usage and pollution from reductions in the acquisition, transportation, and preparation of virgin materials used in electricity production, petroleum refining and chemical manufacturing industries.

V. Background and Overview

A. How Have Gasification Devices Been Used in the Past?

Gasification devices have a long history of use in the United States for the production of fuels. The use of gasification processes to produce useable quantities of fuel began in the mid 1800's when manufactured gas plants converted coal into hydrogen gas and methane to power city street lamps. Following the widespread use of electricity to power city lights, the operation of manufactured gas plants largely ended. Use of gasification systems to produce fuel from coal or other organic sources increased briefly during the years surrounding and during World War II as the international community experienced a shortage of fuels derived from oil. Following the end of World War II, the use of gasification declined rapidly as more effective techniques to produce fuels from crude oil were developed and crude oil was once again plentiful. In the 1970's, gasification technologies were resurrected to deal with fuel shortages. During this time, the United States Department of Energy (DOE) financed research in gasification technologies that resulted in commercial ventures designed to use the technology to produce higher value fuels from low value coal. Over the last 10 to 15 years, private industry and the DOE have continued their investigation of gasification as a clean coal energy alternative, and have developed better methods to extract fuel value from organic containing materials, as well as developing more efficient turbines to utilize the clean burning fuel.

In recent years, the oil refining and chemical manufacturing industries have configured gasification systems to produce base chemical products and fuels. Presently, gasification systems operate around the world in a number of different configurations. In the United States, gasification systems have been designed to gasify coal, municipal solid waste, tires, petroleum coke, biomass, and oil-bearing hazardous secondary materials into synthesis gas for the production of electricity or use as a feedstock to produce more complex chemical products. Data on the use of gasification to process hazardous waste is limited. Information that does exist, has largely been confined to configurations where the systems produce specialty chemical intermediates from virgin materials, or where the devices produce a fuel from historically waste-like materials that can be burned for energy recovery (e.g., gasification of petroleum refinery secondary materials).

There are two reasons gasification has been used relatively infrequently to process hazardous wastes. First, gasification systems are expensive and generally cost more to construct and operate than conventional process devices utilized by fuel and chemical manufacturers. Second, current regulations (albeit relatively minimal for the gasification of hazardous oil-bearing secondary materials from the petroleum industry) limit operators processing these materials from using them in the most cost effective manner. However, because of increased emphasis on the use of more efficient systems, there is renewed interest in using gasification as a possible method to reduce the volume

industry should not be defined as solid wastes if they are to be processed in a gasification system. Nor is the operation of the gasification system, pursuant to the exemption for recycling processes in 40 CFR 261.6(c)(1), altogether satisfactory to the industry. This is because the resulting synthesis gas fuel remains classified as a hazardous waste fuel (see 40 CFR 261.2(c)(2) (fuels produced from secondary materials are normally themselves wastes) and 40 CFR 261.3(c)(2)(so-called derived from rule, which, as relevant here, states that fuels derived from listed wastes remain hazardous waste-derived fuels)), unless it meets the specification for hazardous constituents set out in 40 CFR 261.38 of the rules. The gasification industry maintains that this regulatory framework discourages the use of gasification as a means to recycle hazardous oil-bearing secondary materials from the petroleum refining industry. Representatives of the petroleum refining industry have suggested that an exclusion from the definition of solid waste for secondary materials processed in a gasification system is a more appropriate classification under RCRA, and would greatly enhance the use of this technology in the industry. Proponents of gasification technologies likewise maintain that petroleum refineries would be more likely to recycle their solid waste if the regulatory status of the devices and the gasification system were clearly identified to be a part of the fuel manufacturing process.

[3] See Regulatory Impacts of Proposed Exclusions of Petroleum Refinery Wastes.

of wastes disposed, and thereby reduce the associated treatment costs of those wastes, while producing valuable commodities from the process.

B. How Do Gasification Systems Operate?

In general, gasification systems are designed to react carbon containing materials and steam at high temperatures under partial oxidation conditions to produce a synthesis gas fuel composed mainly of carbon monoxide and hydrogen. However, all gasification systems do not operate in exactly the same manner. Gasification systems can be designed to operate at high or low pressures, reducing conditions, using dry or wet feed systems, but they are all operated in a manner that limits the complete oxidation of hydrogen and carbon monoxide to water and carbon dioxide. Some gasification systems derive a portion of the energy—in the form of heat—from the partial oxidation of the materials being fed to the system. When the feed materials are partially oxidized, heat is given off. The heat helps sustain the process by promoting the disassociation of other molecular species in the reactor freeing the molecular species for limited oxidation. In gasification systems, this process promotes the formation of hydrogen and carbon monoxide species which are the base compounds in synthesis gas fuel. Using organic materials as both fuel and raw material for the gasification process is one of the reasons the system operates with increased efficiency when compared to traditional power plants that use coal or petroleum coke as their fuel.

Gasification systems generally include two basic components. The first is the high temperature reactor or gasifier and the second is a gas cleanup or polishing system used to remove various contaminants from the raw (un-polished) synthesis gas fuel. The two systems work in conjunction to produce a high purity synthesis gas that can be used directly as a fuel for power production, or used to produce chemicals or fuels in other manufacturing processes. Operators of gasification systems monitor and control the operation to ensure that it is producing a high quality synthesis gas. They monitor and limit parameters such as the BTU value, sulfur content, chloride content, and ash content of the materials fed to the reactor (gasifier). They also continuously monitor and regulate the amount of oxygen fed to the reactor, the temperature of the reactor, and the composition of the raw synthesis gas produced by the reactor. In the synthesis gas cleanup stage, operators monitor and regulate various other parameters that maintain the removal efficiency of the cleanup system. The result of these parameter specifications and attendant monitoring is production of a synthesis gas that meets the desired specifications.

Gasification systems, similar to many of the more traditional fuel production units found at petroleum refineries, are expensive, highly engineered systems that must be carefully operated to produce marketable fuels and co-products in a cost-effective manner. Both traditional petroleum refining processes (e.g., distillation, catalytic cracking, fractionation, thermal cracking, etc.) and gasification systems operate under conditions in which the feed, temperature, and pressure are closely controlled to optimize the production of marketable fuels or fuel components. Owners/Operators of both gasification systems and traditional refinery process units must analyze and characterize the feed materials, in addition to controlling the operation of the unit. Operational control of the gasification system is necessary to optimize the conversion processes occurring in the reaction chamber and to regulate the performance of the gas polishing systems.

C. How Do Gasification Systems Remove Contaminants From Raw Synthesis Gas?

In a gasification system, the gas cleanup or polishing component will be configured and monitored to operate with varying degrees of performance. The operation of the gas cleanup component is determined by the composition of the raw synthesis gas and the product specifications for the fuel and chemicals generated. Generally, the systems operate with sufficient effectiveness to produce a synthesis gas that contains low contaminant levels of sulfur, nitrogen, ash, and metals. The systems used to remove contaminants are generally the same types of systems used in other industrial settings to produce commercial grade chemical compounds or to remove unwanted contaminants from gaseous effluent streams. These systems have a history of use in industrial settings with the parameters that control their operation being well understood.

As we explained earlier, the synthesis gas product from gasification is not released directly to the atmosphere. Gasification systems are generally designed to be closed to the environment. In gasification systems, the raw synthesis gas exits the reactor at a temperature between 1800 and 3000 degrees Fahrenheit (depending on the design and operating characteristics of the device). Generally, after exiting the reactor, heat value from the gas is extracted in systems designed to produce steam and electricity. The raw synthesis gas is then typically processed in a series of systems designed to remove entrained particulate matter, acid gases (such as hydrochloric acid), and other inorganic compounds. The gas cleanup systems typically include filters or scrubbers for the removal of entrained particles and absorbers for the removal/recovery of sulfur and chlorine. The solids recovered in the filters or scrubbers are frequently put back into the gasification system. The polishing systems that remove the unwanted contaminants from the raw synthesis gas also concentrate these materials to form chemical by-products. The reduced sulfur species are recovered as elemental sulfur, or in some cases, converted to a sulfuric acid by-product. The typical sulfur removal and recovery process used to clean the raw synthesis gas (to yield a high purity fuel) are the same commercially available methods used in other industrial applications such as oil refining and natural gas recovery. Sulfur recoveries of 95% to 99% can typically be achieved using these systems. These systems do include process vents, but the synthesis gas is not released through these vents. After the gas is polished, it is sent for turbine combustion to produce electricity and steam or to produce other chemical products.

Metal species found in the materials fed to the gasification system are controlled both in the reactor phase, and in the cleanup systems used by the device. The low volatility metals are captured in the slag emitted from the reactor, with the higher volatility metals being captured in the cleanup systems, or in the particulate removal systems and acid gas scrubbers. These captured metals can be put back into the reactor or be removed from the system and disposed. Control of metal compounds in gasification systems is discussed more in a later section of today's proposal.

Ultimately, the extent to which contaminant removal systems polish the raw synthesis gas is governed by the fuel specifications for the systems that use the synthesis gas and/or the environmental regulations that apply to those systems. For example, use of synthesis gas in combustion gas turbines can require fairly low levels of alkalis and total entrained particles, thus the gas cleanup system would be tailored for this type of contaminant removal. The turbine system may also have fairly low sulfur oxide(s) emissions standards

applicable to the turbine stack, so the synthesis gas will also have to be cleaned to a level to meet the emission standard. Therefore, the ability of gasification systems to extract useful chemical by-products from hazardous oil-bearing secondary materials is based on the extent the gas must be polished before it is released for its intended commercial application.

D. What Air Emissions Result From Gasification Systems?

As we stated earlier, there are generally no direct emissions to the atmosphere from a gasification system.[4] [5] Emissions to the atmosphere from gasification activities are nearly always the result of using the synthesis gas as a fuel for the production of power or heat generation. As a fuel, the synthesis gas can be burned in simple cycle gas turbines or in steam boilers. However, synthesis gas is typically used in more advanced systems that are designed as combined cycle gas turbine/steam boilers. Combined cycle turbine configurations exploit physical characteristics unique to synthesis gas to produce electricity with greater efficiency than other power generating designs. Alternatively, the synthesis gas can also be used as a feedstock for chemical manufacturing processes including the production of ammonia, methanol, acetic acid, and hydrogen.

Metal and chlorine emissions from the combustion of synthesis gas depend on the composition of the synthesis gas, which is dependent on the effectiveness of the synthesis gas cleanup system. Chlorine control using wet scrubbers to remove HCl has been used successfully for many years and can routinely achieve a removal effectiveness of 99%.[6] Semi-volatile metals are expected to be contained primarily in the filter/scrubber ash. Lower volatility metals are primarily bound in the slag. Mercury, which is not found in significant quantities in petroleum refinery waste, is highly volatile and is expected to be controlled only to a small degree in a gasifier's wet scrubbers. If mercury was present in the hazardous oil-bearing secondary materials generated by the petroleum refining industry and those materials were processed by a gasification system, the mercury would likely be emitted out the stack of the device (i.e., turbine) firing the synthesis gas produced by the gasification system.[7] Potential mercury emissions are not a concern for this proposed conditional exclusion because hazardous oil-bearing secondary materials generated by petroleum refineries are not expected to contain significant quantities of mercury. See Docket Number F–98–PR2A–FFFFF, Identification and Listing of Hazardous Waste; Petroleum Refining Process Wastes.[8]

E. What Solid Wastes are Generated by Gasification Systems?

Gasification systems also generate solid waste residuals which are largely dependent on the design, configuration, and operation of the gasification system. They can include a slag material composed primarily of ash and low and semi volatile metals bound in a glass-like substrate that is released from the reactor component of the gasifier, sour liquors from the cleanup systems that are used to scrub contaminants from the product synthesis, and particulate matter captured in particulate control systems used by the gasification system to remove fine particulate matter from the synthesis gas.[9] The gasification designs we have reviewed either put the liquid streams and particulate matter back into the reactor, remove the contaminants from the scrubbing streams to produce valuable chemical by-products, treat the effluents in devices designed to destroy or reduce the toxicity of the effluents, or send the effluents for disposal.

Analysis conducted as part of research efforts utilizing gasification technologies has shown that composition of the residues in a given gasification system are largely dependent on the composition of the secondary materials fed to the system. Data submitted by Texaco show that the composition of the vitrified slag that is generated by the gasification reactor is mostly inert material that does not exhibit a characteristic of hazardous waste.[10] At this time, we lack the data necessary to determine whether the characteristics of the residues from gasification are due to the dilution effect of the other materials being processed along with petroleum hazardous secondary materials in the device, or is the result of a unique operational or design trait associated with gasification systems.[11] The Agency specifically solicits comment on this issue.

Under today's proposal, we would classify solid waste residues generated during the gasification of excluded material as newly generated, and determine whether they are hazardous based on whether they exhibit a characteristic when they are generated. Should a residue exhibit a characteristic, it would have to be managed in compliance with hazardous waste regulations. (As noted earlier, to assure process legitimacy, we are also proposing that the residues comply with the UTS for chromium, lead, nickel, vanadium, arsenic, and antimony).[12]

[4] Generally, gasification systems are designed and operated to prevent direct releases to the atmosphere when operating to produce synthesis gas; however, some devices incorporate small incinerators that combust effluent discharges from the raw synthesis gas cleanup systems and those devices do release combustion off-gases to the atmosphere. Under today's proposal, devices that utilize incinerators to combust non-gaseous effluents from the gasification process, or raw synthesis gas cleanup systems would be subject to appropriate regulations to control emissions from those sources. For example, if characteristic hazardous waste is removed from the gasification process and sent to an incinerator for destruction, the combustion device is subject to regulation as a hazardous waste incinerator.

[5] Gasification systems are designed with release vents or flares that operate during emergencies or during malfunctioning operations. Flares and release vents are necessary to prevent damage or catastrophic failure of the gasification system in the event of a major malfunction. These types of relief systems are common at facilities that manufacture products using thermal processes. The operation of the flares or release vents is regulated by each facility's Title V Clean Air Act permit.

[6] Removal effectiveness is based on data that was used to support the Hazardous Waste Combustion Phase 1 MACT rule and is based on data from hazardous waste burning incinerators. See Docket Number F–1999–RC2F–FFFFF and the technical support document for: NESHAPS: Final Standards for Hazardous Air Pollutants for Hazardous Waste Combustors. 64 FR 52828. September 30, l999. Removal effectiveness of systems used by gasification systems were not evaluated for this notice.

[7] *A Comparison of Gasification and Incineration of Hazardous Waste—Final Report.* March 30, 2000. This report was prepared for the U.S. Department of Energy and contrasts incineration and gasification technologies. It also evaluates emissions tests performed on gasification systems processing coal that shows that some mercury is controlled in the gasification process. The report concludes that further tests are necessary to understand the control mechanism and to ensure that the data is not an artifact of poor composite coal sampling.

[8] In a later section of today's proposal, we request comment on options we are considering to revise the synthesis gas specification (found at 40 CFR 261.38(b)) to reduce the allowable concentrations of RCRA metals that can exist in waste-derived synthesis gas excluded from the definition of solid waste. This is because we have determined that the specification does not represent the concentration of metals that realistically exists in synthesis gas derived from hazardous waste.

[9] Data submitted by Texaco in response to the July 1998 NODA suggests that the slag produced by their gasification systems is an inert material that does not leach metals because the glass-like matrix of the material effectively stabilizes the metals. See Docket Number F–98–PR2A–FFFFF.

[10] See: ''Analysis of Residues From Texaco Gasification Process'' which is found in the docket supporting this proposed rule.

[11] Certain gasification systems function because they are designed to take advantage of the heat given off in the limited oxidation reactions, and thus require the introduction of inorganic material to provide thermal inertia for the system. This design characteristic could contribute to the inert quality of the residue material.

[12] EPA's first study of wastes from coal gasification are set forth in the *1990 Report to*

F. Gasification Systems Processing Hazardous Oil-Bearing Secondary Materials From Petroleum Refineries

The gasification of hazardous oil-bearing secondary materials from the petroleum industry is taking place only under very narrow, specialized exemptions. At the present time, we are aware of four gasification operations in the United States that engage in this activity. Three of the gasification systems are operated on-site at petroleum refineries.[13] The fourth is an off-site gasification system owned and operated by the Dakota Gasification Company.[14]

VI. How Do Gasification Systems Differ From Hazardous Waste Treatment Units?

In most cases, gasification systems resemble fuel manufacturing devices more than they resemble RCRA treatment devices. Information submitted to us in response to the July 1998 NODA suggests that the design, operation, and operational characteristics of certain gasification systems are significantly different from those of conventional RCRA treatment devices. This is because gasification systems are not designed and operated to treat waste. Gasification systems manufacture synthesis gas fuel by re-forming the organic compounds that exist in oil-bearing hazardous secondary materials through unique conversion processes that involve thermal disassociation and partial oxidation. The synthesized fuel is primarily composed of hydrogen and carbon monoxide. Gasification systems can also be configured to produce other gaseous or solid compounds for purposes other than as a fuel.

The reformation or conversion processes occurring within gasification systems are continuously monitored and controlled to enhance conversion efficiency. As such, they require feedstock materials to adhere to certain specifications prior to introduction into the system. Feedstock materials must be analyzed to determine BTU value, sulfur concentrations, chlorine concentration, and ash content. The analytical information on the feed material is needed in order to control the processes that convert the organic components of the feedstock material into valuable products (including synthesis gas fuel).

Gasification processes likewise limit and control oxygen levels to ensure the process reactions convert organic material to the synthesis gas product, and to prevent the complete (or unwanted) oxidation of the gaseous compounds that constitute synthesis gas. In contrast to gasification systems, thermal waste treatment devices (such as incinerators and certain industrial furnaces) process materials through ''complete oxidation processes'' to reduce the volume and toxicity of the waste materials. When referring to ''complete oxidation processes'' that occur in thermal treatment devices, what we mean is that the oxidation of specific compounds in the waste material is not controlled to any extent other than that what is needed to fully oxidize and destroy the waste materials.

Gasification systems also differ significantly from thermal waste treatment devices in terms of releases to the environment. As explained more fully below, gasification systems are not designed to and ordinarily do not release gases directly to the environment. Gasification systems are generally designed to be closed to the environment. The gases evolved in the partial oxidation or reactor phase are processed in polishing systems following the reactor that strip the gas of sulfur, chlorine, and particulate matter. These polishing systems recover some of these materials to form additional products such as elemental sulfur, sulfuric acid, or hydrochloric acid. [15]

Following the polishing processes, the synthesis gas can be used in a number of ways: (1) Immediately as a fuel in a combustion turbine; (2) as a chemical intermediate in a chemical manufacturing process; or (3) stored for product use later. In contrast, thermal treatment devices (e.g., incinerators and industrial furnaces) are designed to release combustion off-gases to the environment as a consequence of normal operation.[16] The resultant gases, which are primarily carbon dioxide and water, are rarely used in a manner similar to that of the gasification system.[17]

Gasification systems differ significantly from hazardous waste treatment units. As such, we are today proposing that full RCRA oversight may not be warranted for the gasification of hazardous oil-bearing secondary materials from the petroleum refining industry, as long as we place conditions on the activity so that it can be distinguished from hazardous waste treatment activities.

VII. Detailed Discussion of Today's Proposal

Today, we are proposing to conditionally exclude hazardous oil-bearing secondary materials generated by the petroleum refining industry (SIC 2911) from the definition of solid waste when the materials are destined to be processed in a gasification system to produce synthesis gas fuel and other non-fuel chemical by-products.[18] To

Congress on Special Wastes from Mineral Processing. (See specifically Chapter 5.) In that report, EPA determined that ash from coal gasification was Bevill exempt as a result of the Bevill rul that was promulgated on June 13, 1991 (54 FR 27307). All other solid wastes generated at gasification plants, other than coal gasification ash, are subject to RCRA as newly generated wastes, and to subtitle C if they exhibit a characteristic of hazardous waste. Coal gasification ash retains its Bevill exempt status as long as the gasification facility uses feedstock that is comprised of greater than 50 percent virgin feedstock (i.e. coal). See 54 FR at 36619, September 1, 1989.

[13] See letter from Mr. James Childress, Executive Director, Gasification Technologies Council to Ms. Elaine Eby, USEPA. Re: Operational Gasification Systems Processing Hazardous Oil-Bearing Secondary Materials. January 2002.

[14] The Dakota Gasification Facility, located in Belluah, North Dakota, is a commercial operation that was constructed and designed with the assistance of the DOE to promote the use of gasification of coal for the production of fuels. This facility is currently processing hazardous oil-bearing secondary material from a BP Amoco refinery located in North Dakota under a RCRA treatment study approved by the State.

[15] The markets for these non-fuel by-products were not evaluated for this proposal, but many of the by-products do have marketable value. Non-gaseous by-products that are used in a production process to produce other products are not regulated by this proposal and are generally excluded from regulation under 40 CFR 261.2(e)(1)(i). In some systems the stripped contaminants are fed back to the gasification reactor.

[16] However, we note that certain types of industrial furnaces are designed to treat hazardous waste and extract sulfur compounds or halogen acids from the effluent gas stream prior to release to the atmosphere. These systems are generally operated to release the gases directly to the atmosphere after the desired compounds are extracted from the combustion off-gas.

[17] In addition to the operational differences between gasification systems and thermal waste treatment systems, it would appear that gasification systems currently in operation are being used in the chemical and petroleum refining industries to convert non-waste feedstocks into synthesis gas fuel or chemical intermediates required for specialty chemical manufacturing. These systems are relatively expensive to construct and operate and require a fairly large and consistent supply of carbon-based feedstock (e.g., coal, natural gas, petroleum coke, etc.) to produce synthesis gas that has economic value. The units, at least as presently operated, are integral components of these manufacturing operations. The fact that these devices can be operated in a manner to process materials historically classified as hazardous waste does not discount the fact that they are designed and operated to produce a product that is valuable as a fuel or chemical and that this appears to be their primary function.

[18] The proposed exclusion applies only to hazardous oil-bearing secondary materials from SIC classification 2911. While the Agency understands that some petroleum refineries may be integrated with other industrial processes exhibiting other SIC classifications, this exclusion is only for secondary materials generated by the production processes under the 2911 classification. However, the Agency solicits comment on whether the exclusion should be expanded to other hazardous secondary

Continued

ensure that each gasification system processing materials excluded under today's proposal is engaged in a manufacturing activity, we are proposing that the exclusion be subject to a set of conditions. The conditions specify that: (1) The system processing the hazardous oil-bearing secondary material meets the proposed definition of a gasification system; (2) the synthesis gas product from the gasification system meets the fuel specifications promulgated in the ''synthesis gas rule,'' [19] which is a regulatory benchmark for classifying synthesis gas produced from hazardous waste as a fuel rather than as hazardous waste (see 40 CFR 261.38(b)); (3) the materials (both co-products and solid waste residuals) generated by the gasification system that are placed on the land do not exceed the nonwastewater Universal Treatment Standards (UTS) for 6 metals present in listed wastes generated by the petroleum refining industry; and (4) the excluded hazardous oil-bearing secondary materials are not speculatively accumulated nor placed on the land prior to insertion into the gasification system. Provided these conditions are met, the hazardous oil-bearing secondary materials from petroleum refineries would not be solid wastes. Similarly, the fuels or chemical by-products manufactured from these excluded materials would also be excluded.

The exclusion would apply to materials processed in a gasification system operating either on site or off-site of a petroleum refinery. While this does differ from existing exclusions in that it would apply whether or not the gasification system is located at the site of the petroleum refinery, we believe it is appropriate to extend the on-site exclusion to off-site fuel manufacturing processes because gasification systems operate in exactly the same manner whether they are used to process materials into fuels on-site or off-site of a petroleum refinery (i.e., gasification systems operate as fuel manufacturing devices at any location they are operating).[20]

A. What Are the Conditions of the Exclusion?

Today's proposed exclusion includes four conditions to ensure that each gasification system processing the excluded material is engaged in a legitimate manufacturing activity that converts the valuable components of the hazardous oil-bearing secondary materials into fuels, and into non-fuel chemical by-products, that do not contain high levels of non-contributing toxic components. Today's notice proposes to exclude hazardous oil-bearing secondary materials generated by the petroleum refining industry from the definition of solid waste if the materials are processed in a gasification system and used in a manner consistent with the conditions of the exclusion. The consequence of this exclusion would be that hazardous oil-bearing secondary materials are excluded from the definition of solid waste, at the point of generation, provided: (1) The system meets the definition of a gasification system; (2) the system generates a synthesis gas fuel that meets the specifications of exempted synthesis gas; (3) the materials generated by the gasification system are not placed on the land if they exceed the nonwastewater UTS for chromium, lead, nickel, vanadium, arsenic, and antimony (found at 40 CFR 268.48); and (4) the excluded materials are not placed on the land or speculatively accumulated prior to insertion into the gasification system.

1. Definition of a Gasification System

During our review of the operation and performance of available gasification technologies, we determined that it is necessary to define the types of devices that can process (i.e., gasify) hazardous oil-bearing secondary materials into a synthesis gas that we believe is a legitimate fuel. This is because there are a large number of devices operating in the United States that could claim to be a type of gasification system, but do not gasify materials in the same manner, or to the same extent, as the gasification systems we considered for this proposal. These other devices may be waste treatment devices, or recycling devices that process solid waste. Therefore, this first condition defines the types of systems that may process excluded hazardous oil-bearing secondary material under this exclusion in order to distinguish the gasification process from waste treatment, including incineration.

As explained earlier, most combustion devices (e.g., incinerators) convert organic material into hydrogen and carbon monoxide gases at some point during ideal combustion processes (i.e., complete oxidation of organic material to water and carbon dioxide). Gasification systems preferentially convert the organic material into a synthesis gas primarily composed of carbon monoxide and hydrogen by limiting the oxidation reactions. Gasification systems generally accomplish this by regulating the organic material and oxygen being fed to the reactor based on feedback from continuous monitoring of temperature, pressure, and products of oxidation. These continuously monitored parameters control the extent that organic material is oxidized, and concentrates the metals found in the feed into a slag emitted from the reactor as a solid waste. Therefore, to limit the exclusion to gasification systems that operate as fuel manufacturing devices, as well as to distinguish gasification systems from treatment devices such as incinerators, cement kilns, and thermal desorbers, we are proposing and solicit comment on the following definition of a gasification system.

Gasification system means an enclosed thermal device and associated gas cleaning system or systems that does not meet the definition of an incinerator or industrial furnace (found at §§ 260.10), and that: (1) Limits oxygen concentrations in the enclosed thermal device to prevent the full oxidization of thermally disassociated gaseous compounds; (2) utilizes a gas cleanup system or systems designed to remove contaminants from the partially oxidized gas that do not contribute to its fuel value; (3) slags inorganic feed materials at temperatures above 2000;° F; (4) produces a synthesis gas; and (5) is equipped with monitoring devices that ensure the quality of the synthesis gas produced by the gasification system.

Under this first condition, you would be required to ensure that your gasification system meets the definition above, in order for the hazardous oil-bearing secondary materials from the petroleum industry to be eligible for the exclusion. The purpose of this condition

materials from other industrial operations (with other SIC classifications) when these operations are integrated with industrial processes under the primary SIC classification of 2911.

[19] For purposes of this preamble discussion, we are using the term, ''Synthesis Gas Rule'' to refer to the rulemaking that provided for the ''Syngas Fuel Exclusion'' (40 CFR 261.(b)). The entire rule can be found in 63 FR 33782, June 19,1998. Hazardous Waste Combustors; Revised Standards; Final Rule—Part 1: RCRA Comparable Fuel Exclusion; Permit Modification for Hazardous Waste Combustion Units: Notification of Intent to Comply; Waste Minimization and Pollution Prevention Criteria for Compliance Extensions.

[20] Gasification systems operating off-site of petroleum refineries may continue to process the materials they currently gasify in addition to the materials we are proposing to exclude without affecting the regulatory status of their device with respect to RCRA regulation. However, if gasification systems are processing hazardous wastes (i.e., hazardous materials identified or listed as hazardous wastes, in addition to the petroleum industry secondary materials we are proposing to exclude), then such devices would of course continue to be subject to RCRA jurisdiction under the current proposal.

is to ensure that the exclusion applies only to gasification systems designed, operated, monitored, and controlled in a manner that promotes the removal or conversion of toxic compounds found in the hazardous oil-bearing secondary materials, as well as generating a synthesis gas fuel. The rationale supporting this condition is consistent with the rationale we used in excluding recovered oil from the definition of solid waste. See 63 FR at 42113.

2. Synthesis Gas Fuel Specification

The second condition of this proposed exclusion defines the chemical and physical specifications of a legitimate synthesis gas fuel product. This condition ensures that each gasification system using the exclusion is engaged in a legitimate fuel manufacturing activity. It does this by requiring you to ensure that the synthesis gas produced from the gasification of excluded materials meet the specifications for the exclusion of hazardous waste derived synthesis gas found at 40 CFR 261.38(b). It is appropriate to apply the ''Synthesis Gas Rule'' specifications to synthesis gas produced from hazardous oil-bearing secondary materials, because we believe that synthesis gas manufactured from this material should not contain hazardous constituents and other non-contributing contaminates at concentrations greater than synthesis gas derived from hazardous waste. We recognize that some gasification systems are designed and operated to produce a synthesis gas that may not meet the constituent levels specified by the Synthesis Gas Rule because the gas is specifically manufactured for use in a specialized chemical manufacturing process. Therefore, the specification would apply only to synthesis gas actually used as a fuel. See the preamble discussion on ''Parameters for the Synthesis Gas Fuel Exclusion'' found at 63 FR 33791, June 19, 1998.

Under this proposal, hazardous oil-bearing secondary materials would be excluded from the definition of solid waste at the point they are generated, as long as they are processed in a gasification system that meets our proposed definition, and handled in accordance with the other conditions. Since RCRA regulations do not apply to the excluded materials, the synthesis gas product is also not subject to RCRA regulations, as long as the synthesis gas produced by the gasification system meets as a fuel the specification levels of the synthesis gas exclusion.Of course, units burning the synthesis gas fuel are themselves potentially subject to regulation under other statutes, notably the Clean Air Act. Today's proposal would not affect any such regulation.

3. Land Placement of Products, Co-Products, and Solid Waste Residuals

The third condition of the proposed exclusion applies to co-products and residues generated by the gasification system that are recycled by being applied to the land. This condition would require that materials that are applied to the land must meet the nonwastewater Universal Treatment Standards (UTS) (40 CFR 268.48) for the following toxic metals: antimony, arsenic, chromium, lead, nickel, and vanadium. It is believed that these metals will partition with the ash into the slag residue generated by the process. These metals do not contribute to the gaseous fuel or to the gasification process. We suspect that the metal concentration in the residue will be comparable to or substantially less than the concentration of metals in the slag from gasifiers that process petroleum coke or coal exclusively. Data submitted by BP Amoco show that the metals in oil-bearing secondary materials do not substantially increase the total metal concentration normally found in the residue generated by the Dakota gasification facility when it is processing coal exclusively. [21]

This third condition ensures that co-products or residues generated by the gasification process do not contain toxic metals with a potential for leaching greater than allowed by the requirements of the land disposal restrictions. This condition is similar to conditions established for hazardous waste-derived products that are used in a manner constituting disposal (see 40 CFR 266.20), but we chose only to apply the UTS limits for the metals which are known to exist in petroleum refinery waste.[22]

This condition ensures legitimacy by applying the same land disposal provisions to the co-products or residuals that would have existed had the material not been excluded from the definition of solid waste, and so would eliminate an incentive to claim to be performing ''gasification'' for the real purpose of avoiding treatment of metals in treatment residues that ultimately are placed on the land. The condition similarly would serve to ensure that the gasification of excluded oil-bearing hazardous secondary materials is not just a means of discarding waste components in the materials (which are otherwise listed hazardous wastes) by the eventual unrestricted placement of those components on the land. Finally, the proposed condition is needed to assure that the gasification system is operated for the production purpose claimed. As explained earlier, part of the operating premise of gasification is that it preferentially converts organic matter in secondary materials into fuels (or intermediates) while removing metals from raw synthesis gas and trapping those metals in an inert matrix. The proposed condition provides a means of quantifying this premise.

4. Speculative Accumulation and Storage of Excluded Materials

The fourth condition of the proposed exclusion specifies that excluded hazardous oil-bearing secondary materials may not be placed on the land, or speculatively accumulated prior to insertion into a gasification system. This condition further defines gasification of excluded oil-bearing materials as a manufacturing activity because it requires that the excluded materials are handled as a valuable feed to the gasification system. We know of no gasification system (or for that matter, any refinery) which stores these materials on the land, and to do so would indicate that the materials are being handled as waste, not feedstock (since physical integrity of the ostensibly-valuable feed materials could no longer be assured, and there would be large-scale losses of the oil-bearing secondary materials due to the land placement). Thus, the physical characteristics of hazardous oil-bearing secondary materials from the petroleum industry should preclude storing the material in anything other than tanks or containers. This is because the material is generally comprised of tar-like oily substances that are not amenable for land storage.

The proposed condition prohibiting speculative accumulation of the excluded oil-bearing secondary materials before they are inserted into the gasification system ensures that legitimate quantities of the waste material are being recycled rather than being stored to avoid regulation. We feel that this condition also is necessary to assure that recycling actually occurs, and that materials are not discarded by being stored for extended periods. Furthermore, this condition is consistent with the condition that we

[21] Data submitted by Amoco Refining Inc, which show that petroleum secondary materials make a minor contribution to the total concentration of metals routinely found in ash from the Dakota Gasification facility.

[22] This condition is also similar to a condition we included in the exclusion for other petroleum oil-bearing secondary materials. There, we applied the FO37 listing to non-fuel residuals that are produced when oil-bearing wastes are reinserted into petroleum distillation and refining processes. See 63 FR at 42128.

adopted for excluded oil-bearing residuals returned to refinery processes. See 60 FR 57752.

B. What Are the Proposed Recordkeeping and Reporting Requirements?

There are no specific recordkeeping and reporting requirements associated with this proposal. However, we are seeking comment whether any records and reporting are necessary in addition to the current documentation requirement associated with 40 CFR 261.2(f) for materials that would be excluded from the definition of solid waste under today's notice. 40 CFR 261.2(f) does not contain specific record keeping requirements but it does require the respondent to bear the burden of showing, through appropriate documentation, that the excluded material is being processed in a manner that meets the conditions in the claimed exclusion. We offer this information as a reminder and are not reopening this provision for comment.

In today's notice, we are proposing to exclude hazardous oil-bearing secondary materials generated from the petroleum refinery industry (SIC 2911) that are destined for gasification whether or not the gasification system is located at a refinery. We note that allowing the secondary petroleum streams to go to facilities outside the petroleum refining industry is somewhat different than the structure of 40 CFR 261.4(a)(12)(i), which the Agency has used as a model for today's proposal. 40 CFR 261.4(a)(12)(i) excludes from RCRA jurisdiction, under certain conditions, oil-bearing secondary materials generated by petroleum refineries when the materials are re-inserted into the petroleum refining process (either at the refinery generating the secondary material or at another off-site petroleum refinery, as long as the materials are shipped directly). 40 CFR 261.4(a)(12)(i) does not specify recordkeeping requirements, except 40 CFR 261.2(f) applies to respondents claiming the exclusion.

In today's proposal, however, we believe that excluding materials processed in gasification systems operating independent (or off-site) of petroleum refineries is appropriate because gasification is a process employed by petroleum refineries to upgrade low value organic material into fuels, and the purpose and operation of the system remains the same whether the system is operated at the same location the oil-bearing materials are generated or elsewhere. Since today's proposal would be somewhat more expansive than the exclusion at 40 CFR 261.4(a)(12)(i), we are requesting comment on whether further clarification of recordkeeping and reporting requirements is necessary in addition to the 40 CFR 261.2(f) documentation requirement to ensure that excluded materials are appropriately processed. The purpose of recordkeeping, recording and documentation would be to: (1) Ensure that the excluded materials are indeed fed to a gasification facility; (2) the materials are handled appropriately prior to introduction to the gasification system; (3) the synthesis gas fuel ultimately produced meets the synthesis gas specifications; (4) the inorganic residues produced by the gasification system that are placed on the land do not exceed the nonwastewater UTS for metals found in the input refinery material fed to the gasification system; and (5) the residue does not exhibit a hazardous waste characteristic under subpart C, part 261. One proposed rule, ''Requirements for Zinc Fertilizers Made From Recycled Hazardous Secondary Materials'' (See 65 FR 70954, November 28, 2000) provides an example of additional recordkeeping and reporting requirements that could be used to verify that the conditions of an exclusion are met.

EPA is interested in obtaining comments on what specific records would be necessary to document whether: (1) The synthesis gas generated from a gasification system, using excluded secondary materials, meets the synthesis gas fuel specification under 40 CFR 261.38(b); (2) the residue generated from the gasification system meets the UTS levels in 40 CFR 268.48 for specific inorganic metals; and (3) the residue generated from the gasification system fails to exhibit a hazardous waste characteristic as defined in part 261, subpart C. We are also interested in receiving comments that explain the different types of information petroleum refinery operators currently keep to demonstrate compliance with other solid waste exclusions (such as 40 CFR 261.(a)(12)(i)) that rely on 40 CFR 261.2(f) to demonstrate compliance with the conditions of the exclusions and whether such information is routinely maintained as a type of industry practice.

C. How Do We Ensure Excluded Material Is Processed in a Gasification System?

As with other exclusions and exemptions from the definition of solid waste, the person claiming the exclusion must be able to produce whatever documentation is necessary to demonstrate that the material is excluded from regulation (see § 261.2(f)). EPA recommends that to make this demonstration, petroleum refineries document the amount of secondary material excluded, and the location that these materials are processed in a gasification system, as well as maintaining documentation to demonstrate compliance with the enumerated conditions of today's proposed exclusion.

D. Are We Concerned About Volatile Metals in the Excluded Material?

We are aware that certain metals, which can be found in low concentrations in petroleum refining secondary materials, can be processed by a gasification system and end up in the product synthesis gas. The metals of most concern, based on their inherent properties, are lead and mercury; however, based on data we received from the petroleum refining industry, we do not believe that synthesis gas manufactured from oil-bearing materials will contain sufficient concentrations of these metals to create an emissions hazard if the fuel is burned for energy recovery. Nevertheless, because there is a potential for volatile metals to partition to the synthesis gas product, we are proposing that the synthesis gas must meet the specifications of 40 CFR 261.38(b) if used as a fuel, which limits the concentration of those metals to levels we deemed appropriate for hazardous waste-derived synthesis gas excluded from RCRA regulation. As explained earlier, the fuel specification serves as a means to ensure that the process produces a fuel product rather than a means to dispose of waste.

E. Are We Concerned About Dioxin Emissions From the Processing of Excluded Material?

In contrast to devices that burn organic compounds, gasification systems are designed to promote the thermal decomposition of organic-containing compounds and limit the formation of compounds with a greater molecular weight than methane. This design characteristic limits the formation of dioxin pre-cursors in the high temperature reactor. Formation in the PM control units is controlled by the lack of dioxin precursors, the lack of particulate matter, and the lack of a favorable temperature profile. Analytical data submitted by Texaco and Dow support the contention that dioxin is not generated during synthesis gas production. The reader is referred to the docket for additional information.

In addition to the theoretical arguments and analytical data supporting the contention that synthesis

gas does not contain dioxin, we also limit the amount of dioxin that can exist in synthesis gas fuel directly through the application of the synthesis gas fuel specification found at 40 CFR 261.38(b). The synthesis gas specifications that apply as a condition of the exclusion do not allow significant concentrations of dioxin to be present in the product gas. These factors, as well as analytical results that show low concentrations of dioxin in the produced synthesis gas, lead us to conclude that controls to limit the formation of dioxin in the synthesis gas are unnecessary to propose. Additionally, we recognize that the down stream applications of the synthesis gas will also control the levels of dioxin that may be released to the atmosphere or to other products manufactured from the synthesis gas. Specifically, we believe that any dioxin compounds that exist (at low concentrations) in the synthesis gas will be appropriately controlled under the applicable MACT rules if the synthesis gas is burned to produce electricity in a gas turbine. Therefore, we believe that concerns regarding dioxin formation are adequately addressed in today's proposal and we are not proposing any additional requirements to specifically limit dioxin emissions as a result of downstream uses of the synthesis gas fuel.

VIII. Other Hazardous Secondary Materials That Could Also Be Conditionally Excluded When Processed in a Gasification System

Today's proposed exclusion from the definition of solid waste is based largely on two central themes. First, gasification is a legitimate manufacturing process for processing secondary materials in an efficient and environmentally protective manner and is better viewed as a manufacturing activity rather than waste recycling. Second, hazardous oil bearing secondary materials from the petroleum refining industry (SIC 2911) are especially appropriate for use in such units. With respect to these points, EPA is soliciting comment on expanding the exclusion to allow for other hazardous secondary materials to be conditionally excluded from the definition of solid waste if they are processed in a gasification system.

A. What Are the Environmental Benefits of a Broader Exclusion?

The gasification of hazardous waste can be viewed as an innovative extension of the conventional fuels gasification technology for synthesis gas. The gasification of hazardous secondary materials (i.e., hazardous waste), in this manufacturing application, has the potential to significantly reduce pollution to the environment by allowing for the continued processing of hydrocarbon materials that would otherwise be treated and/or land disposed. [23] The downstream uses of the products generated by the gasification process also have environmental benefit. When the synthesis gas is burned for energy recovery it displaces fossil fuels that would be used for the same energy production. Plus, it displaces the energy used to liberate, transport, and prepare the fossil fuels for use, as well as the pollution that results from removing, transporting and processing the fossil fuels. When synthesis gas is used as a feedstock for the manufacture of chemicals such as acetic acid, acetic anhydride, oxoalcohols, butanol, methanol, ammonia, and hydrogen, it displaces other feedstock that take energy to produce and prepare for manufacturing. Furthermore, when other non-fuel co-products are manufactured in the gasification system, e.g., elemental sulfur, sulfuric acid, chlorine, hydrochloric acid and ammonia, the co-products displace similar products manufactured conventionally. This reduces pollution to the environment associated with the conventional manufacturing processes that do not use secondary materials as a component of the feed.

B. What Is the Regulatory Status of a Gasification System?

Under existing regulations, hazardous secondary materials that are processed in a gasification system to produce synthesis gas and is used or re-used in an industrial process to manufacture legitimate products are not subject to RCRA jurisdiction through the provisions of 40 CFR 261.2(e)(1)(i). This provision excludes materials from the definition of solid waste if the materials are ''used or re-used as ingredients in an industrial process to make a product, provided the materials are not being reclaimed.'' As a result, gasification systems that manufacture synthesis gas, used exclusively in other on-going manufacturing processes, are currently not subject to RCRA jurisdiction because the materials being processed by the system are never solid wastes. Conversely, hazardous secondary materials that are processed in a gasification system to produce synthesis gas that is used as a fuel remain regulated by RCRA in accordance with 40 CFR 261.2(c)(2) and the applicable regulatory provisions in §§ 261.6 and 266.100 et seq. See 63 FR at 33791 (June 19, 1998); see also § 261.2(e)(2)(ii), which says that the exclusion for secondary materials being used or reused does not apply to secondary materials that are burned for energy recovery, used to produce fuels, or contained in fuels. Thus, gasification systems that produce synthesis gas used as a fuel are subject to RCRA jurisdiction because the materials being processed are solid wastes (assuming that the secondary materials being processed are also hazardous wastes).

In the past, we have stated that gasification systems processing hazardous waste materials are exempt from RCRA permitting because they are engaged in recycling (assuming that legitimate recycling is occurring).[24] Designating gasification systems as recycling units exempts them from RCRA permitting, but it does not exclude the material being processed from RCRA regulation. This results in the synthesis gas fuel being designated as a waste-derived fuel and would require that all parties comply with the regulations that apply to the generation, transportation, storage and handling of the hazardous waste materials.

The hazardous waste-derived synthesis gas fuel can be excluded from regulation under the provisions of the synthesis gas exclusion found at 40 CFR 261.38(b). This section provides an exclusion from the definition of solid waste for synthesis gas fuels that meet the composition specifications of the provision. This exclusion applies at the point the fuel is produced. We recognize that this results in a situation where under one use, the product synthesis gas (*i.e.*, as a chemical intermediate), is excluded, but under a different use (i.e., as a fuel) the product synthesis gas is regulated. This is problematic considering the fact that the synthesis gas product remains the same whether it's used as an ingredient in an industrial process or as fuel, and the device itself is unregulated by RCRA in either case. Furthermore, available information suggests that chemical industry gasification systems may not be dedicated to only one use for the synthesis gas, i.e., gasification systems may produce synthesis gas both for the manufacture of chemical products and as a fuel.[25] See the ''Comment Response

[23] U.S. Environmental Protection Agency. *Texaco Gasification Process—Innovative Technology Evaluation Report.* July 1995. EPA/540/R–94/514.

[24] See OSWER Directives 9441.1995(18), and 9432.1996(01).

[25] See letter from Mr. Dan Pearson, Executive Director, Texas Natural Resource Conservation Commission to Mr. Randall A. Jones, Director, Regulatory Affairs, Molten Metals Technology, Re:

Continued

Document'' in Docket Number F–98–RCSF–FFFFF for additional information on this point.

C. What Are the Conditions of the Broader Exclusion?

In today's notice, we are also requesting comment on a proposed expansion of the conditional exclusion from the definition of solid waste (discussed earlier in today's notice) to additional hazardous secondary materials.[26] Under this alternative proposal, one exclusion, under a set of expanded conditions, could be promulgated for hazardous secondary materials, including those from the petroleum industry, destined for processing in a gasification system to produce synthesis gas fuel and other chemical products. We believe that because of the unique properties of synthesis gas and the operational capabilities of gasification systems, as well as its environmental benefits, it is appropriate to suggest and solicit comment on broadening the exclusion in this way.

To expand the exclusion to address additional hazardous secondary materials, three modifications to the current proposal could be made. First, in the third condition of the proposed exclusion, i.e., land placement of products, co-products, and solid waste residuals, the number of hazardous inorganic constituents required to meet UTS would increase from six to fifteen. The addition of nine hazardous inorganic constituents, captures the entire suite of inorganic constituents regulated by RCRA in 40 CFR 268.48 and further ensures that the co-products or residues generated by the gasification system do not contain any toxic inorganics with a potential for leaching greater than allowed by the requirements of the land disposal restrictions. These additional constituents are all toxic metals, except for cyanide.

As mentioned previously, we have data showing metals will partition with the ash into the slag residue generated by the gasification process and be effectively immobilized. As we have discussed earlier, these metal constituents do not contribute to the gaseous fuel or to the gasification process. We are also proposing to add cyanide (both total and amenable) to the array of hazardous inorganic constituents being regulated. It is believed that cyanide will effectively dissociate in the gasification process contributing to the production of the synthesis gas. As such, there should not be any measurable quantities of cyanide in the co-products or residuals. The expansion of this condition to include all the RCRA toxic inorganics ensures that the gasification system is being operated for the production purpose claimed. As previously discussed, part of the operating premise of gasification is that it preferentially converts organic matter in secondary materials into fuels (or intermediates) while removing metals from raw synthesis gas and immobilizing those metals in an inert matrix. This condition is a means of quantifying this premise.

The second modification would be the addition of a fifth condition. This condition would require each hazardous secondary material processed in a gasification system to contain greater than 20% by weight total organic carbon (TOC). The addition of this condition ensures that every secondary material processed in a gasification system contributes to the manufacture of the synthesis gas and so eliminates an incentive to claim to be performing ''gasification'' for the real purpose of avoiding hazardous waste treatment. The 20% TOC threshold approximates the lowest value material known to be effectively processed in a gasification system for synthesis fuel production. The 20% TOC threshold represents the level which we believe is reasonable both economically and technologically to ensure legitimate manufacturing by the gasification system. The Agency recognizes that by including such a condition, it could restrict certain hazardous secondary material from being processed in a gasification system under the exclusion. However, without a complete understanding of these activities and knowledge of the types of hazardous secondary materials that could be processed through such an operation, we believe that with this broader exclusion, a TOC threshold of 20% is a necessary condition to ensure that legitimate manufacturing activities are taking place. Unlike hazardous oil-bearing secondary materials from the petroleum refining industry, little information exists that provides a comprehensive assessment of gasification's performance on other RCRA hazardous waste. (See: *A Comparison of Gasification and Incineration of Hazardous Waste—Final Report.* United States Department of Energy. DCN 99.803931.02. March 30, 2000). However, the Agency specifically solicits comment on the appropriateness of requiring each hazardous secondary material to have a 20% by weight TOC content. In addition, the Agency also requests comment on alternative indicators, other than TOC, that could be used to ensure that hazardous secondary materials are used legitimately in gasification systems to manufacture synthesis gas fuel and other products.

The third or final modification to the exclusion would be a prohibition on the use of any mercury-containing hazardous secondary material into the gasification system for the manufacturing of synthesis gas. As discussed previously in the preamble (See section V. D—What Air Emissions Result From Gasification Systems?), the Agency is concerned with the potential for highly volatile metals, in particular mercury, to be emitted out the stack of devices (i.e., turbines) firing synthesis gas produced by a gasification system. As discussed earlier, this is not a concern, for the petroleum refining exclusion being proposed today, because hazardous oil-bearing secondary materials from the petroleum refining industry are not expected to contain significant quantities of mercury. However, the Agency is concerned that the specification for the synthesis gas exclusion (see 40 CFR 261.38(b)) which requires that the synthesis gas contain less than 1 part per million by volume of each RCRA metal, including mercury, may not represent the concentration of metals that realistically exists in synthesis gas derived from hazardous waste.[27] To that end, the Agency proposes a sixth condition to the broader exclusion—a prohibition on the use of hazardous secondary materials containing mercury. This prohibition would exclude, from processing in a gasification system, any hazardous waste which exhibits the characteristic of mercury and any hazardous waste for which mercury was a basis for listing under 40 CFR part 261, appendix VII.

Proposed Catalytic Extraction Processing (CEP) Facility—Bay City, Texas. February 27, 1996.

[26] Information available to the Agency suggests that there are other secondary materials amenable to gasification. For example, municipal waste and sewage sludge, contaminated soil, tires, and coal ash may be gasified to produce synthesis gas and other valuable products. Used oil, is another example of a material that the Agency believes can be processed in a gasification system to produce synthesis gas (i.e., fuel). The reader is referred to the docket supporting this proposal for additional information.

[27] The Agency conducted a preliminary analysis on determining how much mercury can potentially be emitted from synthesis gas that is combusted in a turbine if the synthesis gas contains mercury at the 1ppmv specification level. It was determined that approximately 1.04 tons of mercury could potentially be released from the use of 1 trillion BTU of synthesis gas at the specification levels. If you would compare this to coal for a similar 1 trillion BTU with a concentration of 0.1ppmw of mercury, 0.004 tons of mercury could be potentially released.

This would include the RCRA hazardous wastes D009, K071, K106, F039, U151, P065 and P092. The Agency also solicits comment on expanding this prohibition to include other highly volatile metals.

With these modifications, a broader exclusion is being suggested, which the Agency believes should ensure that the processing of excluded material(s) in a gasification system is a legitimate fuel manufacturing activity that converts components of hazardous carbonaceous material into fuel and into non-fuel chemical by-products without containing high levels of non-contributing toxic components. As such, the option discussed here conditionally excludes hazardous secondary materials from the definition of solid waste, at the point they are generated, when processed in a gasification system provided: (1) Each hazardous secondary material processed in the system contains greater than 20% by weight total organic carbon; (2) the system does not process any hazardous waste which exhibits the characteristic of mercury and any hazardous waste for which mercury is a basis for listing under 40 CFR part 261, appendix VII as hazardous secondary materials; (3) the system meets the definition of a gasification system; (4) the system generates a synthesis gas fuel that meets the specifications of exempted synthesis gas; (5) the materials generated by the gasification system are not placed on the land if they exceed the nonwastewater UTS for antimony, arsenic, barium, beryllium, cadmium, chromium (total), cyanides (total), cyanides (amenable), lead, mercury, nickel, selenium, silver, thallium, and vanadium; and (6) the excluded materials are not placed on the land or speculatively accumulated prior to insertion into the gasification system.

While the Agency requests comment on all aspects of this proposed rulemaking, we are specifically soliciting comment, information, and data on:

- The performance of gasification on other hazardous secondary materials (that are currently hazardous waste) known to contain low concentrations of metals, e.g., hazardous secondary materials that are generated outside SIC 2911, such as spent potliner from the primary aluminum industry (K088).
- The performance of gasification on certain hazardous secondary materials that contain high concentrations of non-contributing components (namely metals or halides).
- Potential partitioning of metals to the product synthesis gas and their subsequent release during the combustion of the synthesis gas in turbines to produce electricity or steam.[28]
- Whether the Agency should develop a set of general criteria for the types of hazardous secondary materials that would be appropriate for gasification, and what those criteria might be.[29]
- Whether the Agency should require specific design and operating conditions for all components of the gasification systems, including the gas cleanup or polishing systems and the secondary product recovery systems and what they would be.
- The market for building and operating gasification systems in the future, including future capacity for gasification.
- The market for synthesis gas and other products from gasification, including non-fuel products recovered in the process.

Finally, we recognize that in order to achieve the benefits of gasification, secondary materials must be safely transported and handled prior to delivery at the gasification facility, and actually delivered for use as a feedstock to the facilities. We note that a number of factors work towards safe delivery, including Department of Transportation regulations for hazardous materials, and the threat of legal liabilities under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) for spilled or disposed hazardous materials. Further, there are currently only a very few gasification facilities that have indicated any interest in accepting hazardous secondary materials, and they have indicated they must have contracts for acceptance of materials, including technical specifications that limit the types of materials that the particular unit may accept as a feedstock. Also, as explained in more detail in the next section, current regulation requires a person claiming an exclusion to produce appropriate documentation to show he or she actually meets the terms of the exclusion, which may mean, for example, producing contracts with a gasification facility, records of shipment and delivery of materials to the gasification system.

The RCRA hazardous waste universe is broad with over 18,000 large quantity generators and many more small quantity generators. Concerns have been raised that generators, perhaps working with waste brokers, may falsely claim to be sending material to gasification systems for processing as a feedstock, when, in fact, they are simply trying to evade regulation. Therefore, the Agency is specifically seeking comment (as we note in the next section) on whether some sort of mechanism, beyond current regulations, should be imposed to ensure that these secondary materials arrive at the gasification facility and are used as feedstock. Also, we request comment on whether an exclusion should apply when brokers are involved, and if so, whether the exclusion should apply in that case beginning only when the material is shipped from the broker to the gasification facility (i.e., the broker would be regulated under the RCRA rules).

In any event, should improper management occur, despite the factors described above, the exclusion proposed today would not apply and parties would be subject to enforcement action, possibly leading to criminal penalties. We seek comment on the checks and balances described above and whether they adequately address the concerns over possible improper use of the exclusion.

D. What Are the Proposed Recordkeeping and Reporting Requirements for This Broader Exclusion?

As with the petroleum refining conditional exclusion previously discussed in this preamble, there are no specific recordkeeping and reporting requirements specifically associated with this broader conditional exclusion. However, we are seeking comment as to whether any records and/or reporting are necessary in addition to the current documentation requirement associated with 40 CFR 261.2(f) for materials that would be excluded from the definition of solid waste. 40 CFR 261.2(f) does not contain specific recordkeeping requirements but it does require the respondent to bear the burden of showing, through appropriate documentation, that the excluded material is being processed in a manner that meets the conditions in the claimed exclusion. We offer this information again as a reminder and are not reopening this provision for comment.

[28] To address this issue, we are requesting comment on a number of approaches to revise the synthesis gas specifications found at 40 CFR 261.38(b). In particular, the Agency is interested in soliciting comment on the specifications for highly volatile metals. The approaches we are considering can be found in the docket of today's proposal entitled Options to Revise the Synthesis Gas Specification. We specifically request comment on this document.

[29] States could then develop procedures for identifying specific waste streams that are excluded, using either rulemaking procedures or a variance process. A variance process might be similar to the provisions already found at 40 CFR 260.31 for certain exclusions from the definition of solid waste.

In this broader exclusion, we are proposing to exclude hazardous secondary materials, meeting certain conditions, from the definition of solid waste whether the gasification system is located on-site or off-site. We again note that allowing the secondary streams to go to facilities off-site is somewhat different than the structure of 40 CFR 261.4(a)(12)(i), which the Agency has used as a model for today's proposal. 40 CFR 261.4(a)(12)(i) does not specify recordkeeping requirements, except 40 CFR 261.2(f) applies to respondents claiming the exclusion.

In this broader exclusion, however, we believe that excluding materials processed in gasification systems operating independent (or off-site) is appropriate because gasification is a process employed by industry to manufacture synthesis gas. The purpose and operation of the system remains the same whether the system is operated at the same location that the secondary materials are generated or elsewhere. As with the petroleum refining conditional exclusion being proposed today, we are again requesting comment on whether further clarification of recordkeeping and reporting requirements is necessary in addition to the 40 CFR 261.2(f) documentation requirement to ensure that excluded materials are appropriately processed. The purpose of recordkeeping, recording and documentation would be to ensure: (1) That the excluded materials are indeed fed to a gasification facility; (2) each hazardous secondary materials has a TOC content of at least 20%; (3) no mercury-containing hazardous wastes are processed in the gasification system; (4) the materials are handled appropriately prior to introduction to the gasification system; (5) the synthesis gas fuel ultimately produced meets the synthesis gas specifications; (6) the inorganic residues produced by the gasification system that are placed on the land do not exceed the nonwastewater UTS for the inorganic constituents found in 40 CFR 268.48; and (7) the residue does not exhibit a hazardous waste characteristic under subpart C, part 261. As mentioned previously, the proposed rule, ''Requirements for Zinc Fertilizers Made From Recycled Hazardous Secondary Materials'' (See 65 FR 70954, November 28, 2000) provides an example of additional recordkeeping and reporting requirements that could be used to verify that the conditions of an exclusion are met.

EPA is interested in obtaining comments on what specific records would be necessary to document whether: (1) The synthesis gas generated from a gasification system, using excluded secondary materials, meets the synthesis gas fuel specification under 40 CFR 261.38(b); (2) the residue generated from the gasification system meets the UTS levels in 40 CFR 268.48 for specific inorganic metals; and (3) the residue generated from the gasification system fails to exhibit a hazardous waste characteristic as defined in part 261, subpart C. We are also interested in receiving comments that explain the different types of information industry operators currently keep to demonstrate compliance with other solid waste exclusions (such as 40 CFR 261.(a)(12)(i)) that rely on 40 CFR 261.2(f) to demonstrate compliance with the conditions of the exclusions and whether such information is routinely maintained as a type of industry practice.

IX. State Authorization

A. Statutory Authority

Under section 3006 of RCRA, EPA may authorize qualified States to administer the RCRA hazardous waste program within the State. See 40 CFR part 271 for the overall standards and requirements for authorization. Following authorization, the State requirements authorized by EPA apply in lieu of equivalent Federal requirements and become Federally enforceable as requirements of RCRA. EPA maintains independent authority to bring enforcement actions under RCRA sections 3007, 3008, 3013, and 7003. Authorized States also have independent authority to bring enforcement actions under State law. A State may receive authorization by following the approval process described under 40 CFR part part 271.

After a State receives initial authorization, new Federal requirements promulgated under RCRA authority existing prior to the 1984 Hazardous and Solid Waste Amendments (HSWA) do not apply in that State until the State adopts and receives authorization for equivalent State requirements. The State must adopt such requirements to maintain authorization.

In contrast, under RCRA section 3006(g) (42 U.S.C. 6926(g)), new Federal requirements and prohibitions imposed pursuant to HSWA provisions take effect in authorized States at the same time that they take effect in unauthorized States. Although authorized States are still required to update their hazardous waste programs to remain equivalent to the Federal program, EPA carries out HSWA requirements and prohibitions in authorized States, including the issuance of new permits implementing those requirements, until EPA authorizes the State to do so. Authorized States are required to modify their programs only when EPA promulgates Federal requirements that are more stringent or broader in scope than existing Federal requirements. RCRA section 3009 allows the States to impose standards more stringent than those in the Federal program. See also 40 CFR 271.1(i). Therefore, authorized States are not required to adopt Federal regulations, both HSWA and non-HSWA, that are considered less stringent.

B. Effect on State Authorization

Today's proposal would be promulgated pursuant to non-HSWA authority, and contains provisions that are less stringent than the current Federal program. The conditional exclusion for hazardous waste processed in a gasification system would be less stringent. Consequently, States would not be required to adopt the proposed exclusion as a condition of authorization of their hazardous waste programs.

X. Administrative Assessments

A. Executive Order 12866

Under Executive Order 12866, (58 FR 51735 (October 4, 1993)) the Agency must determine whether a regulatory action is ''significant'' and therefore subject to OMB review and the requirements of the Executive Order. The Order defines ''significant regulatory action'' as one that is likely to result in a rule that may: (1) Have an annual effect on the economy of $100 million or more or adversely affect, in a material way, the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities; (2) create serious inconsistency or otherwise interfere with an action taken or planned by another agency; (3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients; or (4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

Pursuant to the terms of Executive Order 12866, it has been determined that this rule is a ''significant regulatory action'' because of novel legal or policy issues. As such, this action was submitted for OMB review. Changes made in response to OMB suggestions or

recommendations will be documented in the public record.

Implementation of this rule may result in considerable positive economic impacts and positive net benefits. Benefits derive from cost savings and resource conservation, and potential environmental quality improvements. There are no costs associated with this rulemaking, outside of the costs of regulatory development.

Economic Impacts

The proposal discusses limiting the exclusion to facilities in the petroleum refining industry, defined under the Census Bureaus's Standard Industrial Classification code 2911. This industry includes the production of petroleum products through distillation, fractionation, and/or cracking of crude oil and unfinished petroleum derivatives. Total 1999 employment in the sector was 63,500 and the value of products estimated at $170 billion.

Data submitted to EPA in Biennial Reports shows 172 refineries generated between 7 and 10 million tons of hazardous waste in 1997. These refineries are currently treating and disposing of their wastes in compliance with RCRA Subtitle C requirements for management, treatment, and disposal. We estimate that approximately 20–25% of this waste is being recycled to petroleum cokers. Some waste is land disposed. Much of the remaining waste is currently used for fuel (at an average cost of $75 per ton) or incinerated (which may cost between $320 and $730 for liquids, sludges, and solids that are not severely contaminated). Disposal of treatment residuals adds another $60–130 per ton to waste management costs. The American Petroleum Institute has estimated that refineries spent a total of $210 million in 1999 for waste management.

Significant uncertainties make it difficult to estimate the impacts of this rulemaking. Because so few facilities are gasifying hazardous wastes, there is not a robust body of data on the operational characteristics of the devices with these feedstocks. We do not have good information on the proportion of these secondary materials that could efficiently serve as supplements to the primary feedstocks of coal and petroleum coke, nor do we have a clear idea of the types of wastes that might be amenable to the process; therefore we are requesting comment on these issue with this proposal.

In addition, we believe that an exclusion for all refinery wastes would foster competition in the market for these secondary materials. Since these materials are replacing (to some extent) other feedstocks for the gasification system, tipping fees for these materials could be charged. We have not attempted to model this market, nor determine supply and demand or prices. It is clear, however, that revenue streams from tipping fees would be bounded by current management costs.

EPA is aware of four refineries who are currently gasifying some residuals; all refineries are eligible to take advantage of this exclusion. It does seem likely that other refiners would be interested in reducing their waste management costs by sending wastes to gasification systems, whether to on-site captive facilities or to off-site gasification facilities. Similarly, these units should be eager to gain tipping fees for feedstocks. Therefore, transportation costs and the technical specification requirements for gasification feedstocks are likely to be the chief limiting factors in moving petroleum wastes into these systems. Within those constraints, this proposal could lead to a substantial reduction in that $210 million spent by refineries on waste management. Concomitantly, gasifiers would receive economic gains, with losses to the hazardous waste treatment and disposal industry.

Costs and Benefits

Costs associated with this rule are expected to be minimal, including time to read the rule, residual (i.e., slag) testing and other tasks to meet the conditions. Losses to the hazardous waste treatment and disposal industry are expected to constitute transfers to generators and gasification owner/operators; although these may be significant impacts, they are not true economic costs. Therefore, the direction of social benefits from this proposal can only be positive. These uncertainties and assumptions, therefore, do not affect the Agency's assessment of positive net benefits stemming from this rule; they only affect the magnitude of that net benefit.

Benefits From This Rule Are Likely To Include

Cost savings: Savings in treatment and disposal costs for wastes. The magnitude of these savings is difficult to project, but the upper bound would be the $210 million that refineries are currently spending on waste management. Depending on how markets and prices develop, this rule could also result in reduced costs of electricity, and reduced costs for chemical intermediates that gasification systems produce. In addition, both generators of refinery wastes and Federal/state RCRA regulating agencies are expected to save administrative burden and costs because of this regulatory change.

Resource conservation benefits: We project that this rule will facilitate gasifiers in substituting secondary materials (formerly disposed as wastes) for coal. To the extent that this rule induces power generators to burn synthesis gas instead of coal, there is the potential for additional resource conservation benefits. Potential environmental benefits exist if that substitution takes place, since synthesis gas is a much cleaner fuel than coal and produces less harmful emissions.

More detail on costs and benefits of the rulemaking are provided in the memorandum entitled, *Regulatory Impacts of Proposed Exclusions of Petroleum Refinery Wastes,* which accompanies this proposal.

B. Regulatory Flexibility Act (RFA), as Amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), 5 U.S.C. 601 et. seq.

The RFA generally requires an agency to prepare a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements under the Administrative Procedure Act or any other statute unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small organizations, and small governmental jurisdictions.

For purposes of assessing the impacts of today's rule on small entities, small entity is defined as: (1) A small business; (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of less than 50,000; and (3) a small organization that is any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.

After considering the economic impacts of today's proposed rule on small entities, I certify that this action will not have a significant economic impact on a substantial number of small entities. In determining whether a rule has a significant economic impact on a substantial number of small entities, the impact of concern is any significant *adverse* economic impact on small entities, since the primary purpose of the regulatory flexibility analyses is to identify and address regulatory alternatives ''which minimize any significant economic impact of the proposed rule on small entities.'' 5 U.S.C. 603 and 604. Thus, an agency may certify that a rule will not have a

significant economic impact on a substantial number of small entities if the rule relieves regulatory burden, or otherwise has a positive economic effect on all of the small entities subject to the rule. This proposal is de-regulatory in nature. The primary industry affected by this rule is the petroleum refining industry, and it will not cause adverse effects to this industry. We have therefore concluded that today's proposed rule will relieve regulatory burden for all small entities. We continue to be interested in the potential impacts of the proposed rule on small entities and welcome comments on issues related to such impacts.

C. Unfunded Mandates Reform Act

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Public Law 104–4, establishes requirements for Federal Agencies to assess the effects of their regulatory actions on State, local, and tribal governments and the private sector. Under section 202 of the UMRA, EPA must prepare a written analysis, including a cost-benefit analysis, for proposed and final rules with ''Federal mandates'' that may result in expenditures to State, local, and tribal governments, in the aggregate, or to the private sector, of $100 million or more in any one year. If a written statement is needed, section 205 of the UMRA generally requires EPA to identify and consider a reasonable number of regulatory alternatives. Under section 205, EPA must adopt the least costly, most cost-effective or least burdensome alternative that achieves the objectives of the rule, unless the Administrator publishes with the final rule an explanation why that alternative was not adopted. The provisions of section 205 do not apply when they are inconsistent with applicable law.

Today's proposed rule contains no Federal mandates (under the regulatory provisions of Title II of UMRA) for State, local, or tribal governments or the private sector. This is because today's proposed rule is de-regulatory and imposes no enforceable duty on any State, local or tribal governments or the private sector. Thus, today's rule is not subject to the requirements of sections 202, 204 and 205 of UMRA.

Before EPA establishes any regulatory requirements that may significantly or uniquely affect small governments, including tribal governments, it must have developed under section 203 of UMRA a small government agency plan. The plan must provide for notifying potentially affected small governments, enabling officials of affected small governments to have meaningful and timely input in the development of EPA regulatory proposals with significant Federal intergovernmental mandates, and informing, educating, and advising small governments on compliance with the regulatory requirements. EPA has determined that this rule will not significantly or uniquely affect small governments. This is because today's proposed rule is de-regulatory and imposes no enforceable duty on any State, local or tribal governments or the private sector. Today's rule is not, therefore, subject to the requirements of section 203 of UMRA.

D. Federalism—Applicability of Executive Order 13132

Executive Order 13132, entitled ''Federalism'' (64 FR 43255, August 10, 1999), requires EPA to develop an accountable process to ensure ''meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications.'' ''Policies that have federalism implications'' is defined in the Executive Order to include regulations that have ''substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.''

This proposed rule does not have federalism implications. It will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. This is because today's proposed rule is de-regulatory and imposes no enforceable duty on any State, local or tribal governments or the private sector. Thus, Executive Order 13132 does not apply to this rule.

In the spirit of Executive Order 13132, and consistent with EPA policy to promote communications between EPA and State and local governments, EPA specifically solicits comment on this proposed rule from State and local officials.

E. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments

Executive Order 13175, entitled ''Consultation and Coordination with Indian Tribal Governments'' (65 FR 67249, November 6, 2000), requires EPA to develop an accountable process to ensure ''meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications.'' ''Policies that have tribal implications'' is defined in the Executive Order to include regulations that have ''substantial direct effects on one or more Indian tribes, on the relationship between the Federal government and the Indian tribes, or on the distribution of power and responsibilities between the Federal government and Indian tribes.''

This proposed rule does not have tribal implications. It will not have substantial direct effects on tribal governments, on the relationship between the Federal government and Indian tribes, or on the distribution of power and responsibilities between the Federal government and Indian tribes, as specified in Executive Order 13175. This is because today's proposed rule is de-regulatory and imposes no enforceable duty on any State, local or tribal governments or the private sector. Thus, Executive Order 13175 does not apply to this rule.

In the spirit of Executive Order 13175, and consistent with EPA policy to promote communications between EPA and tribal governments, EPA specifically solicits additional comment on this proposed rule from tribal officials.

F. Executive Order 13045: Protection of Children from Environmental Risks and Safety Risks

The Executive Order 13045, entitled ''Protection of Children from Environmental Health Risks and Safety Risks (62 FR 19885, April 23, 1997) applies to any rule that EPA determines (1) is ''economically significant'' as defined under Executive Order 12866, and (2) the environmental health or safety risk addressed by the rule has a disproportionate effect on children. If the regulatory action meets both criteria, the Agency must evaluate the environmental health or safety effects of the planned rule on children; and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives. This proposed rule is not subject to the Executive Order because it is not economically significant as defined in Executive Order 12866, and because the Agency does not have reason to believe the environmental health or safety risks addressed by this action present a disproportionate risk to children. The public is invited to submit or identify peer-reviewed studies and data, of which the agency may not be aware.

G. National Technology Transfer and Advancement Act of 1995

Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (''NTTAA''), Public Law 104–113, section 12(d) (15 U.S.C. 272

note) directs EPA to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standards bodies. The NTTAA directs EPA to provide Congress, through OMB, explanations when the Agency decides not to use available and applicable voluntary consensus standards. The proposed rulemaking involves technical standards. Therefore, the Agency conducted a search to identify potentially applicable voluntary consensus standards. However, we identified no such standards. Therefore, EPA proposes to use the constituent specification limits of the synthesis gas exclusion found at 40 CFR 261.38(b) to establish the legitimacy of the fuel, and the universal treatment standards for chromium, lead, nickel, vanadium, arsenic, and antimony to establish the legitimacy of products placed on the land.

EPA welcomes comments on this aspect of the proposed rulemaking and, specifically, invites the public to identify potentially-applicable voluntary consensus standards and to explain why such standards should be used in this regulation.

H. Executive Order 12898

EPA is committed to addressing environmental justice concerns and is assuming a leadership role in environmental justice initiatives to enhance environmental quality for all populations in the United States. The Agency's goals are to ensure that no segment of the population, regardless of race, color, national origin, or income bears disproportionately high and adverse human health or environmental impacts as a result of EPA's policies, programs, and activities, and that all people live in safe and healthful environments. In response to Executive Order 12898 and to concerns voiced by many groups outside the Agency, EPA's Office of Solid Waste and Emergency Response formed an Environmental Justice Task Force to analyze the array of environmental justice issues specific to waste programs and to develop an overall strategy to identify and address these issues (OSWER Directive No. 9200.3–17).

Today's proposed rule pertains to hazardous oil-bearing secondary materials processed in a gasification system to produce valuable products. It is not certain whether the environmental problems addressed by this rule could disproportionately affect minority or low-income communities. Today's proposed rule is intended to reduce risks of excluded hazardous secondary materials as proposed, and to benefit all populations. As such, this rule is not expected to cause any disproportionately high and adverse impacts to minority or low-income communities versus non-minority or affluent communities.

The wastes proposed for exclusion will be subject to protective conditions regardless of where they are generated and regardless of where they may be managed. Although the Agency understands that this proposed exclusion, if finalized, may affect where these wastes are managed in the future, the Agency's decision to conditionally exclude these materials is independent of any decisions regarding the location of waste generators and the siting of waste gasification facilities. Today's proposed rule will reduce loadings of oil-bearing wastes to the soil, and reduce emissions to the atmosphere. EPA believes that these provisions of the proposal will benefit all populations in the United States, including low-income and minority communities.

We encourage all stakeholders including members of the environmental justice community and members of the regulated community to provide comments or further information related to potential environmental justice concerns or impacts, including information and data on facilities that have evaluated potential ecological and human health impacts (taking into account subsistence patterns and sensitive populations) to minority or low-income communities.

I. Executive Order 13211 (Energy Effects)

This proposal is not a ''significant energy action'' as defined in Executive Order 13211, ''Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use'' (66 FR 28355 (May 22, 2001)) because it is not likely to have a significant adverse effect on the supply, distribution, or use of energy. We have concluded that this proposal will not have any adverse energy effects. It is a de-regulatory proposal that will primarily affect the petroleum refinery industry (SIC classification 2911). If adopted, the proposal will promote the practice of petroleum refineries processing their hazardous oil-bearing secondary material (materials historically classified as hazardous waste) in gasification systems to produce synthesis gas fuel. Synthesis gas fuel is an alternative fuel composed primarily of hydrogen and carbon monoxide. When used to produce electricity in combined cycle turbines, its use allows power generators to produce electricity more efficiently than other forms of fossil fuel based electricity production.

J. Paperwork Reduction Act

This action does not impose an information collection burden under the provisions of the Paperwork Reduction Act, 44 U.S.C. 3501 et. seq. There are no information collection requirements for this proposed rule that require an ICR. Furthermore, there are no paperwork requirements for entities affected by this proposal. Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information. An Agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for EPA's regulations are listed in 40 CFR part 9 and 48 CFR chapter 15.

List of Subjects

40 CFR Part 260

Environmental protection, Administrative practice and procedure, Confidential business information, Hazardous waste, Reporting and recordkeeping requirements.

40 CFR Part 261

Environmental protection, Hazardous waste, Recycling, Reporting and recordkeeping requirements.

Dated: March 19, 2002.

Christine Todd Whitman,

Administrator.

For the reasons set out in the preamble. Chapter I of title 40 of the Code of Federal Regulations is proposed to be amended as follows:

PART 260—HAZARDOUS WASTE MANAGEMENT SYSTEM

1. The authority citation for part 260 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6921–6927, 6930, 6934, 6935, 6937–6939, and 6974.

2. Section 260.10 is amended by adding a new definition for ''gasification system'' in alphabetical order to read as follows:

§ 260.10 Definitions.

* * * * *

Gasification system means an enclosed thermal device and associated gas cleaning system or systems that does not meet the definition of an incinerator or industrial furnace (found at §§ 260.10), and that:

(1) Limits oxygen concentrations in the enclosed thermal device to prevent the full oxidization of thermally disassociated gaseous compounds;

(2) Utilizes a gas cleanup system or systems designed to remove contaminants from the partially oxidized gas that do not contribute to its fuel value;

(3) Slags inorganic feed materials at temperatures above 2000°F ;

(4) Produces a synthesis gas; and

(5) Is equipped with monitoring devices that ensure the quality of the synthesis gas produced by the gasification system.

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PART 261—IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

1. The authority citation for part 261 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6921, 6922, and 6938.

2. Section 261.4 is amended by adding paragraph (a)(12)(iii) to read as follows:

§ 261.4 Exclusions.

(a) * * *

(12) * * *

(iii)(A) Hazardous oil-bearing secondary materials (i.e., sludges, byproducts, or spent materials) that are generated at a petroleum refinery (SIC 2911) and inserted into a gasification system (defined in § 260.10 of this chapter) to produce a synthesis gas used as an ingredient in chemical manufacture or as a fuel, subject to the conditions of paragraph (a)(12)(iii)(B) of this section.

(B) Conditions.

(*1*) Synthesis gas used as a fuel must meet the specifications of § 261.38(b) of this part;

(*2*) The hazardous oil-bearing secondary material must not be placed on the land prior to insertion in the gasification system;

(*3*) The hazardous oil-bearing secondary material must not be speculatively accumulated prior to insertion in the gasification system, unless a variance has been granted under § 260.31(a) of this chapter; and

(*4*) Any materials (by-products, sludges, ''frits'', bottoms) generated by the gasification system that are excluded under paragraph (a)(12)(iii) that are placed on the land must meet the non-wastewater Universal Treatment Standards for chromium, lead, nickel, vanadium, arsenic, and antimony found at § 268.48 of this chapter.

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