

**Table VIII-4 Estimated Economic Impact of the Proposed Ergonomics Standard on All Industries**

SIC	Industry	For All Establishments				For Affected Establishments (Those with MSDs)				
		Annualized Compliance Costs for all Establishments (\$1,000s)	Revenues for all Establishments (\$1,000s)	Profits as a Percentage of Revenues	Annualized Compliance Costs as a Percentage of Revenues	Total Number of Affected Establishments over 10 years	Compliance Cost per Establishment	Annualized Costs as a Percentage of Revenues	Costs as a Percentage of Profits	Annualized Cost per Affected Establishment
7820	Motion picture dist.	\$1,807,346	\$18,051,508	5.8%	0.01	687	\$1,241	0.02	0.37	\$2,631
7830	Motion picture theaters	\$6,213,923	\$7,023,730	5.8%	0.09	4,168	\$946	0.14	2.40	\$1,491
7840	Video tape rental	\$5,428,968	\$6,459,177	7.2%	0.08	3,261	\$261	0.17	2.34	\$522
7910	Dance studios & schools	\$1,283,830	\$863,722	4.1%	0.15	3,413	\$224	0.41	10.05	\$623
7920	Producers, orch., entertainers	\$5,448,464	\$16,444,890	3.6%	0.03	3,468	\$324	0.16	4.47	\$1,571
7930	Bowling centers	\$1,496,184	\$2,944,692	4.2%	0.05	1,233,077	\$261	0.14	3.38	\$730
7940	Commercial sports	\$5,987,571	\$12,089,744	3.6%	0.05	3,455,231	\$1,257	0.16	4.48	\$4,091
7990	Misc. recreation services	\$53,034,852	\$55,776,035	4.2%	0.10	\$2,242,593	\$858	0.32	7.62	\$2,888
8010	Offices of medical doctors	\$45,984,511	\$186,598,097	6.3%	0.02	\$11,755,680	\$246	0.13	2.14	\$1,347
8020	Dentists offices and clinics	\$9,425,820	\$46,131,244	11.3%	0.02	\$5,212,831	\$83	0.14	1.27	\$583
8030	Osteopathic physicians	\$434,736	\$4,582,835	5.4%	0.01	\$247,473	\$48	0.2	1.98	\$537
8040	Other health practitioners	\$13,653,456	\$25,053,745	6.5%	0.05	\$1,628,493	\$161	0.25	3.90	\$749
8050	Nursing & personal care fac.	\$158,995,016	\$63,625,522	4.3%	0.25	\$2,735,897	\$6,622	0.54	12.47	\$14,209
8060	Hospitals	\$345,171,125	\$343,314,509	5.1%	0.10	\$17,509,640	\$47,401	0.22	2.80	\$2,404
8070	Med. & dental labs	\$6,311,199	\$16,543,625	7.9%	0.04	\$1,306,946	\$414	0.22	2.80	\$2,404
8080	Home health care services	\$51,514,478	\$27,690,537	3.5%	0.19	\$969,169	\$3,198	0.50	14.36	\$8,643
8090	Hlth & allied serv., n.e.c.	\$15,136,082	\$26,036,633	11.0%	0.06	\$2,864,030	\$726	0.18	1.61	\$2,213
8110	Legal services	\$14,827,269	\$116,202,122	5.0%	0.01	\$5,810,106	\$88	0.3	2.98	\$1,030
8210	Elem. & secondary schools	\$11,922,661	\$30,967,943	5.9%	0.04	\$1,827,109	\$662	0.7	2.59	\$2,629
8220	Colleges & universities	\$36,950,253	\$73,194,239	6.2%	0.05	\$4,538,043	\$10,087	0.19	3.06	\$37,888
8230	Libraries	\$147,528	\$846,367	5.9%	0.02	\$49,936	\$66	0.23	3.91	\$868
8240	Vocational schools	\$659,256	\$6,372,931	5.9%	0.01	\$373,053	\$97	0.12	2.04	\$1,118
8290	Schools, n.e.c.	\$1,001,157	\$7,437,108	5.0%	0.01	\$371,855	\$65	0.16	3.11	\$750
8320	Individual & fam. services	\$40,354,501	\$25,266,265	4.1%	0.16	\$1,035,917	\$937	0.43	10.39	\$2,501
8330	Job train. & related serv.	\$18,644,738	\$8,830,464	2.5%	0.21	\$220,762	\$2,046	0.51	20.29	\$4,915
8350	Child day care services	\$13,661,574	\$12,459,047	3.8%	0.11	\$473,444	\$255	0.33	8.60	\$759
8360	Residential care	\$51,440,382	\$20,174,955	2.6%	0.25	\$524,549	\$1,788	0.51	19.52	\$3,560
8390	Social services, n.e.c.	\$9,045,724	\$22,170,593	3.4%	0.04	\$753,800	\$576	0.16	4.60	\$2,207
8410	Museums & art galleries	\$2,425,886	\$3,660,267	6.1%	0.07	\$223,276	\$537	0.29	4.72	\$2,332
8420	Bot. & zooling. gardens	\$1,164,551	\$906,476	3.3%	0.13	\$55,295	\$1,991	0.43	7.09	\$6,700
8450	Business associations	\$1,512,126	\$14,242,520	3.3%	0.01	\$470,003	\$96	0.10	2.98	\$888
8620	Prof. organizations	\$758,809	\$7,845,620	4.8%	0.01	\$376,590	\$108	0.09	1.93	\$1,033
8630	Labor organizations	\$1,224,039	\$11,731,332	6.4%	0.01	\$790,805	\$63	0.12	1.86	\$714
8640	Civic & social assoc.	\$10,878,058	\$15,241,892	3.4%	0.07	\$518,224	\$294	0.32	9.36	\$1,313
8650	Political organizations	\$340,427	\$69,974	6.4%	0.03	\$69,974	\$132	0.21	3.30	\$895
8660	Religious organizations	\$6,506,177	\$57,709,235	9.1%	0.01	\$5,251,540	\$41	0.23	2.53	\$838
8690	Membership orgs., n.e.c.	\$4,762,801	\$8,262,479	6.4%	0.06	\$528,799	\$525	0.26	4.05	\$2,358
8710	Eng. and arch. services	\$18,663,467	\$98,926,133	4.2%	0.02	\$4,154,898	\$237	0.13	3.19	\$1,680
8720	Accounting, auditing, & bkkeeping	\$18,023,796	\$49,834,103	12.0%	0.04	\$5,980,092	\$214	0.30	2.52	\$1,792
8730	Research & testing services	\$33,709,695	\$47,185,349	3.4%	0.05	\$1,604,302	\$1,218	0.20	6.02	\$4,960
8740	Management & pub. relations	\$98,515,329	\$96,714,846	6.2%	0.04	\$5,996,220	\$405	0.27	4.42	\$2,787
8990	Services, n.e.c.	\$7,614,094	\$13,388,980	5.0%	0.06	\$669,449	\$442	0.15	3.10	\$1,203
<b>Total</b>		<b>\$4,232,197,861</b>	<b>\$15,802,862,958</b>		<b>0.03</b>	<b>\$766,327,987</b>	<b>\$717</b>	<b>0.10</b>	<b>2.06</b>	<b>\$2,669</b>

Source: Office of Regulatory Analysis.  
 Revenue data is from U.S. Dept. of Commerce, Bureau of Census. Compliance costs are from Chapter 5 of this Preliminary Economic Analysis. Profit Rates are from, in most instances, Robert Morris Associates' "RMA Studies."  
 [a] Excludes SIC 3731.  
 [b] A profit rate of 5 percent of revenues (the average rate for all establishments) was estimated for SICs 910,920,970,810, and 8990; a profit rate of 4 percent was estimated for SICs 2280, 2310, and 5620, since they are recognized as industries with lower than average margins.

**Table VIII-4 Estimated Economic Impact of the Proposed Ergonomics Standard on All Industries and all Affected Establishments**

SIC	Industry	For All Establishments			For Affected Establishments (Those with MSDs)			Annualized Annualized Annualized			
		Annualized Compliance Costs for all Establishments (\$1,000s)	Revenues for all Establishments (\$1,000s)	Profits as a Percentage of Revenues	Annualized Compliance Costs as a Percentage of Revenues	Total Number of Affected Establishments over 10 years	Annualized Annualized Annualized				
7820	Motion picture dist.	\$1,807,346	\$18,051,508	5.8%	\$1,046,987	0.1	\$1,241	687	0.02	0.37	\$2,631
7830	Motion picture theaters	\$6,213,923	\$7,023,730	5.8%	\$407,376	0.09	\$946	4,168	0.14	2.40	\$1,491
7840	Video tape rental	\$5,428,968	\$6,459,177	7.2%	\$465,061	0.08	\$261	10,396	0.17	2.34	\$523
7910	Dance studios & schools	\$1,283,830	\$863,722	4.1%	\$35,413	3.6	\$224	2,062	0.41	10.05	\$622
7920	Producers, orch., entertainers	\$5,448,464	\$16,444,890	3.6%	\$592,016	0.03	\$324	3,468	0.16	4.47	\$1,571
7930	Bowling centers	\$1,496,184	\$2,944,692	4.2%	\$123,677	0.05	\$24	2,050	0.14	3.38	\$730
7940	Commercial sports	\$5,987,571	\$12,089,744	3.6%	\$435,231	0.05	\$1,257	1,464	0.48	4.48	\$4,091
7990	Misc. recreation services	\$53,034,852	\$55,776,035	4.2%	\$2,342,593	0.10	\$858	18,362	0.32	7.62	\$2,888
8010	Offices of medical doctors	\$45,984,511	\$186,598,097	6.3%	\$11,755,680	0.02	\$246	34,137	0.14	2.14	\$1,347
8020	Doctors offices and clinics	\$9,425,820	\$46,131,244	11.3%	\$5,212,831	0.02	\$83	16,155	0.14	1.27	\$583
8030	Osteopathic physicians	\$434,716	\$4,582,835	5.4%	\$247,493	0.01	\$48	810	0.11	1.98	\$537
8040	Other health practitioners	\$13,653,456	\$25,053,745	6.5%	\$1,628,493	0.05	\$161	18,219	0.25	3.90	\$749
8050	Nursing & personal care fac.	\$158,998,016	\$63,615,522	4.3%	\$2,735,897	0.25	\$6,622	11,190	0.54	12.47	\$14,209
8060	Hospitals	\$345,171,125	\$343,314,509	5.1%	\$17,509,040	0.10	\$47,401	3,634	0.20	3.95	\$94,988
8070	Med. & dental labs	\$6,211,199	\$16,543,025	7.9%	\$1,306,946	0.04	\$414	2,625	0.22	2.80	\$1,404
8080	Home health care services	\$1,514,478	\$27,690,537	3.5%	\$93,169	0.19	\$198	5,961	0.50	14.36	\$6,643
8090	Hlt. & allied serv., n.e.c.	\$15,156,082	\$26,036,633	11.0%	\$2,864,030	0.06	\$26	6,841	0.18	1.61	\$2,213
8110	Legal services	\$14,827,269	\$116,202,122	5.0%	\$5,821,106	0.01	\$88	14,399	0.15	2.98	\$1,038
8210	Elem. & secondary schools	\$11,922,661	\$30,967,943	5.9%	\$1,827,109	0.04	\$62	4,535	0.15	2.59	\$2,629
8220	Colleges & universities	\$36,950,253	\$73,194,239	6.2%	\$4,528,043	0.05	\$10,087	975	0.19	3.06	\$37,888
8230	Libraries	\$147,528	\$846,367	5.9%	\$49,936	0.02	\$66	170	0.23	3.91	\$868
8240	Vocational schools	\$659,256	\$6,322,931	5.9%	\$373,053	0.01	\$97	590	0.12	2.04	\$1,118
8290	Schools, n.e.c.	\$1,001,157	\$7,437,108	5.0%	\$371,855	0.01	\$65	1,335	0.16	3.11	\$750
8320	Individual & fam. services	\$40,334,501	\$25,266,265	4.1%	\$1,035,917	0.16	\$937	16,130	0.43	10.39	\$2,501
8330	Job train. & related serv.	\$18,644,738	\$8,830,464	2.5%	\$220,762	0.21	\$2,046	3,793	0.51	20.29	\$4,915
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8390	Social services, n.e.c.	\$9,045,724	\$22,170,593	3.4%	\$753,800	0.04	\$576	4,098	0.16	4.60	\$2,207
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8630	Labor organizations	\$1,224,039	\$11,731,332	6.4%	\$750,805	0.01	\$63	1,714	0.12	1.86	\$714
8640	Civic & social assoc.	\$10,878,058	\$15,241,892	3.4%	\$518,224	0.07	\$294	8,286	0.32	9.36	\$1,313
8650	Political organizations	\$340,427	\$1,093,341	6.4%	\$69,974	0.03	\$132	381	0.21	3.30	\$895
8660	Religious organizations	\$6,506,177	\$57,709,235	9.1%	\$5,251,540	0.01	\$41	7,763	0.33	8.38	\$338
8690	Membership orgs., n.e.c.	\$4,762,801	\$8,262,779	6.4%	\$524,799	0.06	\$25	2,020	0.26	4.05	\$2,358
8710	Eng. and arch. services	\$18,663,467	\$98,926,133	4.2%	\$4,154,898	0.02	\$237	11,110	0.13	3.19	\$1,680
8720	Accounting, auditing, & bookkeeping	\$18,023,796	\$49,834,103	12.0%	\$5,986,092	0.05	\$214	10,855	0.30	2.52	\$1,792
8730	Research & testing services	\$23,709,055	\$47,185,549	3.4%	\$1,604,302	0.04	\$1,218	4,780	0.20	6.02	\$4,960
8740	Management & pub. relations	\$28,513,329	\$96,714,846	6.2%	\$5,996,320	0.04	\$405	13,819	0.17	4.42	\$2,787
8990	Services, n.e.c.	\$7,614,094	\$13,388,980	5.0%	\$669,449	0.06	\$442	6,528	0.25	3.10	\$1,203
<b>Total</b>		\$4,232,197,861	\$15,802,862,958	0.03	\$766,327,987	0.6	\$717	1,585,552	0.10	2.06	\$2,669

Source: Office of Regulatory Analysis. Revenue data is from U.S. Dept. of Commerce, Bureau of Census. Compliance costs are from Chapter 5 of this Preliminary Economic Analysis. Profit rates are from, in most cases, Robert Morris Associates' "RMA Studies."

However, because Table VIII-4 also shows that the proposed standard's worst-case impacts are potentially concentrated in a few industries, OSHA analyzed potential impacts on establishments in these industries, termed "affected industry establishments" in this analysis. Affected establishments are defined for this analysis as those without an ergonomics program and whose employees are projected to incur a covered MSD in the next 10 years. OSHA's analysis of affected establishments thus looks at the potential for adverse impacts on those firms likely to experience the greatest impacts under the two worst-case scenarios described above.

- The results of this analysis are presented in Table VIII-4, which shows:

- Data on the number of affected establishments potentially affected over 10 years;
- Annualized costs of compliance per affected establishment; and
- Annualized costs of compliance as a percentage of establishment revenues and establishment profits.

Although Table VIII-4 projects, as would be expected, potentially greater impacts on the profits and revenues of affected establishments than was the case for all establishments, the proposed standard's worst-case impacts overall are only 0.1 percent of revenues and 2.1 percent of profits even for these affected establishments. Table VIII-4 shows that impacts do not exceed 1 percent of revenues for affected establishments in any affected industry, even using these worst-case assumptions.

However, under the worst-case no cost passthrough scenario, Table VIII-4 projects profit impacts exceeding 20 percent on affected establishments in three industry groups: SIC 138 (Oil and gas field services), SIC 561 (Men's and boy's clothing stores), and SIC 833 (Job training and related services). As discussed above, SIC 561's annual profit of \$721 is lower by a factor of 5 than the profit for affected establishments in any other industry shown on Table VIII-4, and establishments in SICs 138 and 833 have average profits of only 2.0 percent and 2.5 percent, respectively, approximately one-half the average profit rate for firms in all industries.

Nevertheless, OSHA analyzed the impacts of the proposed standard on these four industries more extensively to determine what factors might account for these potential worst-case effects on profits. As discussed above, establishments in SIC 561, Men's and boy's clothing, have profits that are lower, by a factor of 5, than those for any other industry shown on Table VIII-4. In an industry such as this, even the very small per-establishment cost of the ergonomics standard—\$404—represents a large share of annual profits. Establishments in this industry are already experiencing serious problems, but the compliance costs of the standard are not the source of these problems.

In the oil and gas field services (SIC 138) and job training and related services (SIC 833) industries, establishments are likely to be able to raise their prices without losing business, because both of these services serve local markets and/or occupy a specialized niche. For job training establishments, a price increase of only 0.5 percent would totally restore profits, even under this worst-case scenario. For oil and gas field services establishments, the story is the same: a price increase of 0.45 percent would restore profits. Even if establishments in these industries were completely unable to pass any costs through, a highly unlikely event, as the Court pointed out in *ADA v. Secretary of Labor*, the profits

of these industries would only decline to 2.25 percent, compared with the current 2.5 percent rate for SIC 833, and to 1.8 percent, compared with the current 2.0 percent profit rate for SIC 138. These kinds of changes in profit rates are within the range of normal fluctuations in profits in most industries.

Thus, OSHA preliminarily finds, even for the potentially most impacted industries, and even assuming absolutely no cost passthrough, that the viability of affected firms will not be adversely impacted by the compliance costs associated with the proposed standard. OSHA has therefore preliminarily concluded that the proposed standard is economically feasible for all affected industries. OSHA has shown that, in the words of the *Lead* decision, the costs of compliance associated with the standard "will not threaten the existence or competitive structure" of any affected industry.

#### G. Economic Impacts

To identify possible economic impacts, OSHA compared annualized costs to revenues and profits for all covered establishments, for all establishments defined as small using Small Business Administration (SBA) size criteria, and for all establishments with 1-19 employees (Ex. 28-3). The comparison was made for establishments in each of these three size classes, for all establishments, and for affected establishments alone (affected establishments are defined as those without programs in place and whose employees will experience at least one covered MSD in the 10 years after the standard is promulgated). Costs were annualized over ten years, including the costs of controlling all of the MSDs projected to occur in the facility over that time period.

OSHA analyzed the impacts of the proposed standard's annualized compliance costs on establishments in each 3-digit SIC industry. The results of this analysis are shown in Tables VIII-5 and VIII-6. OSHA's procedures call for the agency to conduct an Initial Regulatory Flexibility Analysis if, in any affected sector, the impact of the annualized compliance costs exceed 1 percent of revenues or 5 percent of profits for a substantial number of small entities. As Table VIII-5 shows, in no 3-digit industry do the expected costs of compliance exceed 1 percent of revenues. However, the impact of the compliance costs exceeds 5 percent of profits for 27 industries.

Table VIII-5 shows that, across all small business firms in all 3-digit industries, costs as a percentage of revenues average 0.04 percent. Focusing more narrowly on affected establishments (*i.e.*, those whose employees will experience a covered MSD), Table VIII-5 shows that, even in this extreme case, costs are not estimated to exceed 1.5 percent of revenues in any 3-digit industry. Table VIII-5 does show that costs in 27 industries exceed 5 percent of profits, and do so in approximately one-third of all 3-digit SICs, when impacts are considered only for affected establishments.

Table VIII-6 shows a similar pattern of impacts for employers with fewer than 20 employees: costs do not exceed one percent of revenues for very small establishments in any industry. Focusing only on affected establishments, Table VIII-6 shows that no 3-digit industry has estimated costs that exceed one percent of average revenues. The costs of compliance do, however, have higher impacts on the estimated profits of very small affected establishments. In almost half of all industry sectors, costs exceed 5 percent of profits for very small affected establishments.

**Table VIII-5 Estimated Economic Impact Under Worst-Case Scenarios, of the Proposed Ergonomics Standard on Firms Meeting SBA Size Criteria**

SIC	Industry	SBA size (Number of Employees)*	Average Revenue per Firm (SBA)	Profits as a Percentage of Revenues	Average Profit per Firm (SBA) (\$)	Average Cost per Firm (SBA) (\$)	For all small firms		For small affected firms (Those with MSDs)			
							Annualized Compliance Costs as a Percentage of Revenues—SBA (percent)	Annualized Compliance Costs as a Percentage of Profits—SBA (percent)	Number of Affected Small Firms Over 10 years	Annualized Costs per Affected Small Firms	Annualized Costs as a Percentage of Revenues	Annualized Costs as a Percentage of Profits
710	Soil prep. services	100	\$827,563	6.0%	\$49,406	\$232	0.00	0.5	261	\$569	0.07	1.15
720	Crop services	100	\$920,171	7.9%	\$72,694	\$823	0.10	1.2	1,618	\$2,060	0.22	2.83
740	Veterinary services	100	\$323,809	8.7%	\$28,171	\$853	0.08	0.9	8,885	\$663	0.20	2.35
750	Animal serv., except vet.	100	\$130,385	6.0%	\$7,784	\$99	0.08	1.3	1,686	\$608	0.47	7.81
780	Landscape & hort. services	500	\$224,169	4.4%	\$9,863	\$411	0.19	4.2	22,191	\$1,264	0.56	12.81
810	Timber tracts	100	\$655,119	3.1%	\$20,243	\$433	0.09	3.0	183	\$2,029	0.31	10.02
830	Forest products	1000	na [c]	3.1%	na	\$1,936	na	na	34	\$7,822	na	na
850	Forestry services	500	\$651,017	3.1%	\$20,116	\$393	0.08	2.6	341	\$1,804	0.28	8.97
910	Commercial fishing	100	\$467,143	5.0%	\$23,357	\$206	0.06	6.71	255	\$1,567	1.2	6.71
920	Fish hatcheries	100	\$263,926	5.0%	\$13,196	\$691	0.33	6.6	21	\$3,004	1.14	22.76
970	Hunting & trapping	100	\$221,182	5.0%	\$11,059	\$258	0.15	3.1	49	\$1,766	0.80	15.97
1310	Crude petrol. & nat. gas	500	\$3,965,915	5.7%	\$226,454	\$308	0.01	0.1	1,239	\$1,930	0.05	0.85
1320	Natural gas liquids	500	\$48,139,333	4.8%	\$2,320,316	\$842	0.14	0.3	26	\$18,379	0.04	0.79
1380	Oil & gas field services	500	\$626,980	2.0%	\$12,289	\$828	0.14	7.1	1,730	\$4,175	0.67	33.97
2010	Meat products	500	\$8,956,331	2.3%	\$205,996	\$2,623	0.03	1.4	642	\$11,427	0.13	5.55
2020	Dairy products	500	\$15,094,385	2.2%	\$332,076	\$3,388	0.03	1.4	348	\$18,122	0.12	5.46
2030	Preserv fruits & vegetables	500	\$9,121,313	4.2%	\$383,095	\$2,397	0.03	0.8	375	\$12,416	0.14	3.24
2040	Grain mill products	500	\$9,680,093	2.7%	\$261,363	\$2,053	0.03	1.2	439	\$12,065	0.12	4.62
2050	Bakery products	500	\$2,270,290	2.2%	\$49,946	\$2,042	0.10	4.7	235	\$9,530	0.42	19.08
2060	Sugar and confection. prods	500	\$6,274,334	4.6%	\$288,619	\$2,413	0.04	1.0	727	\$11,253	0.18	3.90
2070	Fats and oils	500	\$17,798,517	2.9%	\$516,157	\$2,250	0.02	0.8	67	\$16,977	0.10	3.29
2080	Beverages	500	\$10,514,066	4.5%	\$3,163	\$2,163	0.04	0.8	462	\$15,407	0.15	3.26
2090	Misc. food products	500	\$4,590,098	2.9%	\$133,113	\$1,808	0.04	1.5	853	\$8,404	0.18	6.31
2110	Cigarettes	1000	na [c]	3.9%	na	\$38,343	na	na	3	\$328,533	na	na
2120	Cigars	500	\$1,804,300	3.9%	\$70,368	\$1,115	0.07	1.8	6	\$7,955	0.44	11.31
2130	Chewing & smoking tobacco	500	\$21,752,278	3.9%	\$848,339	\$2,309	0.02	0.4	4	\$13,614	0.06	1.60
2140	Tobacco stemm. & rediving	500	na [c]	3.9%	na	\$4,760	na	na	5	\$26,690	na	na
2210	Brownen fab. mills, cotton	1000	\$15,713,726	3.6%	\$565,694	\$7,087	0.04	1.2	143	\$20,446	0.13	3.61
2220	Broadwoven fabric mills	500	\$5,404,147	2.4%	\$129,700	\$3,382	0.09	3.5	108	\$13,015	0.24	10.03
2230	Brownen fab. mills, wool	500	\$5,776,513	2.4%	\$138,656	\$1,624	0.03	1.3	30	\$4,932	0.09	3.56
2240	Narrow fabric mills	500	\$3,448,690	1.3%	\$97,131	\$2,554	0.08	6.4	98	\$7,170	0.21	15.99
2250	Knitting mills	500	\$3,597,430	2.7%	\$97,131	\$2,354	0.07	2.6	658	\$6,714	0.19	6.91
2260	Tex. finishing, except wool	500	\$4,235,317	1.2%	\$50,824	\$1,923	0.05	4.1	253	\$6,375	0.15	12.54
2270	Carpets and rugs	500	\$5,177,762	1.7%	\$88,022	\$2,040	0.04	2.5	135	\$6,824	0.13	7.75
2280	Yarn and thread mills	500	\$8,354,331	4.0%	\$334,173	\$4,622	0.10	2.0	125	\$21,020	0.25	6.29
2290	Misc. textile goods	500	\$4,445,480	2.4%	\$106,692	\$1,868	0.05	2.0	316	\$5,877	0.13	5.51
2310	Men's & boys' suits & coats	500	\$2,881,376	4.0%	\$115,255	\$1,863	0.07	1.8	72	\$7,232	0.25	6.27
2320	Men's & boys' furnishings	500	\$3,171,012	3.2%	\$101,472	\$2,590	0.10	3.0	504	\$10,478	0.33	10.33
2330	Wm's & misses' outerwear	500	\$1,569,746	2.0%	\$31,395	\$510	0.03	1.6	2,430	\$1,870	0.12	5.96
2340	Wm's & children's undergarments	500	\$3,775,503	2.2%	\$83,061	\$2,613	0.08	3.6	91	\$10,338	0.27	12.45
2350	Hats, caps, & millinery	500	\$1,649,005	4.3%	\$881	\$881	0.05	1.2	104	\$3,208	0.19	4.52
2360	Girls' & children's outerwear	500	\$2,669,747	1.4%	\$37,376	\$1,263	0.05	3.6	154	\$4,752	0.18	12.71
2370	Fur goods	500	\$1,027,540	2.4%	\$24,661	\$88	0.01	0.3	29	\$409	0.04	1.66
2380	Misc. apparel & accessories	500	\$1,580,292	2.4%	\$37,927	\$944	0.06	2.4	263	\$3,333	0.21	8.79
2390	Misc. fab. textile prods	500	\$1,304,873	2.4%	\$31,317	\$705	0.05	2.2	2,525	\$2,442	0.19	7.80
2410	Logging	500	\$929,614	3.9%	\$36,255	\$75	0.01	0.2	1,998	\$539	0.06	1.49
2420	Sawmills & planing mills	500	\$2,910,249	3.8%	\$110,589	\$1,332	0.05	1.3	2,028	\$4,004	0.14	3.62
2430	Millwork & plywood	500	\$1,826,529	3.7%	\$67,582	\$1,344	0.08	2.1	3,041	\$3,829	0.21	5.67
2440	Wood containers	500	\$1,369,020	3.6%	\$49,285	\$706	0.05	1.4	1,041	\$1,918	0.14	3.89
2450	Wood bldings. & mobile homes	500	\$4,950,488	3.7%	\$183,168	\$4,995	0.13	3.5	290	\$17,727	0.36	9.68
2490	Misc. wood products	500	\$2,178,297	2.8%	\$60,992	\$1,033	0.05	1.8	1,040	\$3,502	0.16	5.74

**Table VIII-5 Estimated Economic Impact Under Worst-Case Scenarios, of the Proposed Ergonomics Standard on Firms Meeting SBA Size Criteria**

SIC	Industry	SBA size (Number of Employees)*	Average Revenue per Firm (SBA)	Profits as a Percentage of Revenues [b]	Average Profit per Firm (SBA) (\$)	Average Cost per Firm (SBA) (\$)	For all small firms		For small affected firms (Those with MSDs)			
							Annualized Compliance Costs as a Percentage of Revenues-SBA (percent)	Annualized Compliance Costs as a Percentage of Profits-SBA (percent)	Number of Affected Small Firms Over 10 years	Annualized Costs per Affected Small Firms	Annualized Costs as a Percentage of Revenues	Annualized Costs as a Percentage of Profits
2510	Household furniture	500	\$2,073,124	2.9%	\$60,121	\$1,595	0.08	2.7	1,498	\$5,763	0.28	9.59
2520	Office furniture	500	\$3,012,350	3.9%	\$117,482	\$2,455	0.09	2.3	277	\$8,986	0.30	7.65
2530	Pub bldg & related furn.	500	\$5,819,938	3.0%	\$174,598	\$5,263	0.10	3.4	130	\$17,683	0.30	10.13
2540	Partitions and fixtures	500	\$2,089,272	3.0%	\$62,678	\$1,216	0.06	0.66	940	\$3,867	0.19	6.17
2590	Misc. furniture and fixtures	500	\$2,117,271	3.0%	\$63,518	\$1,025	0.05	0.55	414	\$3,475	0.16	5.47
2610	Pulp mills	750	\$134,667,674 [c]	3.8%	\$5,117,372	\$10,469	0.01	0.2	16	\$40,502	0.03	0.79
2620	Paper mills	750	\$191,302,866	4.7%	\$8,991,235	\$35,806	0.02	0.4	77	\$160,361	0.08	1.78
2630	Paperboard mills	750	\$196,732,297 [c]	4.7%	\$9,246,418	\$17,393	0.01	0.2	43	\$91,758	0.05	0.99
2650	Paper/bird containers & boxes	500	\$8,670,479	4.0%	\$346,819	\$3,672	0.07	1.7	688	\$14,915	0.17	4.30
2670	Misc. cnvrd paper products	500	\$6,820,292	2.7%	\$184,148	\$3,055	0.06	2.0	937	\$9,692	0.14	5.26
2710	Newspapers	500	\$1,125,756	6.0%	\$67,545	\$1,195	0.12	2.1	2,564	\$4,079	0.36	6.04
2720	Periodicals	500	\$2,200,657	3.7%	\$81,424	\$326	0.02	0.4	1,407	\$1,332	0.06	1.64
2730	Books	500	\$2,457,053	4.0%	\$98,282	\$816	0.03	0.9	1,021	\$2,798	0.11	2.85
2740	Miscellaneous publishing	500	\$1,795,050	5.1%	\$91,548	\$407	0.02	0.5	783	\$1,691	0.09	1.85
2750	Commercial printing	500	\$1,151,823	3.3%	\$43,422	\$539	0.04	1.2	12,442	\$1,488	0.11	3.43
2760	Manifold business forms	500	\$5,561,192	2.7%	\$150,152	\$2,493	0.05	2.0	308	\$7,334	0.13	4.88
2770	Greeting cards	500	\$6,967,041	3.8%	\$264,748	\$3,783	0.06	1.6	46	\$10,909	0.16	4.12
2780	Blankbooks & bookbinding	500	\$1,749,401	3.8%	\$66,477	\$1,752	0.11	2.8	645	\$4,271	0.24	6.62
2790	Printing trade services	500	\$1,124,497	3.0%	\$33,735	\$306	0.03	0.9	776	\$1,352	0.12	4.01
2810	Indust. inorganic chemicals	1000	\$50,087,613	4.1%	\$2,053,592	\$3,489	0.01	0.2	106	\$45,940	0.09	2.24
2820	Plastics mat. & synthetics	750	\$100,234,215	5.0%	\$4,326	\$4,326	0.00	0.1	116	\$32,782	0.03	0.65
2830	Drugs	500	\$11,576,143	5.5%	\$636,688	\$1,450	0.02	0.3	230	\$9,702	0.08	1.52
2840	Soap, clnrs, & toilet goods	500	\$6,619,474	2.9%	\$191,965	\$1,083	0.02	0.6	385	\$6,751	0.10	3.52
2850	Paints & allied products	500	\$6,147,975	2.8%	\$172,143	\$947	0.02	0.7	228	\$6,116	0.10	3.55
2860	Indust. organic chemicals	500	\$18,842,994	3.3%	\$621,819	\$1,554	0.01	0.4	95	\$14,701	0.08	2.36
2870	Agricultural chemicals	500	\$7,976,028	3.4%	\$271,185	\$688	0.02	0.3	117	\$5,456	0.07	2.01
2890	Misc. chemical products	500	\$6,784,471	3.8%	\$257,810	\$939	0.01	0.5	494	\$4,860	0.07	1.89
2910	Petroleum refining	1500	\$836,868,684 [c]	3.1%	\$25,942,929	\$15,004	0.00	0.1	77	\$3,844	0.01	0.21
2950	Asphalt paving & roofing mat.	500	\$7,498,719	3.3%	\$247,458	\$1,614	0.04	1.1	234	\$9,441	0.13	3.82
2990	Misc. pet. & coal prods	500	\$10,440,575 [c]	3.7%	\$386,301	\$1,111	0.01	0.4	112	\$4,603	0.04	1.19
3010	Tires and inner tubes	1000	\$110,959,868	3.9%	\$4,327,435	\$27,946	0.03	0.6	31	\$153,001	0.14	3.54
3020	Rubber & plastics footwear	1000	\$14,058,755	4.2%	\$590,468	\$9,891	0.07	1.6	13	\$45,753	0.33	7.75
3050	Hose, blng, and gaskets	500	\$3,876,049	4.9%	\$170,546	\$2,773	0.09	2.0	168	\$13,254	0.34	7.77
3060	Fab. rubber prod., n.e.c.	500	\$4,274,557	3.9%	\$166,708	\$2,682	0.08	1.9	369	\$12,622	0.30	7.57
3080	Misc. plastics, n.e.c.	500	\$4,687,853	3.4%	\$159,387	\$2,109	0.05	1.6	3,269	\$8,723	0.19	5.47
3110	Leather tan. & finishing	500	\$3,171,214	1.7%	\$53,911	\$2,123	0.07	4.3	114	\$6,300	0.20	11.69
3130	Footwear cut stock	500	na [c]	1.8%	na	na	na	na	26	\$3,668	na	na
3140	Footwear, except rubber	500	\$3,351,889	1.9%	\$63,686	\$4,214	0.15	7.9	115	\$13,237	0.39	20.79
3150	Leather gloves & mittens	500	na [c]	1.8%	na	na	na	na	22	\$5,820	0.12	6.49
3160	Luggage	500	\$2,550,508 [c]	1.8%	\$45,909	\$1,023	0.04	2.3	89	\$2,979	0.12	6.49
3170	Handbags & prsnal leather gds.	500	\$1,514,988 [c]	1.8%	\$27,270	\$967	0.06	3.5	114	\$2,888	0.19	10.59
3190	Leather goods, n.e.c.	500	\$1,368,278	1.8%	\$24,629	\$991	0.07	4.0	143	\$2,885	0.21	11.71
3210	Flat glass	1000	\$44,411,164	4.5%	\$1,985,502	\$16,902	0.04	0.8	20	\$66,938	0.15	3.35
3220	Glass, pressed or blown	750	\$18,905,290	6.8%	\$812,560	\$1,285,560	0.04	0.6	139	\$34,412	0.18	2.68
3230	Prod. of purchased glass	500	\$1,988,946	4.4%	\$87,514	\$1,948	0.11	2.5	422	\$7,500	0.38	8.57
3240	Cement, hydraulic	750	\$3,279,097	4.5%	\$1,475,059	\$5,681	0.02	0.4	50	\$26,357	0.08	1.79
3250	Structural clay products	500	\$3,234,269	6.0%	\$194,056	\$3,422	0.15	2.4	137	\$14,805	0.46	7.63
3260	Pottery & related prods	500	\$1,082,204	4.5%	\$48,699	\$3,422	0.17	3.8	317	\$6,711	0.62	13.78
3270	Concrete & plast. prods	500	\$3,222,724	4.3%	\$137,577	\$1,376	0.05	1.2	2,133	\$6,124	0.19	4.42
3280	Cut stone & stone prods	500	\$965,036	4.2%	\$40,532	\$703	0.07	1.7	342	\$2,200	0.23	5.43
3290	Misc. nonmet. mineral prods.	500	\$3,852,558	5.7%	\$219,596	\$2,286	0.07	1.3	372	\$9,758	0.25	4.44

**Table VIII-5 Estimated Economic Impact Under Worst-Case Scenarios, of the Proposed Ergonomics Standard on Firms Meeting SBA Size Criteria**

SIC	Industry	SBA size (Number of Employees)*	Average Revenue per Firm (\$)	Profits as a Percentage of Revenues [b]	Average Profit per Firm (\$)	Average Cost per Firm (\$)	For all small firms		For small affected firms (Those with MSDs)			
							Annualized Compliance Costs as a Percentage of Revenues-SBA (percent)	Annualized Compliance Costs as a Percentage of Profits-SBA (percent)	Number of Affected Small Firms Over 10 years	Annualized Costs per Affected Small Firm	Annualized Costs as a Percentage of Revenues	Annualized Costs as a Percentage of Profits
3310	Basic steel products	750	\$71,587,838	4.7%	\$3,364,628	\$10,440	0.01	0.3	253	\$52,946	0.07	1.57
3320	Iron and steel foundries	500	\$5,316,943	4.7%	\$249,896	\$4,038	0.09	1.9	272	\$16,348	0.31	6.54
3330	Primary nonfer. metals	750	\$104,585,150	4.5%	\$4,706,332	\$8,632	0.01	0.2	43	\$40,387	0.04	0.86
3340	Secondary nonfer. metals	500	\$19,152,945	3.6%	\$689,506	\$2,661	0.02	0.5	63	\$12,500	0.07	1.81
3350	Nonfer. rolling & drawing	750	\$8,983,857	5.6%	\$3,303,096	\$8,858	0.01	0.3	223	\$43,822	0.07	1.33
3360	Nonfer. foundries (stamps)	500	\$3,491,201	3.7%	\$129,174	\$2,284	0.07	1.9	425	\$8,841	0.25	6.84
3390	Misc. primary metal products	750	\$5,066,740	0.5%	\$25,840	\$1,177	0.02	4.5	246	\$4,525	0.09	17.51
3410	Met. cans & ship. containers	500	\$8,487,749	2.8%	\$37,657	\$4,197	0.10	3.7	73	\$24,972	0.29	10.51
3420	Cutlery, handls., & hardware	500	\$3,168,148	4.7%	\$148,903	\$2,157	0.07	1.6	754	\$6,859	0.22	4.61
3430	Plumbing & heating fixtures	500	\$5,500,578	3.8%	\$209,022	\$3,724	0.08	2.0	214	\$11,696	0.21	5.60
3440	Fab. struct. metal products	500	\$3,142,031	4.0%	\$125,681	\$1,523	0.05	1.3	4,464	\$4,533	0.14	3.61
3450	Screw machine products	500	\$3,399,471	3.9%	\$132,579	\$1,750	0.05	1.4	925	\$4,903	0.14	3.70
3460	Met. forgings & stampings	500	\$5,900,679	4.5%	\$265,531	\$3,484	0.06	1.4	1,216	\$10,429	0.18	3.93
3470	Metal services, n.e.c.	500	\$1,930,459	5.7%	\$110,036	\$925	0.05	0.9	1,885	\$2,712	0.14	2.46
3480	Ordnance and access, n.e.c.	500	\$1,916,047	4.4%	\$84,306	\$1,632	0.09	2.1	113	\$6,002	0.31	7.12
3490	Misc. fab. metal products	500	\$3,139,004	4.8%	\$150,672	\$1,779	0.06	1.3	2,269	\$5,655	0.18	3.75
3510	Engines and turbines	1000	\$56,430,684	4.4%	\$2,482,950	\$12,325	0.02	0.5	101	\$45,252	0.08	1.82
3520	Farm & garden machinery	500	\$3,024,716	4.1%	\$124,013	\$1,768	0.06	1.5	514	\$5,917	0.20	4.77
3530	Construct. & related mach.	500	\$4,366,578	5.0%	\$218,329	\$2,252	0.06	1.1	974	\$7,547	0.17	3.34
3540	Metalworking machinery	500	\$1,923,153	4.6%	\$88,465	\$925	0.05	1.1	3,687	\$2,951	0.15	3.34
3550	Special industry mach.	500	\$3,696,115	4.5%	\$166,325	\$1,339	0.04	0.9	1,392	\$4,575	0.12	2.75
3560	General indust. mach.	500	\$4,271,460	4.5%	\$192,216	\$2,206	0.06	1.3	1,204	\$7,894	0.18	4.11
3570	Computer & office equip.	500	\$6,625,168	3.3%	\$218,631	\$1,234	0.02	0.6	475	\$5,265	0.08	2.41
3580	Refrig. & serv. indust mach.	500	\$4,721,613	2.0%	\$94,432	\$2,869	0.07	3.5	611	\$10,155	0.22	10.75
3590	Industrial mach., n.e.c.	500	\$1,086,294	5.5%	\$459,746	\$459	0.04	0.8	5,890	\$2,016	0.19	3.37
3610	Elect. dist. equipment	750	\$14,873,332	4.0%	\$594,933	\$2,500	0.02	0.4	142	\$15,357	0.10	2.58
3620	Elect. indust. apparatus	500	\$3,392,834	4.0%	\$135,713	\$1,478	0.05	1.3	340	\$9,541	0.28	7.03
3630	Household appliances	500	\$5,756,270	3.4%	\$195,713	\$2,815	0.06	1.8	60	\$19,679	0.34	10.05
3640	Elect. lighting & wire equip.	500	\$4,355,541	4.6%	\$200,355	5	0.04	0.2	328	\$10,265	0.24	5.12
3650	Household audio & vid. equip.	500	\$17,721,076	5.9%	\$1,045,543	5	0.01	0.2	129	\$11,620	0.07	1.11
3660	Communications equipment	750	\$30,039,483	5.4%	\$1,622,132	0	0.01	0.1	307	\$16,296	0.05	1.00
3670	Electric components & access.	500	\$4,279,984	5.4%	\$231,119	\$931	0.02	0.4	942	\$6,289	0.15	2.72
3690	Misc. elect. equipment	500	\$4,403,609	5.0%	\$220,180	\$1,758	0.05	0.9	240	\$12,642	0.29	5.74
3710	Motor vehicles & equip.	500	\$5,821,819	3.9%	\$227,051	\$1,935	0.04	1.0	490	\$18,774	0.32	8.27
3720	Aircraft and parts	1000	\$64,238,252	4.3%	\$2,762,245	\$4,463	0.01	0.2	144	\$52,379	0.08	1.90
3730	Ship, boat building and repair [a]	500	\$1,358,254	3.6%	\$48,897	\$433	0.03	0.9	261	\$4,423	0.33	9.05
3740	Railroad equipment	1000	\$43,644,454 [c]	2.8%	\$1,222,045	\$5,496	0.01	0.4	18	\$64,378	0.15	5.27
3750	Motorcycles & bicycles	500	\$2,531,479	3.8%	\$96,196	\$531	0.02	0.6	36	\$5,379	0.21	5.54
3760	Guided missiles	1000	\$228,855,179 [c]	3.8%	\$8,696,497	\$9,485	0.00	0.1	8	\$117,349	0.05	1.35
3790	Misc. transportation equip.	500	\$3,063,312	3.8%	\$116,406	\$795	0.03	0.7	170	\$5,240	0.17	4.50
3810	Srch & navigation equipment	750	\$1,158,168	4.7%	\$2,404,434	\$1,013	0.01	0.2	114	\$32,312	0.06	1.34
3820	Meas. & controlling devices	500	\$3,508,984	5.3%	\$185,976	\$1,013	0.03	0.6	878	\$5,387	0.15	2.90
3840	Medical instrumts & supplies	500	\$3,717,069	6.2%	\$230,458	\$1,031	0.03	0.5	757	\$5,937	0.16	2.58
3850	Ophthalmic goods	500	\$1,524,020	4.2%	\$64,009	\$803	0.06	1.4	104	\$4,461	0.29	6.97
3860	Photo. equip. & supplies	500	\$3,934,531	5.3%	\$208,530	\$1,085	0.03	0.6	112	\$6,869	0.17	3.29
3870	Watches, clocks, & parts	500	\$2,121,654	5.6%	\$118,813	\$352	0.03	0.5	25	\$3,065	0.14	2.58
3910	Jwelry, silvrwre, and plate	500	\$1,704,571	2.8%	\$47,728	\$432	0.09	2.7	648	\$1,870	0.11	3.92
3930	Musical instrumts	500	\$1,432,933	3.3%	\$47,287	\$1,273	0.09	2.7	134	\$5,206	0.36	11.01
3940	Toys and sporting goods	500	\$2,141,491	3.5%	\$74,952	\$1,126	0.05	1.5	918	\$4,277	0.20	5.71
3950	Office and art supplies	500	\$1,910,943	3.3%	\$63,061	\$700	0.04	1.1	255	\$2,829	0.15	4.49
3960	Costume jewelry & notions	500	\$1,192,271	3.3%	\$39,345	\$437	0.04	1.1	243	\$1,953	0.16	4.96

**Table VIII-5 Estimated Economic Impact Under Worst-Case Scenarios, of the Proposed Ergonomics Standard on Firms Meeting SBA Size Criteria**

SIC	Industry	SBA size (Number of Employees) <sup>a</sup>	Average Revenue per Firm (\$B)	Profits as a Percentage of Revenues [b]	Average Profit per Firm (\$)	Average Cost per Firm (\$)	For all small firms		For small affected firms (Those with MSDs)			
							Annualized Compliance Costs as a Percentage of Revenues-SBA (percent)	Annualized Compliance Costs as a Percentage of Profits-SBA (percent)	Number of Affected Small Firms Over 10 years	Annualized Costs per Affected Small Firm	Annualized Costs as a Percentage of Revenues	Annualized Costs as a Percentage of Profits
3990	Misc. manufactures	500	\$1,443.695	3.4%	\$49,086	\$676	0.05	1.4	4,123	\$1,439	0.10	2.93
4110	Local & suburban trans.	500	\$693.674	6.2%	\$2,341	\$2,341	0.36	5.7	4,738	\$4,702	0.68	10.93
4120	Taxis/cabs	500	\$334.160	5.9%	\$1,915	\$341	0.10	1.7	715	\$1,574	0.47	7.98
4130	Intercity & rural bus trans.	500	\$2,047.822	7.0%	\$143,348	\$4,431	0.29	4.2	146	\$14,516	0.71	10.13
4140	Bus charter service	500	\$1,112.257	3.8%	\$42,266	\$1,055	0.10	2.5	611	\$2,472	0.22	5.85
4150	School buses	500	\$655.154	5.9%	\$38,654	\$1,663	0.31	5.3	1,601	\$4,401	0.67	11.38
4170	Bus terminals	100	\$178.250	3.2%	\$10,517	\$520	0.15	4.8	26	\$1,099	0.62	10.45
4210	Trucking & Courier Service	100	\$682.252	9.4%	\$21,832	\$952	0.31	4.8	32,512	\$3,359	0.49	15.38
4220	Pub. warehousing & storage	1000	\$645.103	4.2%	\$60,640	\$1,452	0.22	2.4	4,289	\$4,015	0.62	6.62
4230	Trucking terminal fac.	500	\$528.972 [c]	4.0%	\$22,217	\$1,215	0.26	6.1	33	\$2,959	0.56	13.32
4510	Air trans., scheduled	1500	\$84,888.883	4.0%	\$3,395.555	\$18,711	0.02	0.5	1,186	\$104,226	0.12	3.07
4520	Air trans., nonsched.	1500	\$2,785.728	6.0%	\$167,144	\$172	0.01	0.1	629	\$500	0.02	0.30
4580	Airports and services	100	\$815.921	4.6%	\$37,532	\$200	0.03	0.6	1,326	\$574	0.07	1.53
4610	Pipelines, except natural gas	1500	\$85,999.109 [c]	4.9%	\$4,213.956	\$13,744	0.02	0.3	62	\$214,972	0.25	5.10
4720	Pass. trans. arrangements	100	\$291.573	2.7%	\$7,872	\$61	0.02	0.9	2,944	\$681	0.23	8.65
4730	Freight trans. arrangements	1000	\$1,127.447	3.7%	\$41,716	\$650	0.06	1.5	4,822	\$1,992	0.18	4.78
4740	Rental of railroad cars	20	\$3,112.041	3.4%	\$105,809	\$151	0.01	0.2	16	\$987	0.03	0.93
4780	Misc. trans. services	100	\$597.838	3.4%	\$20,326	\$978	0.20	6.0	679	\$3,744	0.63	18.42
4810	Telephone communication	1500	\$30,966.070	7.7%	\$2,384.387	\$3,508	0.01	0.1	1,118	\$85,583	0.28	3.59
4820	Telegraph & other comm.	100	\$1,587.993	5.7%	\$90,516	\$169	0.01	0.2	49	\$1,564	0.10	1.73
4830	Radio & TV broadcasting	100	\$828.013	2.4%	\$19,872	\$143	0.02	0.8	994	\$1,212	0.15	6.10
4840	Cable & other pay TV services	100	\$2,309.048	5.4%	\$124,689	\$638	0.06	1.1	405	\$6,908	0.30	5.54
4890	Communication serv., n.e.c.	100	\$1,476.773	5.7%	\$84,176	\$95	0.01	0.1	120	\$1,144	0.08	1.36
4910	Electric services	100	\$10,459.747	10.8%	\$1,129.653	\$1,057	0.03	0.3	257	\$22,613	0.22	2.00
4920	Gas product. & distribution	10	\$5,639.801	6.7%	\$377,867	\$184	0.01	0.2	67	\$5,196	0.09	6.08
4930	Comb. utility services	20	\$1,749.337	8.3%	\$145,195	\$227	0.06	0.8	23	\$8,823	0.50	2.97
4940	Water supply	100	\$417.626	10.6%	\$44,268	\$189	0.05	1.1	527	\$1,314	0.31	6.08
4950	Sanitary services	100	\$1,250.569	7.6%	\$95,043	\$865	0.09	0.5	987	\$3,476	0.44	5.76
4960	Steam & air-cond. supplies	100	\$1,091.696	8.3%	\$90,611	\$387	0.07	0.9	10	\$4,026	0.37	4.44
4970	Irrigation systems	100	\$176.445	8.3%	\$90,611	\$149	0.09	1.0	95	\$572	0.32	3.91
5010	Motor vehicles	100	\$7,338.706	2.0%	\$146,774	\$636	0.01	0.5	13,204	\$2,181	0.03	1.49
5020	Furn. & homefurnishings	100	\$3,107.868	2.0%	\$62,157	\$563	0.02	1.0	5,429	\$1,715	0.06	2.76
5030	Lumber & construct. mat.	100	\$3,956.240	1.9%	\$75,169	\$953	0.03	1.6	8,570	\$2,610	0.07	3.47
5040	Prof. & commercial equip.	100	\$2,865.424	2.5%	\$71,636	\$456	0.02	0.8	12,520	\$1,851	0.06	2.58
5050	Met. & minerals, except pet.	100	\$10,345.693	2.8%	\$289,679	\$880	0.01	0.4	3,648	\$2,712	0.03	0.94
5060	Electrical goods	100	\$5,334.184	2.2%	\$117,352	\$461	0.01	0.5	9,925	\$1,913	0.04	1.63
5070	Hardware supplies	100	\$3,243.960	2.2%	\$71,367	\$718	0.03	1.3	8,258	\$2,254	0.07	3.16
5080	Mach. equip. & supplies	100	\$3,120.491	2.9%	\$90,494	\$567	0.02	0.7	23,717	\$1,809	0.06	2.00
5090	Misc. durable goods	100	\$3,072.234	3.2%	\$98,311	\$389	0.01	0.4	10,654	\$1,450	0.05	1.47
5110	Paper and paper products	100	\$4,200.691	1.6%	\$67,211	\$319	0.02	1.0	3,765	\$2,540	0.06	3.78
5120	Drugs, propriet., & sundries	100	\$6,828.751	2.9%	\$198,034	\$566	0.01	0.4	1,457	\$2,708	0.04	1.37
5130	Apparel and notions	100	\$3,898.982	2.1%	\$81,879	\$297	0.01	0.4	4,780	\$1,336	0.03	1.63
5140	Groceries & related products	100	\$6,267.970	1.4%	\$87,750	\$1,003	0.02	1.3	12,569	\$3,326	0.05	3.79
5150	Farm-prod. raw materials	100	\$13,088.804	1.7%	\$222,510	\$233	0.00	0.1	1,829	\$1,356	0.01	0.61
5160	Chemicals & allied prod.	100	\$6,688.714	3.2%	\$214,039	\$417	0.01	0.3	3,212	\$1,950	0.03	0.91
5170	Petrol. & petrol. prod.	100	\$18,899.169	1.2%	\$226,790	\$537	0.00	0.3	2,938	\$2,388	0.01	1.05
5180	Beer, wine, & dist. bev.	100	\$7,805.539	2.3%	\$179,527	\$2,003	0.03	1.3	1,630	\$5,786	0.07	3.22
5190	Misc. nondurable goods	100	\$2,420.357	1.9%	\$45,987	\$422	0.02	1.1	18,052	\$1,257	0.05	2.73
5210	Lumber & other bling mat.	100	\$2,041.155	1.9%	\$38,782	\$1,480	0.09	4.8	10,952	\$3,113	0.15	8.03
5230	Paint, glass, wallpaper str.	100	\$746.327	0.9%	\$6,717	\$449	0.09	10.5	3,228	\$1,361	0.18	20.27
5250	Hardware stores	100	\$747.354	2.3%	\$17,189	\$514	0.08	3.3	6,760	\$1,085	0.15	6.31

**Table VIII-5 Estimated Economic Impact Under Worst-Case Scenarios, of the Proposed Ergonomics Standard on Firms Meeting SBA Size Criteria**

SIC	Industry	SBA size (Number of Employees)*	For all small firms				For small affected firms (Those with MSDs)					
			Average Revenue per Firm (SBA)	Profits as a Percentage of Revenues	Average Profit per Firm (SBA) (\$)	Average Cost per Firm (SBA) (\$)	Annualized Compliance Costs as a Percentage of Revenues-SBA (percent)	Annualized Compliance Costs as a Percentage of Profits-SBA (percent)	Number of Affected Small Firms Over 10 years	Annualized Costs per Affected Small Firm	Annualized Costs as a Percentage of Revenues	Annualized Costs as a Percentage of Profits
5260	Retail nurseries and gardens	100	\$685,629	2.2%	\$15,084	\$616	0.10	4.4	5,227	\$1,325	0.19	8.78
5270	Mobile home dealers	100	\$2,506,918	2.9%	\$72,701	\$949	0.04	1.5	2,293	\$1,976	0.08	2.72
5310	Department stores	500	\$90,424,242	2.6%	\$2,351,030	\$13,243	0.90	34.6	145	\$976,462	1.08	41.53
5330	Variety stores	500	\$518,168	2.7%	\$13,991	\$782	0.37	13.8	2,693	\$3,151	0.61	22.52
5390	Misc. gen. merchandise str.	100	\$867,314	1.6%	\$13,877	\$620	0.13	8.4	2,834	\$3,055	0.35	22.01
5410	Grocery stores	500	\$1,354,669	1.2%	\$16,256	\$1,395	0.14	11.4	31,006	\$5,803	0.43	35.70
5420	Meat and fish markets	500	\$698,037	1.3%	\$9,074	\$280	0.04	3.1	2,197	\$1,003	0.14	11.05
5430	Fruit & vegetable markets	500	\$670,436	1.3%	\$8,716	\$161	0.02	1.9	614	\$877	0.13	10.06
5440	Candy, nut, & confection str	500	\$356,630	1.3%	\$4,654	\$153	0.06	4.3	698	\$1,043	0.29	22.49
5450	Dairy products stores	500	\$357,975	1.3%	\$4,654	\$111	0.05	3.7	950	\$950	0.27	20.42
5460	Retail bakeries	500	\$310,632	3.0%	\$9,319	\$216	0.08	2.5	4,795	\$910	0.29	9.76
5490	Misc. food stores	100	\$485,584	1.8%	\$8,741	\$122	0.03	1.8	2,047	\$388	0.12	6.72
5510	New and used car dealers	100	\$14,022,797	1.1%	\$154,251	\$2,830	0.02	2.0	15,764	\$4,068	0.03	2.64
5520	Used car dealers	1000	\$1,204,329	2.9%	\$30,108	\$50	0.00	0.2	1,935	\$573	0.05	1.90
5530	Auto & home supply stores	100	\$734,699	1.9%	\$13,959	\$643	0.13	6.9	15,128	\$1,860	0.25	13.32
5540	Gas service stations	100	\$1,661,818	1.6%	\$26,589	\$298	0.03	1.7	22,903	\$1,250	0.08	4.70
5550	Boat dealers	100	\$1,497,285	2.2%	\$32,940	\$529	0.04	1.7	2,280	\$1,176	0.08	3.57
5560	Rec. vehicle dealers	20	\$1,564,906	1.7%	\$26,603	\$595	0.04	2.4	1,298	\$1,201	0.08	4.51
5570	Motorcycle dealers	500	\$1,722,849	3.1%	\$53,408	\$80	0.00	0.2	456	\$668	0.04	1.25
5590	Auto dealers, n.e.c.	500	\$1,054,926	2.6%	\$27,428	\$67	0.01	0.2	125	\$665	0.06	2.42
5610	Men's & boys' clothing str	100	\$734,468	0.1%	\$734	\$146	0.05	39.4	1,695	\$1,188	0.04	0.16
5620	Women's clothing stores	100	\$521,388	4.0%	\$20,856	\$117	0.04	1.2	3,610	\$1,307	0.25	6.27
5630	Wm's access & specialty str	100	\$424,294	4.5%	\$19,093	\$86	0.04	0.9	705	\$1,049	0.25	5.49
5640	Children's & infants' wear str	100	\$442,743	1.2%	\$5,313	\$205	0.07	6.2	822	\$1,289	0.29	24.27
5650	Family clothing stores	100	\$811,771	1.3%	\$10,553	\$774	0.23	17.5	3,914	\$3,824	0.47	36.23
5660	Shoe stores	100	\$720,198	2.6%	\$18,725	\$159	0.08	2.9	1,931	\$2,614	0.36	13.96
5690	Misc. apparel stores	500	\$486,401	1.2%	\$5,837	\$62	0.02	1.3	956	\$659	0.14	11.30
5710	Furniture & homefurnishng str	100	\$837,185	2.3%	\$19,255	\$623	0.09	3.9	2,627	\$1,560	0.19	8.10
5720	Household appliance str	100	\$851,037	2.3%	\$19,574	\$552	0.07	3.0	4,005	\$1,380	0.16	7.05
5730	Radio, TV, & compr str	100	\$1,073,328	2.3%	\$24,687	\$329	0.05	2.0	6,675	\$1,907	0.18	7.72
5810	Eating & drinking places	500	\$469,053	3.0%	\$14,072	\$328	0.08	2.8	128,415	\$1,190	0.25	8.46
5910	Drug stores	100	\$1,276,589	2.5%	\$31,915	\$450	0.06	2.4	10,658	\$1,821	0.14	5.71
5920	Liquor stores	1000	\$803,413	1.4%	\$11,248	\$45	0.01	0.4	3,029	\$423	0.05	3.76
5930	Used merchandise stores	500	\$327,184	4.6%	\$15,050	\$237	0.08	1.7	5,829	\$955	0.29	6.35
5940	Misc. shopping goods str.	100	\$506,822	2.2%	\$11,150	\$243	0.06	2.8	29,906	\$1,049	0.21	9.40
5960	Nonstore retailers	100	\$831,934	2.0%	\$16,639	\$664	0.09	4.4	9,386	\$2,081	0.25	12.51
5980	Fuel dealers	100	\$1,502,002	0.8%	\$12,016	\$590	0.05	6.8	3,581	\$1,859	0.12	15.47
5990	Retail stores, n.e.c.	100	\$392,251	2.6%	\$10,199	\$158	0.05	1.8	14,159	\$1,063	0.27	10.43
6010	Central res. depository	10	na [c]	12.7%	na	\$233	na	na	1	\$3,130	na	na
6020	Commercial banks	10	\$1,727,898	12.7%	\$219,443	\$67	0.14	1.1	112	\$20,574	1.19	9.38
6030	Savings institutions	10	\$1,974,399	12.7%	\$250,749	\$55	0.08	0.6	33	\$15,956	0.81	6.36
6060	Credit unions	10	\$494,582	12.7%	\$62,812	\$52	0.02	0.1	937	\$587	0.12	0.93
6080	Foreign banking	100	\$6,126,893	12.7%	\$778,115	\$74	0.00	0.0	6	\$2,180	0.04	0.33
6090	Banking-related functions	100	\$918,459	12.7%	\$116,644	\$131	0.02	0.2	486	\$1,547	0.17	1.33
6110	Federal credit agencies	20	\$1,722,770	14.6%	\$251,524	\$27	0.02	0.2	3	\$9,859	0.57	3.92
6140	Personal cred. institutions	20	\$856,550	18.1%	\$155,036	\$19	0.01	0.1	128	\$2,706	0.32	1.75
6150	Business cred. institutions	20	\$1,814,771	15.5%	\$281,290	\$35	0.01	0.0	219	\$1,151	0.06	0.41
6160	Mortgage bankers & brokers	100	\$695,722	9.6%	\$66,789	\$68	0.01	0.2	1,549	\$949	0.14	1.42
6210	Security brokers & dealers	200	\$842,572	10.5%	\$31	\$31	0.01	0.1	370	\$1,764	0.21	1.99
6220	Commodity contracts brokers	100	\$1,061,365	11.7%	\$124,180	\$37	0.00	0.0	85	\$709	0.07	0.57
6230	Security & commod. exchanges	100	\$1,600,957	11.7%	\$187,312	\$165	0.02	0.1	11	\$1,573	0.10	0.84

**Table VIII-5 Estimated Economic Impact Under Worst-Case Scenarios, of the Proposed Ergonomics Standard on Firms Meeting SBA Size Criteria**

SIC	Industry	SBA size (Number of Employees)*	For all small firms				For small affected firms (Those with MSDs)					
			Average Revenue per Firm (SBA)	Profits as a Percentage of Revenues [b]	Average Profit per Firm (SBA) (\$)	Average Cost per Firm (SBA) (\$)	Annualized Compliance Costs as a Percentage of Revenues-SBA (percent)	Annualized Compliance Costs as a Percentage of Profits-SBA (percent)	Number of Affected Small Firms Over 10 years	Annualized Costs per Affected Small Firm	Annualized Costs as a Percentage of Revenues	Annualized Costs as a Percentage of Profits
6280	Security & commod. services	100	\$731,044	14.1%	\$103,077	\$26	0.00	0.0	437	\$1,062	0.15	1.03
6310	Life insurance	100	\$7,739,146	12.7%	\$982,872	\$176	0.02	0.2	135	\$14,390	0.19	1.46
6320	Medical & health insur.	20	\$4,637,512	12.7%	\$588,964	\$134	0.01	0.1	67	\$4,124	0.09	0.70
6330	Fire, marine, & casualty ins.	1500	\$140,086,752	12.7%	\$17,791,018	\$3,452	0.00	0.0	248	\$283,937	0.20	1.60
6350	Surety insurance	20	\$2,086,520	12.7%	\$264,988	\$56	0.01	0.0	13	\$2,014	0.10	0.76
6360	Title insurance	100	\$628,048	12.7%	\$79,762	\$189	0.12	0.9	109	\$4,292	0.68	5.38
6370	Pension and health funds	1000	\$758,021	12.7%	\$96,289	\$108	0.01	0.1	249	\$1,193	0.16	1.24
6390	Ins. carriers, n.e.c.	100	\$1,836,789	12.7%	\$233,272	\$141	0.01	0.1	46	\$878	0.05	0.38
6410	Insurance agents	100	\$376,269	6.8%	\$25,586	\$42	0.01	0.2	9,495	\$557	0.15	2.18
6510	Real estate operators	100	\$723,466	15.4%	\$111,414	\$203	0.03	0.2	23,947	\$850	0.12	0.76
6530	RE agents and managers	100	\$452,717	12.1%	\$54,779	\$127	0.03	0.2	17,090	\$919	0.20	1.68
6540	Title abstract and managers	100	\$450,454	12.1%	\$54,505	\$146	0.04	0.3	1,204	\$629	0.14	1.15
6550	Subdividers & developers	100	\$686,118	9.1%	\$62,437	\$314	0.05	0.5	3,755	\$1,543	0.22	2.47
6710	Holding offices	100	\$1,458,012	17.5%	\$255,152	\$63	0.00	0.0	846	\$1,759	0.02	0.69
6720	Investment offices	20	\$430,933	17.5%	\$438,363	\$63	0.00	0.0	32	\$1,656	0.07	0.38
6730	Truists	100	\$964,611	17.5%	\$168,807	\$80	0.01	0.0	907	\$771	0.08	0.46
6790	Miscellaneous investing	20	\$1,309,443	17.5%	\$229,152	\$48	0.00	0.0	575	\$656	0.05	0.29
7010	Hotels and motels	100	\$562,982	7.0%	\$39,409	\$639	0.13	1.9	13,478	\$2,010	0.36	5.10
7020	Rooming & boarding houses	1000	\$274,294	7.0%	\$19,201	\$285	0.10	1.5	519	\$890	0.32	4.64
7030	Camps and rec. vehicle parks	1000	\$403,297	7.0%	\$28,231	\$33	0.01	0.1	427	\$576	0.14	2.04
7040	Membership-basis org. hotels	100	\$216,959	7.0%	\$15,187	\$29	0.01	0.2	167	\$414	0.19	2.72
7210	Laundry & garment services	100	\$247,311	3.8%	\$9,398	\$365	0.15	4.1	19,329	\$1,062	0.43	11.30
7220	Photo studios, portrait	500	\$278,014	3.9%	\$10,843	\$114	0.06	1.5	1,511	\$995	0.36	9.18
7230	Beauty shops	500	\$142,666	4.6%	\$6,563	\$42	0.03	0.7	7,931	\$430	0.30	6.55
7240	Barber shops	100	\$82,197	4.6%	\$3,781	\$108	0.14	2.9	1,016	\$478	0.58	12.63
7250	Shoe repair	100	\$101,726	4.6%	\$4,679	\$113	0.11	2.4	418	\$596	0.59	12.74
7260	Fun. service and crematories	100	\$590,431	7.9%	\$46,644	\$150	0.03	0.4	2,838	\$834	0.14	1.79
7290	Misc. personal services.	500	\$212,827	4.6%	\$9,790	\$50	0.03	0.6	1,091	\$1,420	0.67	14.51
7310	Advertising	100	\$765,849	3.8%	\$29,102	\$217	0.03	0.8	3,055	\$1,373	0.18	4.72
7320	Credit report. & collection	100	\$674,626	7.0%	\$47,224	\$133	0.02	0.3	966	\$930	0.14	1.97
7330	Mailing, reprod. steno., serv	100	\$500,227	4.6%	\$23,010	\$163	0.03	0.7	5,396	\$1,048	0.21	4.55
7340	Services to buildings	500	\$238,731	3.7%	\$9,573	\$176	0.07	1.9	12,290	\$935	0.36	9.76
7350	Misc. equip. rental	100	\$985,159	9.2%	\$90,635	\$327	0.04	0.5	4,016	\$2,010	0.20	2.22
7360	Pers. supply services	500	\$1,103,842	3.0%	\$33,115	\$1381	0.17	5.8	6,019	\$8,402	0.76	25.37
7370	Compt. & data proc. services	500	\$1,097,682	5.2%	\$57,079	\$138	0.01	0.3	7,146	\$1,711	0.16	3.00
7380	Misc. business services	500	\$557,848	3.4%	\$18,967	\$242	0.05	1.4	14,724	\$1,402	0.25	7.39
7510	Auto rentals, no drivers	100	\$1,154,193	5.7%	\$63,789	\$427	0.07	1.1	6,771	\$2,651	0.23	4.03
7520	Automobile parking	100	\$682,842	4.8%	\$32,776	\$254	0.12	2.5	414	\$5,421	0.79	16.54
7530	Automotive repair shops	500	\$374,580	3.9%	\$14,609	\$198	0.05	1.4	36,758	\$751	0.20	5.14
7540	Automotive serv. exc repair	500	\$349,680	6.5%	\$22,729	\$408	0.12	1.9	9,281	\$1,186	0.34	5.22
7620	Electrical repair shops	100	\$384,314	2.6%	\$9,992	\$363	0.10	4.0	5,382	\$1,293	0.34	12.94
7630	Watch and jewelry repair	100	\$156,483	3.4%	\$5,320	\$151	0.10	3.1	398	\$684	0.44	12.86
7640	Reupholstery & furn. repair	100	\$149,960	3.4%	\$5,099	\$112	0.07	2.1	1,452	\$528	0.35	10.36
7690	Misc. repair shops	100	\$456,359	5.9%	\$26,925	\$376	0.08	1.4	12,308	\$1,186	0.26	4.41
7810	Motion picture production	500	\$990,868	5.4%	\$53,507	\$418	0.04	0.8	2,454	\$2,492	0.25	4.66
7820	Motion picture dist.	20	\$1,444,490	5.8%	\$83,780	\$365	0.03	0.5	445	\$1,005	0.07	1.20
7830	Motion picture theaters	100	\$652,241	5.8%	\$37,630	\$958	0.33	5.7	1,580	\$3,958	0.61	10.46
7840	Video tape rental	500	\$297,050	7.2%	\$21,388	\$275	0.11	1.6	7,203	\$795	0.27	9.59
7910	Dance studios & schools	100	\$147,902	4.1%	\$6,064	\$210	0.14	3.4	2,061	\$582	0.39	3.72
7920	Products, orch., entertainers	100	\$713,474	3.6%	\$25,685	\$191	0.03	0.7	3,228	\$977	0.14	3.80
7930	Bowling centers	500	\$480,995	4.2%	\$20,202	\$258	0.06	1.4	1,830	\$809	0.17	4.00

**Table VIII-5 Estimated Economic Impact Under Worst-Case Scenarios, of the Proposed Ergonomics Standard on Firms Meeting SBA Size Criteria**

SIC	Industry	SBA size (Number of Employees) <sup>a</sup>	For all small firms				For small affected firms (Those with MSDs)					
			Average Revenue per Firm (SBA)	Profits as a Percentage of Revenues	Average Profit per Firm (SBA)	Average Cost per Firm (SBA)	Annualized Compliance Costs as a Percentage of Revenues-SBA (percent)	Annualized Compliance Costs as a Percentage of Profits-SBA (percent)	Number of Affected Small Firms Over 10 years	Annualized Costs per Affected Small Firm	Annualized Costs as a Percentage of Revenues	Annualized Costs as a Percentage of Profits
7940	Commercial sports	100	\$1,064,778	3.6%	\$38,332	\$416	0.04	1.1	1,259	\$1,498	0.14	3.91
7990	Misc. recreation services	500	\$602,501	4.2%	\$25,305	\$681	0.12	2.8	17,198	\$2,443	0.41	9.65
8010	Offices of medical doctors	100	\$775,789	6.3%	\$48,875	\$184	0.02	0.4	30,591	\$1,113	0.14	2.28
8020	Dentists offices and clinics	500	\$413,582	11.3%	\$46,735	\$75	0.02	0.2	15,864	\$531	0.13	1.14
8030	Osteopathic physicians	500	\$501,172	5.4%	\$27,063	\$43	0.01	0.2	786	\$500	0.10	1.85
8040	Other health practitioners	500	\$289,816	6.5%	\$18,838	\$145	0.05	0.8	17,520	\$703	0.24	3.73
8050	Nursing & personal care fac.	500	\$2,533,384	4.3%	\$108,936	\$5,958	0.35	8.2	6,066	\$3,504	0.93	21.58
8060	Hospitals	100	\$2,933,028	5.1%	\$149,584	\$3,119	0.17	3.4	329	\$12,379	0.42	8.28
8070	Med. & dental labs	100	\$567,385	7.9%	\$44,823	\$236	0.05	0.6	2,039	\$1,725	0.30	3.85
8080	Home hith care services	500	\$1,352,121	3.5%	\$47,324	\$2,695	0.30	8.6	3,534	\$12,169	0.90	25.71
8090	Hlth & allied serv., n.e.c.	500	\$1,242,429	11.0%	\$136,667	\$794	0.08	0.7	4,121	\$4,012	0.32	2.94
8110	Legal services	100	\$499,601	5.0%	\$24,980	\$69	0.01	0.3	13,330	\$864	0.17	3.46
8210	Elem. & secondary schools	100	\$1,176,073	5.9%	\$69,388	\$420	0.04	0.7	3,421	\$2,066	0.18	2.98
8220	Colleges & universities	100	\$1,325,665	6.2%	\$82,191	\$632	0.07	1.1	260	\$5,624	0.42	6.84
8230	Libraries	1000	\$390,031	5.9%	\$23,012	\$62	0.01	0.2	164	\$852	0.22	3.70
8240	Vocational schools	100	\$557,312	5.9%	\$32,881	\$68	0.01	0.2	481	\$944	0.17	2.87
8290	Schools, n.e.c.	1000	\$500,377	5.0%	\$25,019	\$53	0.01	0.2	1,288	\$636	0.13	2.54
8320	Individual & fam. services	500	\$609,148	4.1%	\$24,975	\$944	0.16	3.8	12,854	\$3,159	0.52	12.65
8330	Job train. & related serv.	500	\$1,095,666	2.5%	\$27,392	\$2,250	0.23	9.2	2,477	\$8,240	0.75	30.08
8350	Child day care services	1000	\$266,652	3.8%	\$10,133	\$250	0.09	2.3	15,684	\$854	0.32	8.42
8360	Residential care	500	\$860,750	2.6%	\$22,380	\$2,038	0.26	9.9	9,280	\$6,310	0.73	28.20
8390	Social services, n.e.c.	100	\$982,940	3.4%	\$33,420	\$376	0.05	1.3	2,944	\$1,958	0.20	5.86
8410	Museums & art galleries	100	\$413,094	6.1%	\$25,199	\$258	0.06	1.1	906	\$1,255	0.30	4.98
8420	Bot. & zoology gardens	100	\$580,625	6.1%	\$35,418	\$713	0.13	2.2	133	\$2,921	0.50	8.25
8610	Business associations	100	\$658,954	3.3%	\$21,745	\$67	0.01	0.3	1,566	\$669	0.10	3.08
8620	Prof. organizations	100	\$732,835	4.8%	\$35,176	\$67	0.01	0.2	642	\$720	0.10	2.07
8630	Labor organizations	100	\$432,735	6.4%	\$27,695	\$45	0.01	0.2	1,557	\$561	0.13	2.03
8640	Civic & social assoc.	500	\$382,131	3.4%	\$12,992	\$252	0.07	2.0	7,826	\$1,187	0.31	9.14
8650	Political organizations	100	\$362,243	6.4%	\$23,184	\$89	0.02	0.4	371	\$615	0.17	2.65
8660	Religious organizations	500	\$328,231	9.1%	\$29,869	\$34	0.01	0.1	7,712	\$695	0.21	2.33
8690	Membership orgs., n.e.c.	100	\$482,414	6.4%	\$30,874	\$325	0.08	1.2	1,571	\$1,843	0.38	5.97
8710	Eng. and archt. services	100	\$647,979	4.2%	\$27,215	\$140	0.02	0.6	9,322	\$1,164	0.18	4.28
8720	Accntg, auditing, & bkeeping	100	\$324,342	12.0%	\$38,921	\$120	0.04	0.3	9,288	\$1,075	0.33	2.76
8730	Research & testing services	100	\$976,053	3.4%	\$33,186	\$504	0.06	1.8	3,434	\$2,742	0.28	8.26
8740	Management & pub. relations	100	\$540,229	6.2%	\$33,494	\$194	0.04	0.6	11,955	\$1,516	0.28	4.53
8990	Services, n.e.c.	100	\$470,966	5.0%	\$23,548	\$285	0.06	1.3	5,755	\$848	0.18	3.60
<b>Total</b>												
<b>Average (unweighted)</b>			\$11,070,190	4.9%	\$481,756	\$1,898	0.04	0.1	1,210,067	\$13,666	0.23	6.67

Source: Office of Regulatory Analysis.

Revenue data is from U.S. Dept. of Commerce, Bureau of Census. Compliance costs are from Chapter 5 of this Preliminary Economic Analysis. Profit rates are from, in most cases, Robert Morris Associates. "RMA Studies."

\* Approximated, to make use of available firm revenue data.

[a] Excludes SIC 3731

[b] A profit rate of 5 percent of revenues was estimated for SICs 910,920,970,8110, and 8990; a profit rate of 4 percent was estimated for SICs 2280, 2310, and 5620.

[c] Revenue data was wholly or partially suppressed by the Census Bureau for the SBA small entity size category. Any projected economic impacts are therefore overestimated for these industries. Where estimated costs as a percent of profits would be in excess of 20 percent in those industries for which the Bureau suppressed the data, OSHA reported profit impacts as "na."

**Table VIII-6 Estimated Economic Impact of the Proposed Ergonomics Standard on All Very Small Firms and All Very Small Affected Firms (Those with MSDs)\***

SIC	Industry	Average Revenues for Very Small Firms (\$)	Profits as a Percentage of Revenues	Profits (\$1,000s)	Average Profits per firm (\$)	For all very small firms				For very small affected firms (those with MSDs)			
						Annualized Costs per Firm	Annualized Costs as a Percent of Revenues	Annualized Costs as a Percent of Profits	Total Number of Affected Firms over 10 years	Annualized Costs per Affected Very Small Firm	Annualized Costs as a Percent of Revenues	Annualized Costs as a Percent of Profits	
710	Soil prep. services	\$354,118	6.0%	\$12,346	\$21,141	\$108	0.03	0.5	230	\$275	0.08	1.3	
720	Crop services	\$363,704	7.9%	\$95,938	\$28,733	\$295	0.08	1.0	1,321	\$746	0.21	2.6	
740	Veterinary services	\$147,753	8.7%	\$273,531	\$12,855	\$228	0.15	1.8	7,875	\$461	0.42	4.8	
750	Animal serv., except vet.	\$77,543	6.0%	\$46,742	\$4,629	\$69	0.09	1.5	1,519	\$545	0.59	10.0	
780	Landscape & hort. services	\$109,792	4.4%	\$313,231	\$4,831	\$167	0.15	3.5	19,881	\$703	0.50	11.3	
810	Timber tracts	\$241,574	3.1%	\$4,307	\$7,465	\$186	0.08	2.5	153	\$769	0.29	9.4	
830	Forest products	\$508,094	3.1%	\$1,335	\$15,700	\$204	0.04	1.3	23	\$687	0.15	4.9	
850	Forestry services	\$203,723	3.1%	\$6,389	\$6,295	\$167	0.08	2.7	247	\$687	0.34	10.9	
910	Commercial fishing	\$260,772	5.0%	\$18,541	\$13,039	\$90	0.03	0.7	225	\$568	0.22	4.4	
920	Fish hatcheries	\$147,276	5.0%	\$427	\$7,364	\$195	0.13	2.7	13	\$888	0.60	12.1	
970	Hunting & trapping	\$157,738	5.0%	\$1,893	\$7,887	\$48	0.03	0.6	40	\$288	0.18	3.7	
1310	Crude petrol. & nat. gas	\$1,063,503	5.7%	\$398,241	\$60,726	\$77	0.01	0.1	874	\$580	0.05	1.0	
1320	Natural gas liquids	\$6,478,211	4.8%	\$11,865	\$312,250	\$169	0.00	0.1	12	\$537	0.01	0.2	
1380	Oil & gas field services	\$321,483	2.0%	\$43,862	\$6,301	\$125	0.04	2.0	984	\$912	0.28	14.5	
2010	Meat products	\$588,374	2.3%	\$22,207	\$13,533	\$240	0.04	1.8	379	\$1,036	0.18	7.7	
2020	Dairy products	\$770,743	2.2%	\$12,955	\$16,956	\$294	0.04	1.7	175	\$1,282	0.17	7.6	
2030	Preserv'd fruits & vegetables	\$510,610	4.2%	\$19,730	\$21,446	\$176	0.03	0.8	191	\$848	0.17	4.0	
2040	Grain mill products	\$964,208	2.7%	\$28,481	\$26,034	\$355	0.04	1.4	279	\$1,391	0.14	5.3	
2050	Bakery products	\$217,705	2.2%	\$10,087	\$4,790	\$233	0.11	4.9	435	\$1,127	0.52	23.5	
2060	Sugar and confect. prods	\$511,272	4.6%	\$13,758	\$3,519	\$237	0.05	1.0	120	\$1,155	0.23	4.9	
2070	Fats and oils	\$1,433,935	2.9%	\$5,739	\$41,584	\$278	0.02	0.7	34	\$1,127	0.08	2.7	
2080	Beverages	\$2,376,764	4.5%	\$129,415	\$106,954	\$330	0.01	0.3	268	\$1,490	0.06	1.4	
2090	Misc. food products	\$525,021	2.9%	\$36,359	\$15,226	\$262	0.05	1.7	515	\$1,212	0.23	8.0	
2110	Cigarettes	na	3.9%	na	na	\$128	na	na	na	na	na	na	
2120	Cigars	na	3.9%	na	na	\$51	na	na	2	\$671	na	na	
2130	Cheewing & smoking tobacco	\$1,063,083	3.9%	\$498	\$41,460	\$104	0.01	0.3	2	\$816	0.08	2.0	
2140	Tobacco stemm. & redrying	\$267,223	3.6%	\$2,799	\$9,620	\$83	na	na	na	na	na	na	
2210	Brdwvn fab. mills, cotton	\$190,505	2.4%	\$933	\$4,572	\$275	0.10	2.9	94	\$855	0.32	8.9	
2220	Broadwoven fabric mills	\$458,913	2.4%	\$507	\$11,014	\$139	0.07	3.0	48	\$586	0.31	12.8	
2230	Brdwvn fab. mills, wool	\$324,956	1.3%	\$570	\$4,224	\$68	0.01	0.6	12	\$263	0.06	2.4	
2240	Narrow fabric mills	\$371,512	2.7%	\$9,439	\$10,031	\$306	0.09	7.2	49	\$843	0.26	20.0	
2250	Knitting mills	\$369,584	1.2%	\$2,302	\$4,435	\$203	0.05	2.0	286	\$668	0.18	6.7	
2260	Tex. finishing, except wool	\$458,882	1.7%	\$2,317	\$7,801	\$150	0.03	1.9	78	\$664	0.18	15.0	
2270	Carpets and rugs	\$380,590	4.0%	\$2,375	\$15,224	\$194	0.05	1.3	47	\$572	0.12	7.3	
2280	Yarn and thread mills	\$376,255	2.4%	\$4,632	\$9,030	\$240	0.06	2.7	145	\$649	0.17	4.3	
2290	Misc. textile goods	\$247,145	4.0%	\$1,433	\$9,886	\$165	0.07	1.7	33	\$845	0.22	9.4	
2310	Men's & boys' suits & coats	\$303,121	3.2%	\$7,828	\$9,700	\$203	0.07	2.1	191	\$724	0.29	7.3	
2320	Men's & boys' furnishings	\$235,611	2.0%	\$29,847	\$4,712	\$129	0.05	2.7	1,401	\$857	0.28	8.8	
2330	Wm's & misses' outerwear	\$509,612	2.2%	\$11,704	\$11,211	\$190	0.04	1.7	37	\$582	0.25	12.3	
2340	Hats, caps, & millinery	\$172,675	4.3%	\$1,693	\$7,425	\$130	0.08	1.8	47	\$787	0.15	7.0	
2350	Girls' & children's outerwear	\$425,055	1.4%	\$2,124	\$5,951	\$124	0.03	1.1	60	\$628	0.36	8.5	
2360	Fur goods	\$660,448	2.4%	\$2,124	\$15,851	\$69	0.01	0.4	27	\$558	0.13	9.4	
2370	Misc. apparel & accessories	\$216,937	2.4%	\$3,167	\$5,206	\$178	0.08	3.4	156	\$342	0.05	2.2	
2380	Misc. fab. textile prods	\$194,512	2.4%	\$34,167	\$4,668	\$165	0.08	3.5	1,889	\$741	0.34	14.2	
2410	Logging	\$421,274	3.9%	\$223,050	\$16,430	\$60	0.01	0.4	1,721	\$641	0.33	13.7	
										\$473	0.11	2.9	

**Table VIII-6 Estimated Economic Impact of the Proposed Ergonomics Standard on All Very Small Firms and All Very Small Affected Firms (Those with MSDs)\***

SIC	Industry	Average Revenues for Very Small Firms (\$)	Profits as a Percentage of Revenues	Profits (\$1,000s)	Average Profits per firm (\$)	For all very small firms				For very small affected firms (those with MSDs)			
						Annualized Costs per Firm	Annualized Costs as a Percent of Revenues	Annualized Costs as a Percent of Profits	Total Number of Affected Firms over 10 years	Annualized Costs per Affected Very Small Firm	Annualized Costs as a Percent of Revenues	Annualized Costs as a Percent of Profits	
2420	Sawmills & planing mills	\$262,325	3.8%	\$39,774	\$9,968	\$314	0.12	3.2	1,365	\$918	0.35	9.2	
2430	Millwork & plywood	\$245,373	3.7%	\$64,469	\$9,079	\$346	0.14	3.8	2,492	\$987	0.40	10.9	
2440	Wood containers	\$215,651	3.6%	\$15,837	\$7,763	\$295	0.14	3.8	741	\$813	0.38	10.5	
2450	Wood buildings & mobile hom	\$365,286	3.7%	\$6,758	\$15,516	\$339	0.09	2.5	159	\$1,065	0.29	7.9	
2490	Misc. wood products	\$273,903	2.8%	\$19,012	\$7,669	\$267	0.10	3.5	713	\$929	0.34	12.1	
2510	Household furniture	\$203,804	2.9%	\$33,257	\$5,910	\$245	0.12	4.2	1,028	\$940	0.46	15.9	
2520	Office furniture	\$259,145	3.9%	\$6,115	\$10,107	\$320	0.12	3.2	167	\$1,164	0.45	11.5	
2530	Pub bldg & related furn.	\$332,258	3.0%	\$2,203	\$9,968	\$664	0.20	6.7	71	\$2,059	0.62	20.7	
2540	Partitions and fixtures	\$245,147	3.0%	\$15,996	\$7,354	\$327	0.13	4.4	640	\$1,112	0.45	15.1	
2590	Misc. furniture and fixtures	\$251,255	3.0%	\$7,402	\$7,538	\$219	0.09	2.9	286	\$751	0.30	10.0	
2610	Pulp mills	na [c]	3.8%	\$1,039	na	\$95	na	na	na	na	na	na	
2620	Paper mills	\$442,060	4.7%	\$20,777	\$20,777	\$218	0.05	1.0	12	\$913	0.21	4.4	
2630	Paperboard mills	na [c]	4.7%	na	na	\$174	na	na	5	\$678	na	na	
2650	Paperboard containers & boxes	\$514,381	4.0%	\$13,394	\$20,575	\$369	0.07	1.8	239	\$1,006	0.20	4.9	
2670	Misc. cnvrt paper products	\$498,582	2.7%	\$16,154	\$13,462	\$310	0.06	2.3	436	\$852	0.17	6.3	
2710	Newspapers	\$171,876	6.0%	\$58,111	\$10,313	\$191	0.11	1.9	1,716	\$627	0.36	6.1	
2720	Periodicals	\$372,480	3.7%	\$64,788	\$13,782	\$90	0.02	0.7	964	\$440	0.12	3.2	
2730	Books	\$399,819	4.0%	\$43,740	\$15,993	\$137	0.03	0.9	671	\$558	0.14	3.5	
2740	Miscellaneous publishing	\$386,448	5.1%	\$49,390	\$19,709	\$101	0.03	0.5	511	\$496	0.13	2.5	
2750	Commercial printing	\$234,077	3.3%	\$23,687	\$7,725	\$200	0.09	2.6	9,661	\$600	0.26	7.8	
2760	Manifold business forms	\$369,381	2.7%	\$3,690	\$9,973	\$323	0.09	3.2	150	\$794	0.21	8.0	
2770	Greeting cards	\$299,953	3.8%	\$969	\$11,398	\$254	0.08	2.2	24	\$885	0.29	7.8	
2780	Blankbooks & bookbinding	\$156,867	3.8%	\$5,705	\$5,961	\$294	0.19	4.9	371	\$758	0.48	12.7	
2790	Printing trade services	\$189,836	3.0%	\$15,445	\$5,695	\$112	0.06	2.0	414	\$734	0.39	12.9	
2810	Indust. inorganic chemicals	\$1,240,983	4.1%	\$15,061	\$50,880	\$116	0.01	0.2	38	\$904	0.07	1.8	
2820	Plastics mat. & synthetics	\$1,246,308	5.0%	\$18,819	\$62,315	\$107	0.01	0.2	38	\$864	0.07	1.4	
2830	Drugs	\$938,460	5.5%	\$40,312	\$51,615	\$127	0.01	0.2	101	\$975	0.10	1.9	
2840	Soap, clnrs. & toilet goods	\$892,064	2.9%	\$40,331	\$24,870	\$154	0.02	0.6	224	\$1,029	0.12	4.0	
2850	Paints & allied products	\$670,834	2.8%	\$15,064	\$18,783	\$165	0.02	0.9	137	\$966	0.14	5.1	
2860	Indust. organic chemicals	\$1,226,195	3.3%	\$10,561	\$40,464	\$104	0.01	0.3	32	\$850	0.07	2.1	
2870	Agricultural chemicals	\$1,005,313	3.4%	\$15,723	\$34,181	\$122	0.01	0.4	68	\$818	0.08	2.4	
2890	Misc. chemical products	\$932,634	3.8%	\$39,728	\$35,440	\$204	0.02	0.6	367	\$624	0.07	1.8	
2910	Petroleum refining	\$2,321,532 [c]	3.1%	\$4,822	\$71,968	\$119	0.01	0.2	11	\$709	0.03	1.0	
2950	Asphalt paving & roofing mat.	\$1,955,981	3.3%	\$24,012	\$64,547	\$297	0.02	0.5	128	\$858	0.04	1.3	
2990	Misc. pet. & coal prod	\$238,135 [c]	3.7%	\$1,894	\$8,811	\$146	0.06	1.7	42	\$754	0.32	8.6	
3010	Tires and inner tubes	\$449,894	3.9%	\$1,158	\$17,546	\$334	0.07	1.9	16	\$1,416	0.31	8.1	
3020	Rubber & plastics footwear	\$231,682	4.2%	\$214	\$9,731	\$268	0.12	2.8	5	\$1,302	0.56	13.4	
3050	Hose, blng. and gaskets	\$334,264	4.4%	\$5,236	\$14,708	\$331	0.10	2.2	87	\$1,352	0.40	9.2	
3060	Fab. rubber prod. n.e.c.	\$294,956	3.9%	\$8,812	\$11,503	\$313	0.11	2.7	183	\$1,308	0.44	11.4	
3080	Misc. plastics, n.e.c.	\$360,366	3.4%	\$74,960	\$12,252	\$252	0.07	2.1	1,872	\$823	0.23	6.7	
3110	Leather tan. & finishing	\$329,655	1.7%	\$1,233	\$5,604	\$295	0.09	5.3	71	\$910	0.28	16.2	
3130	Footwear cut stock	na [c]	1.8%	na	na	na	na	na	15	\$796	na	na	
3140	Footwear, except rubber	\$335,179	1.9%	\$1,210	\$6,368	\$247	0.07	3.9	57	\$819	0.24	12.9	
3150	Leather gloves & mittens	na [c]	1.8%	na	na	\$391	na	na	10	\$1,090	na	na	
3160	Luggage	na [c]	1.8%	na	na	\$143	na	na	44	\$519	na	na	
3170	Handbags & prsnal leather gds.	na [c]	1.8%	na	na	\$178	na	na	78	\$618	na	na	

**Table VIII-6 Estimated Economic Impact of the Proposed Ergonomics Standard on All Very Small Firms and All Very Small Affected Firms (Those with MSDs)\***

SIC	Industry	Average Revenues for Very Small Firms (\$)	Profits as a Percentage of Revenues	Profits (\$1,000s)	Average Profits per firm (\$)	For all very small firms				For very small affected firms (those with MSDs)			
						Annualized Costs per Firm	Annualized Costs as a Percent of Revenues	Annualized Costs as a Percent of Profits	Total Number of Affected Firms over 10 years	Annualized Costs per Affected Very Small Firm	Annualized Costs as a Percent of Revenues	Annualized Costs as a Percent of Profits	
3190	Leather goods, n.e.c.	\$192,370	1.8%	\$1,115	\$3,463	\$276	0.14	8.0	102	\$870	0.45	25.1	
3210	Flat glass	\$207,842	4.5%	\$355	\$9,353	\$347	0.17	3.7	10	\$1,324	0.64	14.2	
3220	Glass, pressed or blown	\$301,159	6.8%	\$8,089	\$20,479	\$326	0.11	1.6	91	\$1,419	0.47	6.9	
3230	Prod. of purchased glass	\$230,435	4.4%	\$11,619	\$10,139	\$300	0.13	3.0	284	\$1,208	0.52	11.9	
3240	Cement, hydraulic	\$1,050,298	4.5%	\$3,970	\$47,263	\$298	0.03	0.6	23	\$1,070	0.10	2.3	
3250	Structural clay products	\$256,304	6.0%	\$3,645	\$15,378	\$375	0.15	2.4	69	\$1,278	0.50	8.3	
3260	Pottery & related prods	\$132,403	4.5%	\$5,386	\$5,958	\$296	0.22	5.0	221	\$1,211	0.91	20.3	
3270	Concrete & plast. products	\$413,581	4.3%	\$73,804	\$17,784	\$417	0.10	3.3	1,353	\$1,277	0.31	7.2	
3280	Cut stone & stone prods	\$247,993	4.2%	\$9,103	\$10,416	\$358	0.14	3.4	271	\$1,156	0.47	11.1	
3290	Misc. nonmet. mineral prods.	\$407,792	5.7%	\$17,526	\$23,244	\$341	0.08	1.5	196	\$1,313	0.32	5.6	
3310	Basic steel products	\$797,017	4.7%	\$17,943	\$37,460	\$182	0.02	0.5	84	\$1,043	0.13	2.8	
3320	Iron and steel foundries	\$337,456	4.7%	\$6,265	\$15,860	\$304	0.09	1.9	98	\$1,222	0.36	7.7	
3330	Primary nonfer. metals	\$970,958	4.5%	\$4,195	\$43,693	\$194	0.02	0.4	18	\$1,048	0.11	2.4	
3340	Secondary nonfer. metals	\$1,072,780	3.6%	\$4,557	\$38,620	\$294	0.03	0.8	29	\$1,186	0.11	3.1	
3350	Nonfer. rolling & drawing	\$625,461	5.6%	\$10,333	\$35,026	\$237	0.04	0.7	61	\$1,154	0.18	3.3	
3360	Nonfer. foundries (stngs)	\$240,793	3.7%	\$7,617	\$8,909	\$303	0.13	3.4	214	\$1,208	0.50	13.6	
3390	Misc. primary metal prods	\$286,519	0.5%	\$617	\$1,461	\$189	0.07	13.0	115	\$693	0.24	47.4	
3410	Met. cans & ship. containers	\$655,041	2.8%	\$2,256	\$18,341	\$314	0.05	1.7	456	\$977	0.15	5.3	
3420	Cutlery, hndls., & hardware	\$278,801	4.7%	\$18,542	\$13,104	\$315	0.11	2.4	40	\$978	0.35	7.5	
3430	Plumbing & heating fixtures	\$367,613	3.8%	\$5,266	\$13,969	\$438	0.12	3.1	456	\$1,272	0.35	9.1	
3440	Fab. struct. metal products	\$321,458	4.0%	\$101,362	\$12,858	\$338	0.11	2.6	2,702	\$986	0.31	7.7	
3450	Screw machine products	\$240,690	3.9%	\$13,029	\$9,387	\$392	0.16	4.2	513	\$1,063	0.44	11.3	
3460	Met. forgings & stampings	\$337,019	4.5%	\$24,538	\$15,166	\$433	0.13	2.9	565	\$1,240	0.37	8.2	
3470	Metal services, n.e.c.	\$225,866	5.7%	\$46,489	\$12,874	\$301	0.13	2.3	1,230	\$885	0.39	6.9	
3480	Ordnance and access., n.e.c.	\$167,856	4.4%	\$2,208	\$7,386	\$205	0.12	2.8	75	\$817	0.49	11.1	
3490	Misc. fab. metal products	\$312,038	4.8%	\$65,453	\$14,978	\$312	0.10	2.1	1,391	\$979	0.31	6.5	
3510	Engines and turbines	\$413,304	4.4%	\$2,928	\$18,185	\$228	0.06	1.3	45	\$815	0.20	4.5	
3520	Farm & garden machinery	\$326,580	4.1%	\$15,023	\$13,390	\$214	0.07	1.6	328	\$733	0.22	5.5	
3530	Construct. & related mach.	\$394,130	5.0%	\$34,940	\$19,707	\$320	0.08	1.6	538	\$1,057	0.27	5.4	
3540	Metalworking machinery	\$232,627	4.6%	\$88,956	\$10,701	\$288	0.12	2.7	2,572	\$932	0.40	8.7	
3550	Special industry mach.	\$344,630	4.5%	\$44,711	\$15,508	\$250	0.07	1.6	822	\$876	0.25	5.6	
3560	General indust. mach.	\$356,137	4.5%	\$34,857	\$16,026	\$291	0.08	1.8	659	\$961	0.27	6.0	
3570	Computer & office equip.	\$621,373	3.3%	\$26,452	\$20,505	\$137	0.02	0.7	246	\$719	0.12	3.5	
3580	Refrig. & serv. indust. mach.	\$334,315	2.0%	\$7,796	\$6,686	\$316	0.09	4.7	336	\$1,096	0.33	16.4	
3590	Industrial mach., n.e.c.	\$193,735	5.5%	\$224,595	\$10,655	\$225	0.12	2.1	4,172	\$1,137	0.59	10.7	
3610	Elect. dist. equipment	\$394,178	4.0%	\$7,174	\$15,767	\$195	0.05	1.2	75	\$1,187	0.30	7.5	
3620	Elect. indust. apparatus	\$389,434	4.0%	\$19,643	\$15,577	\$216	0.06	1.4	205	\$1,335	0.34	8.6	
3630	Household appliances	\$421,725	3.4%	\$3,284	\$14,339	\$250	0.06	1.7	35	\$1,636	0.39	11.4	
3640	Elect. lightng. & wire equip.	\$338,127	4.6%	\$17,374	\$15,554	\$222	0.07	1.4	188	\$1,323	0.39	8.5	
3650	Household audio & vid. equi	\$569,616	5.9%	\$18,383	\$33,607	\$170	0.03	0.5	80	\$1,168	0.21	3.5	
3660	Communications equipment	\$496,670	5.4%	\$29,985	\$26,820	\$97	0.02	0.4	129	\$842	0.17	3.1	
3670	Electric components & access.	\$381,138	5.4%	\$68,104	\$20,581	\$105	0.03	0.5	423	\$821	0.22	4.0	
3690	Misc. elect. equipment	\$380,068	5.0%	\$16,799	\$19,003	\$121	0.06	1.2	106	\$1,837	0.48	9.7	
3710	Motor vehicles & equip.	\$418,128	3.9%	\$42,659	\$16,307	\$104	0.02	0.6	313	\$868	0.21	5.3	
3720	Aircraft and parts	\$551,923	4.3%	\$13,317	\$15,133	\$135	0.04	0.9	64	\$1,855	0.53	12.3	
3730	Ship, boat bldng. and repair[a]	\$188,726	3.6%	\$17,685	\$6,794	\$176	0.09	2.6	367	\$1,247	0.66	18.3	

**Table VIII-6 Estimated Economic Impact of the Proposed Ergonomics Standard on All Very Small Firms and All Very Small Affected Firms (Those with MSDs)\***

SIC	Industry	Average Revenues for Very Small Firms (\$)	Profits as a Percentage of Revenues	Profits (\$1,000s)	Average Profits per firm (\$)	For all very small firms				For very small affected firms (those with MSDs)			
						Annualized Costs per Firm	Annualized Costs as a Percent of Revenues	Annualized Profits as a Percent of Profits	Total Number of Affected Firms over 10 years	Annualized Costs per Affected Very Small Firm	Annualized Costs as a Percent of Revenues	Annualized Profits as a Percent of Profits	
3740	Railroad equipment	na [c]	2.8%	na	na	\$175	na	na	6	\$1,754	na	na	na
3750	Motorcycles & bicycles	\$364,505	3.8%	\$3,864	\$13,851	\$192	0.05	0.5	27	\$2,009	0.55	0.55	14.5
3760	Guided missiles	na [c]	3.8%	na	na	\$51	na	na	na	na	na	na	na
3790	Misc. transportation equip.	\$355,671	3.8%	\$9,745	\$13,516	\$180	0.05	0.5	131	\$990	0.28	0.28	7.3
3810	Strch. & navigation equipment	\$309,297	4.7%	\$4,797	\$14,557	\$78	0.03	0.3	37	\$698	0.23	0.23	4.8
3820	Mens. & controlling devices	\$352,337	5.3%	\$51,951	\$18,674	\$151	0.04	0.4	491	\$853	0.24	0.24	4.6
3840	Medical instrmnts & supplies	\$514,868	6.2%	\$88,264	\$31,922	\$128	0.02	0.2	436	\$815	0.16	0.16	2.6
3850	Ophthalmic goods	\$253,881	4.2%	\$4,223	\$10,663	\$155	0.06	0.6	70	\$874	0.34	0.34	8.2
3860	Photo. equip. & supplies	\$442,828	5.3%	\$11,054	\$23,470	\$126	0.03	0.3	62	\$952	0.21	0.21	4.1
3870	Watches, clocks, & parts	\$260,379	5.6%	\$1,385	\$14,581	\$76	0.03	0.3	15	\$496	0.19	0.19	3.4
3910	Jwelry, silvrwre, and plate	\$309,642	2.8%	\$21,302	\$8,670	\$127	0.04	0.4	503	\$623	0.20	0.20	7.2
3930	Musical instrmnts	\$183,232	3.3%	\$2,763	\$6,047	\$195	0.11	1.1	102	\$869	0.47	0.47	14.4
3940	Toys and sporting goods	\$260,558	3.3%	\$24,696	\$9,120	\$221	0.08	0.8	651	\$919	0.35	0.35	10.1
3950	Office and art supplies	\$229,779	3.3%	\$5,945	\$7,583	\$160	0.07	0.7	177	\$711	0.31	0.31	9.4
3960	Costume jewelry & notions	\$243,748	3.3%	\$7,280	\$8,044	\$104	0.04	0.4	172	\$551	0.23	0.23	6.9
3990	Misc. manufacturers	\$227,598	3.4%	\$5,097	\$7,738	\$182	0.08	0.8	3,571	\$362	0.16	0.16	4.7
4110	Local & suburban trans.	\$131,754	6.2%	\$34,200	\$8,169	\$441	0.33	3.3	3,061	\$957	0.73	0.73	11.7
4120	Taxicabs	\$108,596	5.9%	\$19,298	\$6,407	\$96	0.09	0.9	479	\$601	0.55	0.55	9.4
4130	Intercity & rural bus trans.	\$209,955	7.0%	\$29,955	\$14,697	\$274	0.13	1.3	64	\$854	0.41	0.41	5.8
4140	Bus charter service	\$190,309	3.8%	\$6,726	\$7,232	\$224	0.12	1.2	276	\$755	0.40	0.40	10.4
4150	School buses	\$92,169	5.9%	\$12,709	\$5,438	\$182	0.20	2.0	606	\$703	0.76	0.76	12.9
4210	Bus terminals	\$165,896	5.9%	\$470	\$9,788	\$384	0.23	2.3	23	\$798	0.48	0.48	8.2
4210	Tiking & Courier Service	\$256,899	3.2%	\$768,001	\$8,221	\$189	0.07	0.7	23,128	\$762	0.30	0.30	9.3
4220	Pub. warehousing & storage	\$284,511	9.4%	\$205,020	\$26,744	\$379	0.13	1.3	3,321	\$874	0.31	0.31	3.3
4230	Trucking terminal fac.	\$172,967 [c]	4.2%	\$436	\$7,265	\$328	0.19	1.9	24	\$806	0.47	0.47	11.1
4510	Air trans., scheduled	\$753,374	4.0%	\$37,819	\$30,135	\$756	0.10	1.0	805	\$1,178	0.16	0.16	3.9
4520	Air trans., nonsched.	\$469,131	6.0%	\$37,155	\$28,148	\$94	0.02	0.2	402	\$308	0.07	0.07	1.1
4580	Airports and services	\$250,033	4.6%	\$31,825	\$11,502	\$161	0.06	0.6	937	\$476	0.19	0.19	4.1
4610	Pipelines, except natural gas	na [c]	4.9%	na	na	\$510	na	na	19	\$869	na	na	na
4720	Pass. trans. arrangements	\$147,833	2.7%	\$102,597	\$3,991	\$35	0.02	0.2	2,283	\$397	0.27	0.27	9.9
4730	Freight trans. arrangements	\$305,924	3.7%	\$122,564	\$11,319	\$230	0.08	0.8	3,725	\$668	0.22	0.22	5.9
4740	Rental of railroad cars	\$2,541,068	3.4%	\$6,307	\$86,396	\$95	0.00	0.0	16	\$446	0.02	0.02	0.5
4780	Misc. trans. services	\$214,235	3.4%	\$12,936	\$7,284	\$332	0.15	1.5	395	\$1,493	0.70	0.70	20.5
4810	Telephone communication	\$469,144	7.7%	\$202,620	\$36,124	\$92	0.02	0.2	638	\$810	0.17	0.17	2.2
4820	Telegraph & other comm.	\$502,591	5.7%	\$10,428	\$28,648	\$62	0.01	0.1	35	\$651	0.13	0.13	2.3
4830	Radio & TV broadcasting	\$160,378	2.4%	\$20,951	\$3,849	\$43	0.03	0.3	481	\$489	0.30	0.30	12.7
4840	Cable & other pay TV services	\$739,240	5.4%	\$67,663	\$39,919	\$154	0.02	0.2	290	\$900	0.12	0.12	2.3
4890	Communication serv., n.e.c.	\$454,817	5.7%	\$31,498	\$25,925	\$32	0.01	0.1	70	\$551	0.12	0.12	2.1
4910	Electric services	\$1,047,530	10.8%	\$61,318	\$113,133	\$179	0.02	0.2	87	\$1,117	0.11	0.11	1.0
4920	Gas product. & distribution	\$4,870,258	6.7%	\$174,574	\$326,307	\$223	0.00	0.0	97	\$1,231	0.03	0.03	0.4
4930	Comb. utility services	\$1,059,789	8.3%	\$15,393	\$87,962	\$118	0.01	0.1	23	\$907	0.09	0.09	1.0
4940	Water supply	\$227,639	10.6%	\$80,087	\$24,130	\$137	0.06	0.6	494	\$919	0.40	0.40	3.8
4950	Sanitary services	\$339,686	7.6%	\$108,712	\$25,816	\$320	0.09	0.9	791	\$1,707	0.50	0.50	6.6
4960	Steam & air-cond. supplies	\$734,972	8.3%	\$2,196	\$6,003	\$193	0.03	0.3	7	\$1,049	0.14	0.14	1.7
4970	Irrigation systems	\$102,303	8.3%	\$2,938	\$8,491	\$79	0.08	0.8	92	\$296	0.29	0.29	3.5
5010	Motor vehicles	\$997,216	2.0%	\$577,727	\$19,944	\$279	0.03	0.3	10,574	\$764	0.08	0.08	3.8

**Table VIII-6 Estimated Economic Impact of the Proposed Ergonomics Standard on All Very Small Firms and All Very Small Affected Firms (Those with MSDs)\***

SIC	Industry	Average Revenues for Very Small Firms (\$)	Profits as a Percentage of Revenues	Profits (\$1,000s)	Average Profits per firm (\$)	For all very small firms				For very small affected firms (those with MSDs)			
						Annualized Costs per Firm	Annualized Costs as a Percent of Revenues	Annualized Costs as a Percent of Profits	Total Number of Affected Firms over 10 years	Annualized Costs per Affected Very Small Firm	Annualized Costs as a Percent of Revenues	Annualized Costs as a Percent of Profits	
5020	Furn. & homefurnishings	\$1,337,006	2.0%	\$346,900	\$26,740	\$252	0.02	0.9	4,333	\$753	0.06	2.8	
5030	Lumber & construct. mat.	\$1,364,186	1.9%	\$399,109	\$25,920	\$453	0.03	1.7	6,888	\$1,013	0.07	3.9	
5040	Prof. & commercial equip.	\$990,766	2.5%	\$910,291	\$24,769	\$163	0.02	0.7	9,285	\$645	0.07	2.6	
5050	Met. & minerals, except pet.	\$4,613,645	2.8%	\$934,761	\$129,182	\$332	0.01	0.3	2,775	\$864	0.02	0.7	
5060	Electrical goods	\$2,078,746	2.2%	\$1,133,646	\$45,732	\$192	0.01	0.4	7,613	\$635	0.03	1.4	
5070	Hardware supplies	\$1,182,468	2.2%	\$415,032	\$26,014	\$374	0.03	1.4	6,787	\$879	0.07	3.4	
5080	Mach., equip., & supplies	\$1,192,421	2.9%	\$1,811,001	\$34,380	\$288	0.02	0.8	19,167	\$787	0.07	2.3	
5090	Misc. durable goods	\$1,312,292	3.2%	\$1,435,207	\$41,993	\$176	0.01	0.4	8,590	\$701	0.05	1.7	
5100	Paper and paper products	\$1,719,729	1.6%	\$318,686	\$27,516	\$140	0.01	0.5	2,557	\$635	0.04	2.3	
5120	Drugs, propriet., & sundries	\$1,559,160	2.9%	\$217,713	\$45,216	\$154	0.01	0.3	997	\$745	0.05	1.6	
5130	Apparel and notions	\$1,737,426	2.1%	\$656,309	\$36,486	\$133	0.01	0.4	3,755	\$637	0.04	1.7	
5140	Groceries & related products	\$2,200,655	1.4%	\$926,401	\$30,809	\$306	0.01	1.0	9,429	\$976	0.04	3.2	
5150	Farm-prod. raw materials	\$4,082,308	1.7%	\$416,951	\$69,399	\$124	0.00	0.2	1,277	\$583	0.01	0.8	
5160	Chemicals & allied prod.	\$2,415,490	3.2%	\$724,570	\$77,296	\$195	0.01	0.3	2,518	\$727	0.03	0.9	
5170	Petrol. & petrol. prod.	\$5,853,007	2.2%	\$451,407	\$70,236	\$242	0.00	0.2	2,002	\$776	0.01	1.1	
5180	Beer, wine, & dist. bev.	\$1,901,134	1.3%	\$107,741	\$43,726	\$490	0.03	1.1	948	\$1,272	0.07	2.9	
5190	Misc. nondurable goods	\$991,448	1.9%	\$761,695	\$18,838	\$194	0.02	1.0	15,860	\$495	0.05	2.6	
5210	Lumber & other bldg. mat.	\$346,349	1.9%	\$150,831	\$10,381	\$534	0.10	5.1	8,461	\$917	0.17	8.8	
5230	Paint, glass, wallpaper str.	\$405,055	0.9%	\$19,598	\$3,645	\$376	0.09	10.3	3,046	\$663	0.16	18.2	
5250	Hardware stores	\$300,058	2.3%	\$77,950	\$6,901	\$296	0.10	4.3	5,681	\$588	0.20	8.5	
5260	Retail nurseries and gardens	\$353,082	2.2%	\$73,204	\$7,768	\$366	0.10	4.7	4,567	\$755	0.21	9.7	
5270	Mobile home dealers	\$1,016,599	2.9%	\$97,642	\$29,481	\$578	0.06	2.0	1,960	\$977	0.10	3.3	
5310	Department stores	\$1,124,000	2.6%	\$3,507	\$29,224	\$55	0.00	0.2	12	\$534	0.05	1.8	
5330	Variety stores	\$232,711	2.7%	\$22,883	\$6,283	\$483	0.21	7.7	2,440	\$720	0.31	11.5	
5390	Misc. gen. merchandise str.	\$326,089	1.6%	\$34,320	\$5,217	\$186	0.06	3.6	1,829	\$668	0.20	12.8	
5410	Grocery stores	\$372,487	1.2%	\$341,608	\$4,470	\$217	0.06	4.9	21,284	\$780	0.21	17.4	
5420	Meat and fish markets	\$379,841	1.3%	\$34,886	\$4,938	\$207	0.05	4.2	1,924	\$759	0.20	15.4	
5430	Fruit & vegetable markets	\$344,048	1.3%	\$13,396	\$4,473	\$98	0.03	2.2	487	\$603	0.18	13.5	
5440	Candy, nut, & confection str.	\$160,161	1.3%	\$5,801	\$2,082	\$126	0.08	6.12	612	\$571	0.36	27.4	
5450	Dairy products stores	\$209,840	1.3%	\$4,035	\$2,728	\$98	0.05	3.6	263	\$549	0.26	20.1	
5460	Retail bakeries	\$130,643	3.0%	\$59,557	\$3,919	\$163	0.12	4.1	3,873	\$638	0.49	16.3	
5490	Misc. food stores	\$271,747	1.8%	\$34,539	\$4,891	\$99	0.04	2.0	1,829	\$384	0.14	7.9	
5510	New and used car dealers	\$1,181,684	1.1%	\$106,783	\$12,999	\$449	0.04	3.5	4,042	\$913	0.08	7.0	
5520	Used car dealers	\$746,731	2.5%	\$391,380	\$18,668	\$37	0.00	0.2	1,655	\$472	0.06	2.5	
5530	Auto & home supply stores	\$365,409	1.9%	\$178,596	\$6,943	\$424	0.12	6.1	13,673	\$798	0.22	11.5	
5540	Gas service stations	\$807,554	1.6%	\$661,858	\$12,921	\$203	0.03	1.6	19,900	\$522	0.06	4.0	
5550	Boat dealers	\$659,731	2.2%	\$62,846	\$14,514	\$356	0.05	2.5	2,017	\$765	0.12	5.3	
5560	Rec. vehicle dealers	\$780,614	1.7%	\$32,022	\$13,270	\$475	0.06	3.6	1,298	\$883	0.11	6.7	
5570	Motorcycle dealers	\$619,849	3.1%	\$64,602	\$19,215	\$52	0.01	0.3	332	\$524	0.08	2.7	
5590	Auto dealers, n.e.c.	\$590,677	2.6%	\$17,922	\$15,358	\$44	0.01	0.3	99	\$522	0.09	3.4	
5610	Men's & boys clothing str.	\$357,954	0.1%	\$2,081	\$358	\$104	0.03	29.0	1,469	\$411	0.11	11.47	
5620	Women's clothing stores	\$252,774	4.0%	\$160,612	\$10,111	\$80	0.03	0.8	3,065	\$412	0.16	4.1	
5630	Wm's access & specialty str.	\$211,468	4.5%	\$36,751	\$9,516	\$68	0.03	0.7	631	\$414	0.20	4.4	
5640	Child's & infants' wear str.	\$207,560	1.2%	\$27,335	\$2,491	\$102	0.05	4.1	599	\$501	0.24	20.1	
5650	Family clothing stores	\$282,179	1.3%	\$24,651	\$3,668	\$239	0.08	6.5	2,818	\$571	0.20	15.6	
5660	Shoe stores	\$339,604	2.6%	\$62,117	\$8,830	\$124	0.04	1.4	1,759	\$503	0.15	5.7	

**Table VIII-6 Estimated Economic Impact of the Proposed Ergonomics Standard on All Very Small Firms and All Very Small Affected Firms (Those with MSDs)\***

SIC	Industry	Average Revenues for Very Small Firms (\$)	Profits as a Percentage of Revenues	For all very small firms				For very small affected firms (those with MSDs)			
				Average Profits per firm (\$)	Annualized Costs per Firm	Annualized Costs as a Percent of Revenues	Annualized Costs as a Percent of Profits	Annualized Costs per Affected Very Small Firm	Annualized Costs as a Percent of Revenues	Annualized Costs as a Percent of Profits	Total Number of Affected Firms over 10 years
5690	Misc. apparel stores	\$239,857	1.2%	\$20,798	\$43	0.02	1.5	\$392	0.16	795	13.6
5710	Furniture & homefurnishing str	\$391,573	2.3%	\$426,227	\$369	0.09	4.1	\$747	0.19	23,388	8.3
5720	Household appliance str	\$399,872	2.3%	\$9,197	\$323	0.08	3.5	\$755	0.19	3,630	8.2
5730	Radio, TV, & compr str	\$473,892	2.3%	\$250,852	\$156	0.03	1.4	\$675	0.14	5,301	6.2
5810	Eating & drinking places	\$127,704	3.0%	\$1,120,186	\$3,831	0.09	3.0	\$444	0.35	75,111	11.6
5910	Drug stores	\$534,247	2.5%	\$287,745	\$192	0.04	1.4	\$551	0.10	7,500	4.1
5920	Liquor stores	\$457,765	1.4%	\$159,493	\$34	0.01	6.4	\$320	0.07	2,612	5.0
5930	Used merchandise stores	\$186,153	4.6%	\$158,330	\$138	0.07	1.6	\$495	0.27	5,139	5.8
5940	Misc. shopping goods str.	\$257,537	2.2%	\$500,200	\$144	0.06	2.5	\$493	0.19	25,859	8.7
5960	Nonstore retailers	\$327,931	2.0%	\$158,214	\$220	0.07	3.4	\$707	0.22	7,510	10.8
5980	Fuel dealers	\$574,269	0.8%	\$30,776	\$349	0.06	7.6	\$783	0.14	2,987	17.0
5990	Retail stores, n.e.c.	\$231,538	2.6%	\$444,991	\$114	0.05	1.9	\$689	0.30	12,187	11.4
6010	Central res. depository	na [c]	12.7%	na	\$161	na	na	na	na	na	na
6020	Commercial banks	\$600,009	12.7%	\$206,276	\$67	0.01	0.1	\$402	0.07	449	0.5
6030	Savings institutions	\$977,677	12.7%	\$124,165	\$64	0.01	0.1	\$444	0.05	90	0.4
6060	Credit unions	\$420,849	12.7%	\$445,274	\$67	0.02	0.1	\$387	0.09	1,438	0.7
6080	Foreign banking	\$3,363,784	12.7%	\$43,574	\$74	0.00	0.0	\$408	0.01	18	0.1
6090	Banking-related functions	\$289,839	12.7%	\$109,656	\$61	0.02	0.2	\$463	0.16	394	1.3
6110	Federal credit agencies	\$896,270	14.6%	\$9,683	\$20	0.00	0.0	\$435	0.05	3	0.3
6140	Personal cred. institutions	\$595,983	18.1%	\$439,043	\$15	0.00	0.0	\$490	0.08	128	0.5
6150	Business cred. institutions	\$1,193,070	15.5%	\$504,108	\$37	0.00	0.0	\$458	0.04	219	0.2
6160	Mortgage bankers & brokers	\$271,298	9.6%	\$331,913	\$34	0.01	0.1	\$414	0.15	1,057	1.6
6210	Security brokers & dealers	\$552,911	10.5%	\$455,621	\$21	0.00	0.0	\$455	0.08	370	0.8
6220	Commodity contracts brokers	\$451,741	11.7%	\$72,674	\$9	0.00	0.0	\$230	0.05	52	0.4
6230	Security & commod. exchange	\$239,233	11.7%	\$1,679	\$44	0.02	0.2	\$449	0.19	6	1.6
6280	Security & commod. services	\$321,210	14.1%	\$726,734	\$14	0.00	0.0	\$861	0.27	265	1.9
6310	Life insurance	\$1,834,300	12.7%	\$193,354	\$40	0.00	0.0	\$340	0.03	61	0.2
6320	Medical & health insur.	\$3,241,956	12.7%	\$250,743	\$75	0.00	0.0	\$685	0.02	67	0.2
6330	Fire, marine, & casualty ins.	\$1,049,008	12.7%	\$202,900	\$42	0.00	0.0	\$677	0.06	95	0.5
6350	Surety insurance	\$1,478,721	12.7%	\$38,311	\$38	0.00	0.0	\$584	0.04	13	0.3
6360	Title insurance	\$272,718	12.7%	\$19,292	\$78	0.03	0.2	\$553	0.20	79	1.6
6370	Pension and health funds	\$265,760	12.7%	\$73,207	\$34	0.01	0.1	\$523	0.20	141	1.5
6390	Ins. carriers, n.e.c.	\$469,706	12.7%	\$11,990	\$28	0.01	0.0	\$179	0.04	32	0.3
6410	Insurance agents	\$208,917	6.8%	\$1,594,937	\$27	0.01	0.2	\$409	0.20	7,411	2.9
6510	Real estate operators	\$437,952	15.4%	\$6,147,986	\$67	0.03	0.2	\$500	0.11	21,631	0.7
6530	RE agents and managers	\$276,237	12.1%	\$3,597,325	\$58	0.02	0.2	\$455	0.16	13,824	1.4
6540	Title abstract offices	\$199,511	12.1%	\$98,615	\$99	0.05	0.4	\$404	0.20	999	1.7
6550	Subdividers & devlopers	\$350,225	9.1%	\$325,289	\$130	0.04	0.4	\$692	0.20	3,086	2.2
6710	Holding offices	\$769,686	17.5%	\$705,264	\$46	0.01	0.0	\$535	0.07	455	0.4
6720	Investment offices	\$2,142,997	17.5%	\$257,267	\$24	0.00	0.0	\$502	0.02	32	0.2
6730	Trusts	\$409,627	17.5%	\$568,317	\$41	0.01	0.1	\$470	0.11	688	0.7
6790	Miscellaneous investing	\$932,853	17.5%	\$1,187,475	\$34	0.00	0.0	\$426	0.05	575	0.3
7010	Hotels and motels	\$172,236	7.0%	\$353,593	\$232	0.13	1.9	\$811	0.47	8,390	6.7
7020	Rooming & boarding houses	\$128,762	7.0%	\$13,250	\$98	0.08	1.1	\$312	0.24	462	3.5
7030	Camps and rec. vehicle parks	\$202,714	7.0%	\$90,929	\$21	0.01	0.1	\$457	0.23	289	3.2
7040	Membership-basis org. hotels	\$171,197	7.0%	\$27,023	\$25	0.01	0.2	\$401	0.23	143	3.3

**Table VIII-6 Estimated Economic Impact of the Proposed Ergonomics Standard on All Very Small Firms and All Very Small Affected Firms (Those with MSDs)\***

SIC	Industry	For all very small firms				For very small affected firms (those with MSDs)						
		Average Revenues for Very Small Firms (\$)	Profits as a Percentage of Revenues	Profits (\$1,000s)	Average Profits per firm (\$)	Annualized Costs per Firm	Annualized Costs as a Percent of Revenues	Annualized Costs per Affected Very Small Firm	Annualized Costs as a Percent of Revenues	Total Number of Affected Firms over 10 years	Annualized Costs as a Percent of Profits	
7210	Laundry & garment services	\$115,139	3.8%	\$204,426	\$4,375	\$241	0.21	\$681	0.59	16,575	0.59	15.6
7220	Photo studios, portrait	\$163,990	3.9%	\$53,621	\$6,396	\$63	0.04	\$394	0.24	1,339	0.24	6.2
7230	Beauty shops	\$77,387	4.6%	\$252,237	\$3,560	\$38	0.05	\$388	0.50	6,869	0.50	10.9
7240	Barber shops	\$72,648	4.6%	\$14,032	\$3,342	\$106	0.15	\$64	0.64	964	0.64	13.9
7250	Shoe repair	\$94,046	4.6%	\$8,830	\$4,326	\$40	0.04	\$206	0.22	394	0.22	4.8
7260	Fun. service and crematories	\$346,624	7.9%	\$312,991	\$27,383	\$124	0.04	\$569	0.16	2,484	0.16	2.1
7290	Misc. personal services	\$101,738	4.6%	\$116,165	\$4,680	\$17	0.02	\$790	0.78	537	0.78	16.9
7310	Advertising	\$328,643	3.8%	\$203,861	\$12,488	\$84	0.03	\$592	0.18	2,329	0.18	4.7
7320	Credit report. & collection	\$190,234	7.0%	\$65,610	\$13,316	\$52	0.03	\$457	0.24	560	0.24	3.4
7330	Mailing, reprod., sten., serv	\$249,443	4.6%	\$361,741	\$11,474	\$72	0.03	\$531	0.21	4,282	0.21	4.6
7340	Services to buildings	\$96,644	3.7%	\$204,859	\$3,576	\$68	0.07	\$429	0.44	9,067	0.44	12.0
7350	Misc. equip. rental	\$319,788	9.7%	\$435,895	\$29,421	\$154	0.05	\$711	0.22	3,217	0.22	2.4
7360	Pers. supply services	\$259,712	3.0%	\$134,401	\$7,791	\$42	0.02	\$538	0.21	1,333	0.21	6.9
7370	Compr. & data proc. services	\$273,544	5.2%	\$1,005,842	\$14,224	\$28	0.01	\$553	0.20	3,539	0.20	3.9
7380	Misc. business services	\$214,709	3.4%	\$314,432	\$7,300	\$40	0.02	\$271	0.13	10,487	0.13	3.7
7510	Auto rentals, no drivers	\$449,841	5.7%	\$125,281	\$25,641	\$176	0.04	\$717	0.16	1,200	0.16	2.8
7520	Automobile parking	\$282,968	4.8%	\$24,313	\$13,582	\$114	0.04	\$717	0.25	286	0.25	5.3
7530	Automotive repair shops	\$228,541	3.9%	\$1,153,160	\$8,913	\$177	0.08	\$671	0.29	34,183	0.29	7.2
7540	Automotive serv., exc. repair	\$145,592	6.5%	\$196,339	\$9,463	\$239	0.16	\$723	0.47	7,235	0.47	7.5
7620	Electrical repair shops	\$185,528	2.6%	\$78,622	\$4,824	\$206	0.11	\$752	0.41	4,478	0.41	15.6
7630	Watch and jewelry repair	\$133,127	3.4%	\$29,334	\$4,526	\$132	0.29	\$556	0.42	378	0.42	12.3
7640	Reupholstery & furn. repair	\$125,164	3.4%	\$29,334	\$4,256	\$80	0.06	\$398	0.32	1,376	0.32	6.6
7690	Misc. repair shops	\$210,042	5.9%	\$440,862	\$12,392	\$241	0.11	\$823	0.39	10,395	0.39	6.6
7810	Motion picture production	\$440,712	5.4%	\$319,685	\$23,798	\$88	0.02	\$667	0.15	1,763	0.15	2.8
7820	Motion picture dist.	\$802,155	5.8%	\$50,340	\$46,525	\$366	0.05	\$889	0.11	445	0.11	1.9
7830	Motion picture theaters	\$206,221	5.8%	\$123,178	\$11,961	\$530	0.26	\$957	0.46	1,167	0.46	8.0
7840	Video tape rental	\$123,805	7.2%	\$120,891	\$8,914	\$257	0.21	\$524	0.42	6,646	0.42	5.9
7910	Dance studios & schools	\$95,808	4.1%	\$21,868	\$3,928	\$207	0.22	\$591	0.62	1,950	0.62	15.0
7920	Producers, orch., entertainers	\$451,723	3.6%	\$250,988	\$16,262	\$88	0.02	\$571	0.13	2,375	0.13	3.5
7930	Bowling centers	\$118,745	4.2%	\$18,842	\$4,987	\$137	0.12	\$594	0.50	871	0.50	11.9
7940	Commercial sports	\$398,365	3.6%	\$58,354	\$14,341	\$121	0.10	\$879	0.13	954	0.13	3.6
7990	Misc. recreation services	\$179,978	4.2%	\$372,239	\$7,559	\$173	0.10	\$879	0.49	9,692	0.49	11.6
8010	Offices of medical doctors	\$375,838	6.3%	\$3,750,538	\$23,678	\$83	0.03	\$516	0.15	6,647	0.15	2.7
8020	Dentists offices and clinics	\$275,329	11.3%	\$3,386,315	\$31,112	\$74	0.02	\$539	0.14	24,491	0.14	2.3
8030	Osteopathic physicians	\$300,717	5.4%	\$137,639	\$16,239	\$35	0.01	\$437	0.19	15,010	0.19	1.7
8040	Other health practitioners	\$198,218	6.5%	\$1,025,567	\$12,884	\$112	0.06	\$538	0.27	16,647	0.27	4.2
8050	Nursing & personal care fac.	\$186,764	4.3%	\$37,536	\$8,031	\$322	0.17	\$701	0.47	1,701	0.47	11.0
8060	Hospitals	\$1,960,099	5.1%	\$24,192	\$99,965	\$165	0.01	\$735	0.04	54	0.04	0.7
8070	Med. & dental labs	\$227,997	7.9%	\$206,649	\$18,012	\$75	0.03	\$563	0.25	1,519	0.25	3.1
8080	Home hth care services	\$178,999	3.5%	\$35,823	\$6,265	\$190	0.11	\$821	0.46	1,323	0.46	13.1
8090	Hth & allied serv., n.e.c.	\$241,346	11.0%	\$253,746	\$26,548	\$134	0.06	\$486	0.20	2,631	0.20	1.8
8110	Legal services	\$248,616	5.0%	\$1,937,821	\$36	\$36	0.01	\$601	0.24	9,243	0.24	4.8
8210	Elem. & secondary schools	\$124,855	5.9%	\$53,841	\$7,366	\$66	0.05	\$538	0.43	890	0.43	7.3
8220	Colleges & universities	\$250,072	6.2%	\$15,706	\$15,504	\$35	0.01	\$608	0.24	59	0.24	3.9
8230	Libraries	\$76,904	5.9%	\$8,585	\$4,537	\$22	0.03	\$454	0.59	92	0.59	10.0
8240	Vocational schools	\$176,678	5.9%	\$55,685	\$10,424	\$24	0.01	\$480	0.27	262	0.27	4.6

**Table VIII-6 Estimated Economic Impact of the Proposed Ergonomics Standard on All Very Small Firms and All Very Small Affected Firms (Those with MSDs)\***

SIC	Industry	For all very small firms				For very small affected firms (those with MSDs)				
		Average Revenues for Very Small Firms (\$)	Profits as a Percentage of Revenues	Profits per firm (\$)	Annualized Costs per Firm	Annualized Costs as a Percent of Revenues	Annualized Costs as a Percent of Profits	Annualized Costs per Firm	Annualized Costs as a Percent of Profits	
8290	Schools, n.e.c.	\$161,333	5.0%	\$8,067	\$22	0.01	0.3	\$331	0.21	4.1
8320	Individual & fam. services	\$172,044	4.1%	\$4,594	\$150	0.13	3.3	\$504	0.45	11.0
8330	Job train. & related serv.	\$141,082	2.5%	\$1,869	\$107	0.08	3.0	\$452	0.32	12.8
8350	Child day care services	\$55,578	3.8%	\$3,112	\$99	0.18	4.7	\$366	0.66	17.4
8360	Residential care	\$90,977	2.6%	\$2,365	\$261	0.29	11.0	\$616	0.68	26.1
8390	Social services, n.e.c.	\$261,374	3.4%	\$8,525	\$78	0.03	0.9	\$444	0.17	5.0
8410	Museums & art galleries	\$124,048	6.1%	\$7,667	\$72	0.06	0.9	\$437	0.35	5.8
8420	Bot. & zool. gardens	\$157,533	6.1%	\$9,610	\$97	0.06	1.0	\$518	0.33	5.4
8610	Business associations	\$253,725	3.3%	\$8,373	\$31	0.01	0.4	\$399	0.16	4.8
8620	Prof. organizations	\$274,989	4.8%	\$13,199	\$26	0.01	0.2	\$397	0.14	3.0
8630	Labor organizations	\$188,674	6.4%	\$20,586	\$21	0.01	0.2	\$335	0.18	2.8
8640	Civic & social assoc.	\$153,214	3.4%	\$5,209	\$65	0.04	1.2	\$378	0.25	7.3
8650	Political organizations	\$221,265	6.4%	\$35,162	\$27	0.01	0.2	\$213	0.10	1.5
8660	Religious organizations	\$121,886	9.1%	\$11,092	\$13	0.01	0.1	\$435	0.36	3.9
8690	Membership orgs., n.e.c.	\$162,338	6.4%	\$69,746	\$74	0.05	0.7	\$474	0.29	4.6
8710	Eng. and arch. services	\$230,441	4.2%	\$9,679	\$42	0.02	0.4	\$457	0.20	4.7
8720	Accting, auditing, & bkkeepin	\$166,295	12.0%	\$19,955	\$45	0.03	0.2	\$463	0.28	2.3
8730	Research & testing services	\$294,370	3.4%	\$10,009	\$82	0.03	0.8	\$553	0.19	5.5
8740	Management & pub. relations	\$256,909	6.2%	\$15,928	\$44	0.02	0.3	\$426	0.17	2.7
8990	Services, n.e.c.	\$246,015	5.0%	\$12,301	\$153	0.06	1.2	\$452	0.18	3.7
Average		\$537,098	4.9%	\$26,997	\$183	0.06	1.80	\$740	0.24	6.96
Total		\$69,586,551					896,908			

Source: Office of Regulatory Analysis. Revenue data are from U.S. Dept. of Commerce, Bureau of Census. Compliance costs are from Chapter V of this Preliminary Economic Analysis. Profit rates are from, in most cases, Robert Morris Associates ("RMA Studies")

\* "Very small firm" refers to firms with 1-19 employees.

[a] Excludes SIC 3731 (not in the scope of proposed standard)

[b] A profit rate of 5 percent of revenues was estimated for SICs 910,920,970,8110, and 8990; a profit rate of 4 percent was estimated for SICs 2280, 2310, and 5620.

[c] Revenue data was wholly or partially suppressed by the Census Bureau for the 1-19 employee entity size category. Any projected economic impacts are therefore overestimated for these industries. Where estimated costs as a percent of profits would be in excess of 20 percent in those industries for which the Bureau suppressed the data, OSHA reported profit impacts as "na."

Based on these findings, OSHA convened a Small Business Regulatory Enforcement Fairness Act (SBREFA) Panel (the report of the Panel is in the docket of this rulemaking as Ex. 23) and an Initial Regulatory Flexibility Analysis, which is presented in the next section.

#### H. Initial Regulatory Flexibility Analysis

The Regulatory Flexibility Act, as amended in 1996, requires that an Initial Regulatory Flexibility Analysis (IRFA) contain the following elements:

- (1) A description of the reasons why action by the Agency is being considered;
- (2) A succinct statement of the objectives of, and legal basis for, the proposed rule;
- (3) A description of and, where feasible, an estimate of the number of small entities to which the proposed rule will apply;
- (4) A description of the projected reporting, recordkeeping and other compliance requirements of the proposed rule, including an estimate of the classes of small entities that will be subject to the requirements and the type of professional skills necessary for preparation of the report or record; and
- (5) An identification, to the extent practicable, of all relevant Federal rules that may duplicate, overlap or conflict with the proposed rule.

In addition, a Regulatory Flexibility Analysis must contain a description of any significant alternatives to the proposed rule that accomplish the stated objectives of the applicable statute (in this case the OSH Act) and that minimize any significant economic impact of the proposed rule on small entities.<sup>5</sup>

#### 1. Description of the Reasons for Agency Action

As discussed in detail in section H.2, below, OSHA has determined that it is appropriate to propose an ergonomics program standard to ensure that general industry employers whose employees have experienced an MSD covered by the standard are afforded the protection provided by the quick fix option or the full ergonomics program. Employers are required by the full program to perform a job hazard analysis of the job and to implement controls that are reasonably anticipated to eliminate or materially reduce the risk factors giving rise to the ergonomics injury or illness.

Musculoskeletal disorders have continued to occur in the workplace in large numbers: in 1996, 647,000 lost workday MSDs were reported by employers to the Bureau of Labor Statistics, and OSHA estimates that the number of non-lost workday MSDs (*i.e.*, restricted work MSDs and non-lost workday MSDs) occurring in the same year brings this total to about 1.8 million MSDs in that year.

OSHA establishes that workplace risk factors pose a significant risk of material impairment of health or functional capacity to workers in general industries in Sections VI and VII of this preamble, the Preliminary Risk Assessment and Significance of Risk sections, respectively. The OSH Act, as explained below, requires OSHA to act when the risk of harm posed to workers is significant and feasible means of reducing that risk exist. As demonstrated in Chapter III (Technological Feasibility) of the economic analysis, employers have many choices of controls available

to address these risks. Further, because the standard allows employers to choose among several control approaches—engineering, work practice, or administrative controls—employers will have an even larger range of control choices. Thus, OSHA is considering regulatory action because workers in the industries covered by the rule are at significant risk of material health impairment and feasible methods of reducing this risk substantially are available.

#### 2. Legal Basis and Objectives of the Proposed Rule

OSHA's authority to issue an ergonomics program standard derives from sections 2(b), 6(b)(5), 8(c)(1), and 8(g)(2) of the OSH Act. The objective of the proposed rule is to reduce the risk of occupational musculoskeletal disorders in exposed working populations through the use of an ergonomics program that includes management leadership and employee participation, hazard identification and reporting, job hazard control and analysis, training, MSD management, and program evaluation. Implementation of ergonomics programs incorporating these elements has been shown to substantially reduce the risk of MSDs among workers.

In developing the proposed standard, OSHA will be guided by eight principles: (1) The proposed standard should focus on operations where the risk of MSDs is the greatest and solutions are known; (2) it should maximize worker protection and cost-effectiveness; (3) it should include those program elements that best practices have shown to be effective; (4) it should be written in plain language; (5) it should recognize the unique needs of small businesses; (6) it should be performance-oriented and flexible; (7) it should recognize employers who already have effective ergonomics programs; and (8) it should include a tiered approach that does not require employers whose establishments do not have problem jobs to implement a full program.

OSHA standards must also be supported by substantial evidence in the record as a whole. OSHA has collected and analyzed thousands of scientific studies and articles on MSDs, successful interventions to control them, and ergonomic programs. Other government agencies have also found such programs to be effective. In August of 1997, for example, the Government Accounting Office (GAO) issued a report of its investigation of ergonomics programs. The GAO report, "Private Sector Ergonomics Programs Yield Results," is a detailed review of the ergonomics programs of five major corporations that shows that these companies have implemented programs that successfully address serious ergonomic problems (Ex. 26-5). A NIOSH publication entitled "Elements of Ergonomics Program" (1998) also identified the elements included in the program envisioned by the proposed standard as essential to program success (Ex. 26-2).

NIOSH (1997) also recently published a critical review of the large body of epidemiologic evidence on work-related MSDs and exposure to workplace risk factors. NIOSH identified more than 2,000 studies for this project and conducted a detailed review of over 600 of those studies (Ex. 26-1). NIOSH found that, for most combinations of MSDs and risk factors, the human evidence for causality was either sufficient or strong. NIOSH found the evidence convincing based on the strength of the associations, the lack of ambiguity in temporal relationships from projected studies, the consistency of the results of these studies, and these studies' use of adequate controls or adjustment for likely confounders. Similarly, a recent (1998) National Research Council (NRC) panel of 66 scientists considered the evidence for the work-relatedness of musculoskeletal

<sup>5</sup>The Regulatory Flexibility Act states that a Regulatory Flexibility Analysis need not contain all of the above elements *in toto* if these elements are presented elsewhere in the documentation and analysis of the rule. The Regulatory Flexibility Analysis should, however, summarize where these elements can be found elsewhere in the rulemaking record.

disorders. The most significant finding of the NRC report concerned the work-relatedness of MSDs: "there is a higher incidence of reported pain, injury, loss of work, and disability among individuals who are employed in occupations where there is a high level of exposure to physical loading than for those employed in occupations with lower levels of exposure." (Ex. 26-37)

### 3. Description of the Number of Small Entities

Determining the number of small entities falling within the scope of various provisions of the proposed standard at any given time is complicated, because all small entities in general industry are potentially affected by the rule in the sense that if a covered MSD occurs, the establishment will have at least to determine if the MSD is covered by the standard. (For the purpose of this economic analysis, a covered MSD is one that meets the criteria for an OSHA recordable injury or illness and additionally meets the screening criteria in section 1910.902.) The first step in the description of affected small entities for this IRFA is therefore to determine the number of small entities in general industry. However, in a typical year, most small entities will not in fact be within the scope of the standard, because only those small entities that have employees engaged in manual handling or manufacturing operations, or whose employee(s) experience a covered MSD, will be covered by the standard. Further, only establishments whose employee(s) experience a covered MSD will need to have a full program. Thus, to be within the scope of the standard, a small entity must have employees: (1) Engaged in manufacturing operations; (2) engaged in manual handling operations, or (3) who have experienced a covered MSD.

This analysis has been carried out in terms of small establishments rather than small entities. This was necessary because of the complexity of the probability calculation involving small entities owning multiple establishments. As a result, this economic analysis tends to overestimate the number of affected small entities, because some small establishments are owned by large entities. OSHA estimates that there are 5.8 million small establishments in general industry potentially affected by the rule. Of these, an estimated 1.45 million small establishment would be required by the proposed standard to maintain a basic ergonomics program at all times because they have employees engaged in manual handling or manufacturing operations. Over the course of 10 years, 1.5 million small establishments would need to initiate a full program at least once because an employee in the establishment had a covered MSD.

The proposed standard potentially covers an estimated 5.1 million very small entities (*i.e.*, those employing fewer than 20 employees). Of these, OSHA estimates that 1.27 million very small entities would be required to maintain a basic ergonomics program at all times. Over the course of 10 years, 1.1 million very small establishments would need to initiate a full program at least once because an employee in the establishment had a covered MSD.

### 4. Description of Proposed Reporting, Recordkeeping and Other Compliance Requirements

#### Compliance Requirements

There is widespread agreement that successful ergonomics programs include the following elements in some form:

- Management leadership and employee participation
- Hazard information and reporting
- MSD management

- Job hazard analysis and control
- Training
- Program evaluation.

OSHA is proposing a tiered approach to program implementation in this standard. This would mean that general industry establishments with a somewhat lower probability of incurring a covered MSD (*i.e.*, general industry establishments that do not engage in manual handling or manufacturing operations) would not be required to take action until an MSD has occurred. Moreover, further action would only be triggered if the MSD is determined by the employer to be one that is recordable under the OSHA recordkeeping standard, and, in addition, is determined by the employer to be a covered MSD. Establishments with a higher probability of incurring a covered MSD, *i.e.*, those whose employees engage in manufacturing operations or manual handling, would be required to implement a basic ergonomics program that emphasizes employer leadership and employee participation and hazard information and reporting, even in the absence of a covered MSD.

If no covered MSD occurs for three years in a job that has been controlled under the program required by the standard, the establishment is permitted by the proposed standard to drop back to the lesser program for that job (if the establishment had employees who were engaged in manufacturing or manual handling operations) or to a program consisting essentially only of maintaining the controls in the problem job and any associated employee training (if the establishment did not have employees engaged in manufacturing operations or manual handling).

The basic program includes those elements listed above that are appropriate to workplaces where covered MSDs and problem jobs have not yet been identified. The proposed standard includes the following elements in the basic program:

- Management leadership, including allocation of resources, information and training for responsible managers or supervisors, and assignment of program responsibilities;
- Establishment of an employee reporting system and protection against discrimination for employees participating in the program or reporting hazards;
- Providing employees with the information they need to recognize the signs and symptoms of MSDs and MSD hazards;
- Review of safety and health records the employer already keeps;
- Employee participation in the basic program; and
- Determination of the recordability and then covered status of reported MSDs.

Once a covered MSD has been identified, a full ergonomics program is required. However, even the full program may not be necessary in some circumstances when an MSD is identified. For example, if the means of controlling a job are obvious and completely effective, such as eliminating the need for lifting by installing automated equipment, then a detailed job hazard analysis is unnecessary because the employer will be able to use the proposed standard's quick fix option.

Table VIII-7 shows the requirements of the rule, the circumstances that trigger these requirements, the hours or costs involved, and the level of expertise required. These are estimates made by OSHA and its ergonomics consultants, and they are based on experience in implementing such

programs in a variety of workplaces. To further ensure that OSHA's estimates reflect real experience in actual workplaces, OSHA reviewed its estimates of the costs of controlling jobs with an Expert Ergonomics Panel made up of ergonomists with experience in controlling jobs in general industry settings. These estimates have been significantly modified from the estimates provided to the SBREFA Panel in February 1999. The most significant modifications to the economic analysis in response to the recommendations of the SBREFA panel are:

- OSHA has added "familiarization" costs for all general industry employers to read and understand the proposed rule to determine whether it:

(1) Applies to their establishment, and

(2) Would allow their program to be grandfathered in.

- OSHA has significantly increased its estimates of the costs of the analysis necessary to identify appropriate controls for problem jobs;
- OSHA has added costs for employers to assess whether a given MSD is in fact a covered MSD;
- OSHA has increased its estimates both of the amount of time consultants would be needed and the cost of consultant services.

The following table (Table VIII-7) shows the assumption OSHA used to develop the costs estimates used in this Preliminary Economic Analysis.

**Table VIII-7.—Assumptions Used To Develop Costs for Provisions of the Proposed Rule**

PROVISION	WHEN REQUIRED	HOURS OR COSTS INVOLVED	LEVEL OF STAFF OR EXPERTISE REQUIRED
Familiarization Costs to Review Standard to Determine Applicability to Establishment and Ability to Grandfather In (Cost to All General Industry Firms)	Initially for all establishments in general industry	1 Hour	Manager
Cost to Investigate whether an MSD or Persistent Symptoms are Covered by the Standard (Cost to All General Industry Firms)	All establishments with manufacturing or manual handling jobs; for other general industry establishments, only when an MSD occurs	0.25 hour of managerial time and 0.25 hour of employee time per recordable MSD	Manager who has received initial training
Cost to Implement Initial Program (designating responsible persons, providing resources, etc.) (Basic Program)	Establishments with basic programs: all with manual handling or manufacturing jobs; otherwise, only if MSD occurs	1 hour	Manager with initial training
Cost to Provide Managerial Training as Part of Management Leadership (Basic Program)	Establishments with basic programs: all with manual handling or manufacturing jobs; otherwise, only if MSD occurs	2 Hours	Manager
Cost to Set up Reporting System (Basic Program)	Establishments with basic programs: all with manual handling or manufacturing jobs; otherwise, only if MSD occurs	1 hour	Manager with initial training
Cost to Provide Employee Information (Basic Program)	Establishments with basic programs: all with manual handling or manufacturing jobs; otherwise, only if MSD occurs	0.5 hour per employee plus 0.5 hour managerial time	Manager with initial training
Cost to Provide Managerial Training in Establishments with Full Program	If persistent symptoms or an MSD occurs in manufacturing or manual handling establishments; otherwise, only where an MSD occurs	16 hours of managerial time	Manager with initial training

Table VIII-7.—Assumptions Used To Develop Costs for Provisions of the Proposed Rule—Continued

PROVISION	WHEN REQUIRED	HOURS OR COSTS INVOLVED	LEVEL OF STAFF OR EXPERTISE REQUIRED
Cost to Train Employees in Establishments with Full Programs	All establishments having problem jobs	1 hour of employee time per affected employee, 2 hours of managerial time per problem job to provide training; 25% of employers able to use quick fix option and do not need to conduct employee training	Manager with training required for the full program
Cost of Job Hazard Analysis (Full Program)	All establishments with problem jobs	1 hour of managerial time plus 1 hour employee time per problem job	Manager with full program training
Cost to Evaluate Job Controls (Full Program)	All establishments with problem jobs	2–16 hours of employee and 2–32 hours managerial time, depending on problem job; in 15% of cases, \$2,000 for consulting ergonomist's time is assumed to be required	In 85% of cases, manager with full program training; in 15% of cases, consultant ergonomist
Cost to Administer MSD Management (Full Program)	All establishments with problem jobs	1 hour of managerial time per MSD	Manager with full program training, health care professional, or ergonomist
Cost to Do Record-keeping (Full Program)	All establishments with an MSD or persistent symptoms	0.25 hours of supervisory time per MSD	Supervisor
Cost to Conduct Program Evaluation (Full Program)	All establishments with full programs	4 hours of managerial time in the three years following occurrence of covered MSD. For 25% of problem jobs able to use quick fix option, no program evaluation is conducted	Manager with full program training
Cost To Implement Job Controls— Engineering, work practice, or administrative controls	Job control costs: all establishments with problem jobs	Costs per job intervention per affected employee vary by industry and occupational groups and are presented in detail in Chapter V of the Preliminary Economic Impact Analysis (affected employees include the employee incurring the covered MSD and all other employees in the establishment with the same job)	Covered under costs calculated for evaluating and implementing controls (above)
Cost to Provide Work Restriction Protection	All establishments with problem jobs	\$946 per MSD	Covered in costs for administering MSD management, above

### Benefits of the Proposed Standard

OSHA estimates that the proposed standard would, within 10 years, lower the current (1996) general industry rate of MSDs by 26 percent and produce direct cost savings of \$9.1 billion per year; direct cost savings are defined as the value of lost production, medical costs, administrative costs of insurance, and indirect costs to employers. Direct cost savings do not include any quantitative benefits for the pain

and suffering of workers and their families, and thus do not represent a full measure of the economic benefits of the proposed standard.

OSHA's benefits estimates are based on the following key assumptions, data, and estimates:

- Estimates of MSD rates are based on the BLS data on MSD rates for lost workday MSDs, multiplied by the ratio of lost workday injuries to all injuries and illnesses in an

industry to arrive at the total number of MSDs for an industry (see Industrial Profile, Chapter II, for a table showing MSD rates by industry);

- When a job is fixed, the MSD rate in that job is assumed to be reduced by 50% (the basis for this estimate is discussed in the Benefits chapter of this Preliminary Economic Analysis and in the Preliminary Risk Assessment section of the Preamble); and
- Establishments already having ergonomics programs are assumed already to have achieved a 50% reduction in their rates of MSDs.

#### Key Assumptions of the Preliminary Economic Analysis

OSHA's analysis of the benefits, costs and economic impacts of the proposed standard uses a variety of data and estimates from a number of sources. These data and estimates have been outlined in detail in the Industrial Profile, Costs of Compliance, and Benefit chapters of the Preliminary Economic Analysis (Chapters II, V, and IV, respectively). There are, however, certain issues for which data are lacking, and OSHA has had to make reasonable assumptions to bridge the data gaps in these cases. This section outlines certain key assumptions that OSHA has made, and solicits information and data that could be used to refine these assumptions.

1. BLS maintains data distinguishing MSDs from other types of occupational injuries and illnesses only for MSDs involving days away from work. This means that MSDs that involve restricted work (assignment of the injured worker to "light duty" work) or that involve time off only on the day of the injury are not counted by the BLS. Lacking any other information, OSHA has assumed that the ratio of all MSDs to MSDs with days away from work is the same for each industry as the ratio in that industry of total injuries and illnesses to all injuries and illnesses involving days away from work. The average value of this ratio is three, but the value varies greatly by industry. OSHA solicits information concerning the actual experience of employers with respect to the number of MSDs involving days away from work and the number of OSHA recordable MSDs that do not involve lost time.

2. OSHA does not have information concerning how many MSDs meet the proposed standard's test for covered MSDs (*i.e.*, the number of MSDs that would "pass" the screening criteria in section 1910.902) and thus would require the implementation of a full program. In the absence of such information, OSHA has assumed that all jobs that have already been controlled will not subsequently give rise to a covered MSD, while all jobs that have not been controlled will have covered MSDs that require the implementation of a full program. This assumption is discussed in detail in the Benefits chapter (Chapter IV), but it affects both the benefits and costs estimates for this proposed standard. OSHA welcomes any information concerning the frequency with which covered MSDs and non-covered MSDs occur, both in previously controlled and in uncontrolled jobs.

3. Lacking more detailed information, OSHA has assumed that MSD rates within an industry are determined by whether or not establishments have ergonomics programs. Many SERs were concerned that the proposed standard would result in significantly increased reporting of MSDs. OSHA examined this possibility by conducting a sensitivity analysis of the direct cost savings (benefits) and costs that would occur if the number of MSDs reported increased by 50 percent. OSHA found that, if the new MSDs reported had the same severity as those currently being covered by workers' compensation, the new reporting would increase

the costs of the proposed standard to employers only by 24 percent but would increase the direct cost savings (benefits) associated with the proposed standard by 66 percent. This disproportion between the costs and benefits would be the case unless the new MSDs being reported were only 20% as severe as those being reported today. Further, based on the NCCI's estimate that employee-perpetrated fraud accounts for less than 2 percent of all workers' compensation fraud, and on the fact that the work restriction protection provision of the standard is triggered only when the employer—not the employee—makes the determination that WRP is necessary, OSHA does not believe that the proposed standard will encourage an increase in employee perpetrated fraud or that such fraud will affect the standard's costs or benefits.

#### Recordkeeping Requirements

Firms with fewer than 10 employees do not have to keep any records under this proposed standard. Firms that do not meet this condition must keep the following records:

- Employee reports and responses to those reports;
- Results of job hazard analyses;
- Hazard control records;
- Quick fix control records
- Evaluations of the program; and
- MSD management records.

#### 5. Federal and State Rules That May Duplicate, Overlap or Conflict With the Proposed Rule

There are no existing Federal regulations requiring ergonomics programs of employers in general industry. OSHA published voluntary guidelines for ergonomics program management in meatpacking plants in 1990 to assist employers in that industry voluntarily to establish and maintain ergonomics programs. Only one state, California, currently has an ergonomics program standard in effect. The California program requirement is triggered by two or more MSDs of any type occurring in the same job. If OSHA were to adopt a similar approach, fewer full programs would be required than is the case with the proposed rule; however, the California rule requires a program if there are two MSDs of *any* kind, even if they do not meet OSHA's criteria for a covered MSD. (For a more detailed discussion of alternative triggers, see the last section of this chapter.) Several other States—Washington, Rhode Island, Minnesota, North Carolina—are currently developing enforceable ergonomics standards.

Currently, employers are required to correct some ergonomic hazards (*i.e.*, those posing a risk of death or serious physical harm) under the General Duty Clause of the OSH Act. OSHA's draft safety and health program rule (once in effect) would provide a framework requiring employers to address those ergonomic hazards citable under the General Duty Clause. OSHA has reviewed the current drafts of both the safety and health program rule and the ergonomics program standard and found that the ergonomics program required by the ergonomics program rule is consistent with and could easily be made a part of a safety and health program set up to comply with the draft safety and health program rule (once in effect). Indeed, the ergonomics program standard could be viewed as augmenting the safety and health program rule in three ways: (1) By expanding the coverage of the safety and health program rule to cover ergonomic hazards not covered by the General Duty Clause, (2) by providing additional detail concerning how MSD hazards should be addressed, and (3)

by requiring MSD management, including work restriction protection, for workers experiencing job-related musculoskeletal disorders.

Small entity representatives (SERs) who participated in the SBREFA process expressed concern that the proposed ergonomics standard might present conflicts with the National Labor Relations Act (NLRA) and with the Americans with Disabilities Act (ADA) and other equal opportunity legislation. These possible conflicts are discussed in detail in the Preamble to the proposed rule, along with a discussion of the perception among some SERs that the proposed standard may provide incentives to violate these statutes, *e.g.*, by encouraging selective hiring.

#### 6. Alternatives to the Proposed Standard

#### **Regulatory Flexibility Elements Already Incorporated Into the Proposed Rule**

OSHA's proposed rule already incorporates a variety of regulatory flexibility features. First, the proposed rule has many performance-oriented aspects and is designed to provide all firms with flexibility in meeting the rule's core requirements. For example, the core requirement for employee participation states only that employees must have ways to report problems, get responses, and be involved in developing, implementing, and evaluating the ergonomics program. Employers have great flexibility in how to establish such systems and ensure such participation. Some employers may use formal mechanisms, such as employee surveys and joint employee-management committees. Others may find it more effective simply to designate a person who can receive employee reports and discuss problems with affected employees. The choice is up to the employer.

In addition to these general flexibility features, OSHA's proposed rule has been tailored to recognize the special problems potentially faced by employers with fewer than 10 employees in complying with the new rule. Although these employers cannot be exempted from the rule under the mandate of the OSH Act, the requirements for these employers have been reduced in some instances. For example, OSHA has tailored the proposed rule to very small employers by exempting them from all documentation requirements.

However, the most important regulatory flexibility features incorporated into the proposed standard are those related to tiering and the use of triggers. Tiering refers to the two levels of ergonomics program embedded in the standard: a "basic" program with few requirements for establishments without covered MSDs, and a "full" program with additional requirements for establishments with such MSDs. Triggers, on the other hand, are events occurring in the workplace that require certain employer actions under the standard. These mechanisms are designed to address the range in risk encountered by employees potentially within the scope of the standard.

Figures 1 and 2 show the distribution and cumulative distributions of the general industry population by level of risk of incurring a lost-workday MSD. The average risk of incurring such an MSD for all general industry employees covered by the BLS statistics is 7.1 per thousand employees per year (using 1996 data). As the table shows, less than 20 percent of the population is subject to levels of risk more than twice this average. Almost all employees experience a risk that is greater than 1 per 1,000 per year. Thus, employees in general industry are almost universally subject to a significant annual risk of incurring a lost workday MSD; however, portions of the employee population are subject to unusually high risks. OSHA has preliminarily rejected the alternative of exempting some employers in general industry from the scope of the standard because significant risk exists for all employees in general industry and the Act does not envision the exemption of employers whose employees face such risks.

Recognizing the need to provide protection for employees subject to significant risk but wishing to minimize the burden associated with a full ergonomics program, OSHA has tried in the proposed rule to provide flexibility through a system of tiering and triggers, as discussed above. The proposed standard uses two types of triggers: (1) Whether a general industry employer has employees engaged in manufacturing operations or manual handling, and (2) whether or not an employee in a general industry facility has had a job-related MSD.

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**Figure 1**  
**Employment by MSD Incidence**  
**From 1996 BLS Data (3-digit SIC)**

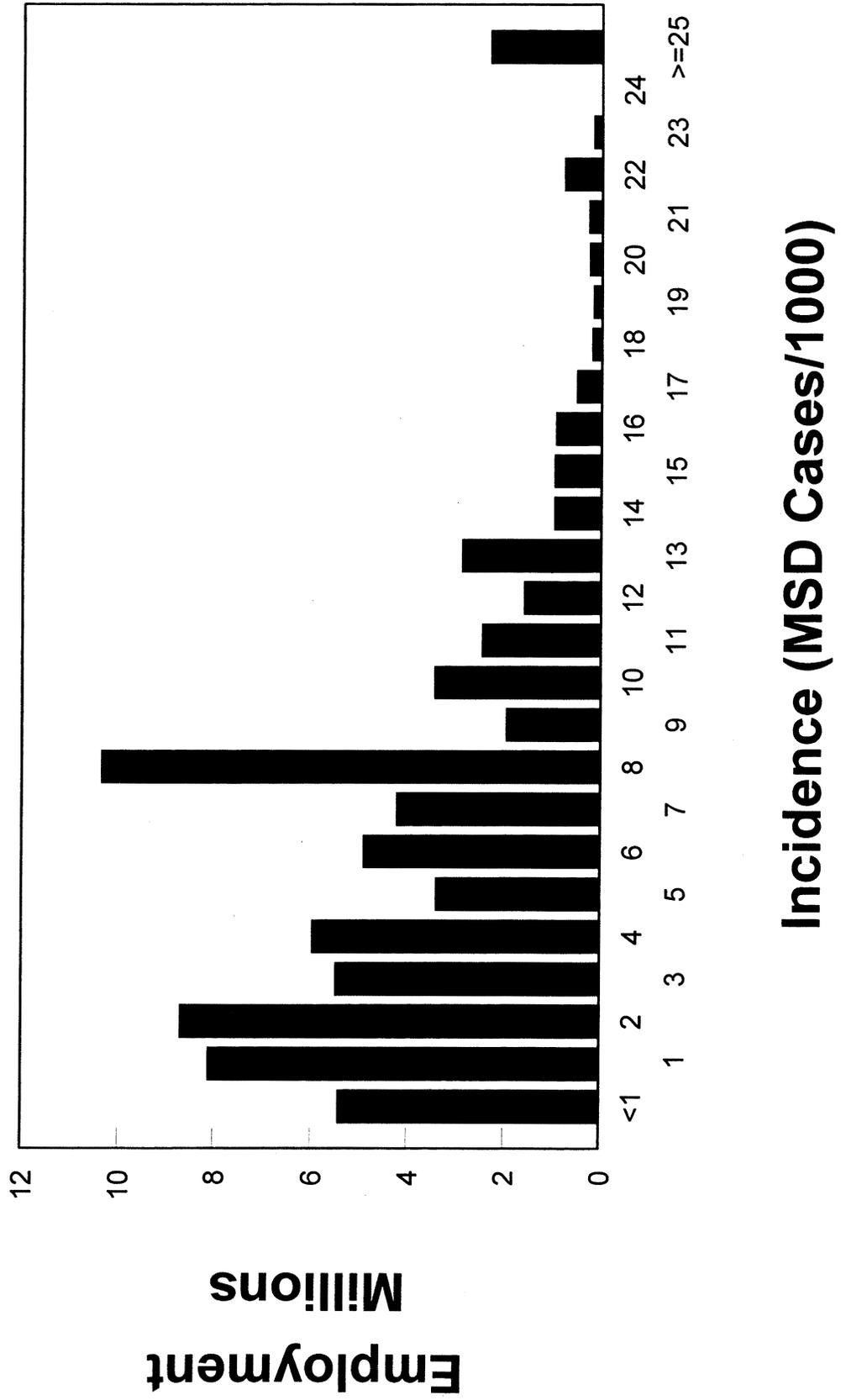
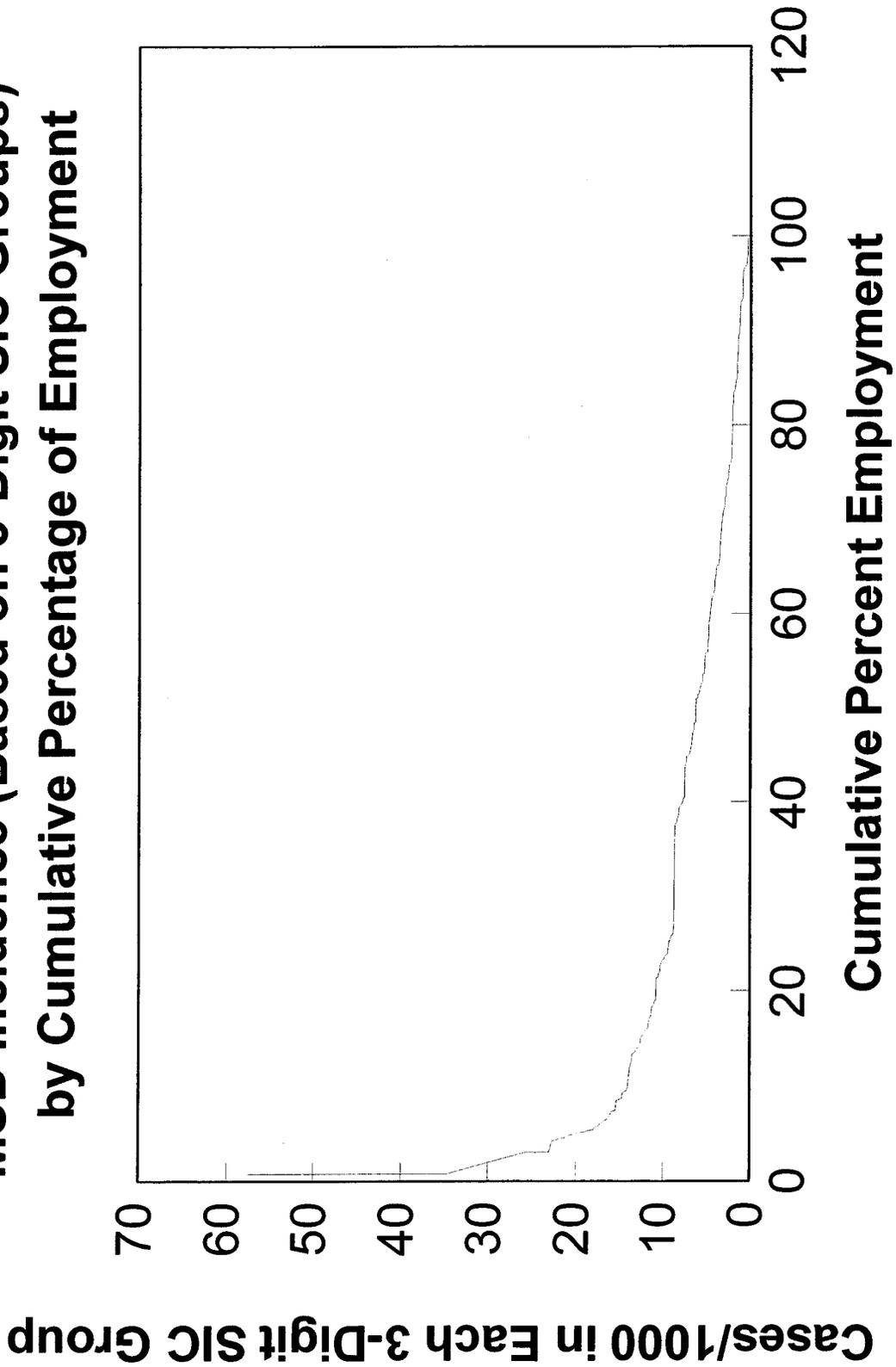


Figure 2

**MSD Incidence (Based on 3-Digit SIC Groups)  
by Cumulative Percentage of Employment**



Employers with employees engaged in manufacturing operations or manual handling are treated differently from other general industry employers because employees engaged in these activities account for 60 percent of all lost workday MSDs while accounting for only 28% of all employees in general industry. Firms with employees engaged in these two activities are required to set up a basic ergonomics program with management leadership, employee participation, and hazard identification and information even if no MSD has occurred at the facility. Approximately 25 percent of all general industry employers will need to set up a basic program for their employees engaged in manufacturing operations or manual handling as a result of this requirement. (The basic program need not be applied to other employees in the facility.) Other employers do not need to set up a basic program unless an MSD occurs. However, firms with employees engaged in manufacturing operations or manual handling are not required to have the full program elements of job hazard analysis and hazard control; training; MSD management; and program evaluation unless a covered MSD occurs. In other words, general industry employers who do not have any employees engaged in manufacturing operations or manual handling do not need to have any ergonomics program until a covered MSD occurs. Thus most program elements are only required in firms clearly demonstrated to have an MSD hazard, as evidenced by the fact that a covered MSD has occurred.

Approximately 75% percent of all employers will not need to respond to this standard in any way unless an MSD occurs in their facility. Even when an MSD occurs, the full program applies only to the injured employee (at his or her job) and to employees with the same job (with respect to physical work activities) as that of the employee who incurred the MSD. There is no need for the employer to set up a program for other employees (*i.e.*, those who are not in the problem job or a job judged to be the same as that job) in the facility.

The triggers used for additional program elements in the proposed standard are the presence of employees engaged in manufacturing or manual handling, and the presence of a covered MSD. A covered MSD is defined as one that meets the following criteria:

- It is, or would be, recordable on an OSHA 200 log;
- It occurred in a job where workplace conditions and physical work activities are reasonably likely to cause or contribute to the type of MSD reported; and
- The workplace conditions and physical work activities are a core element and/or make up a significant amount of the employee's worktime.

This multi-level trigger serves to eliminate many MSDs that may occur as a result of unusual activities on the job or that are not the result of routine exposure to risk factors of a kind known to cause or contribute to MSDs.

OSHA will respond to the need expressed by many small business stakeholders for guidance and outreach by providing extensive outreach materials when the rule is published in final form. For example, OSHA may develop one or more checklists that can be used to aid in determining if an MSD is covered and to aid in job analysis. OSHA solicits comments on the best ways to focus its outreach efforts and the best means for providing compliance assistance to small entities.

Presented below are a number of alternatives that OSHA has considered in developing the proposed standard. OSHA solicits comment on all of the alternatives discussed below.

**Alternative 1: No Rule: Continue To Rely Only on Existing OSHA Programs and Policies.** Some small entity stakeholders urged OSHA to continue to rely on outreach efforts to encourage employers to adopt ergonomics programs voluntarily, *i.e.*, to continue to urge employers to voluntarily adopt the Agency's meatpacking guidelines, or a variant on these guidelines designed for all firms, rather than issuing a rule. OSHA has made the voluntary adoption of ergonomics programs a cornerstone of many of its injury prevention efforts for years. The Agency also has had regional ergonomics coordinators to provide technical assistance to OSHA area offices, consultation programs and state programs since 1987. OSHA issued the ergonomics program management guidelines for meatpacking plants in 1990 (Ex. 26-3). Since 1991, OSHA has also published a series of booklets designed to raise awareness and provide solutions to ergonomics problems. Since 1996, OSHA has had a formal four-pronged strategy for ergonomics, including outreach and education; research; and enforcement under the General Duty Clause, in addition to development of this proposed rule. As part of this strategy, starting in 1997, OSHA has held a series of national and regional "Best Practices" conferences on ergonomics. Such conferences have made a special effort to assure participation by small businesses. Starting in 1997, OSHA also has maintained an ergonomics page on its web site. This page provides access to OSHA publications on ergonomics, news about opportunities to participate in ergonomics conferences, and links to websites with ergonomics information.

Despite these efforts and the fact that many firms have found ergonomics programs cost-effective, only one-third of establishments surveyed by OSHA (OSHA survey, 1993) reported having done any risk analysis of ergonomic hazards in their workplaces. Even fewer have actually attempted to fix jobs that have ergonomic hazards. Firms that have begun to implement ergonomics programs cannot be distinguished by industry, SIC code, or other obvious factor from those that have not done so, *i.e.*, some firms have implemented such programs, while other firms that face similar musculoskeletal problems and belong to the same industry have not.

Although the Agency's efforts to encourage the voluntary adoption of ergonomics programs, backed by enforcement efforts involving the General Duty Clause (which have often led to corporate settlements), have resulted in thousands of employers and employees receiving the benefits of ergonomics programs, the majority of employers still have not adopted such programs. OSHA's experience also shows that outreach without enforcement is unlikely to be successful. The industries that have been most successful in adopting ergonomics programs and reducing MSDs—the automobile and meatpacking industries—both did so as a result of an OSHA strategy combining strong enforcement and outreach. At this stage, the additional incentive provided by a rule, in addition to targeted enforcement of the General Duty Clause and continued outreach, is needed if a majority of employers are to adopt ergonomics programs. OSHA will continue, and indeed plans to intensify, its outreach efforts in this area. Publication of a rule does not mean that OSHA is abandoning outreach, or choosing only to rely on this rule; instead, the Agency is adding a rule to all of its other efforts to encourage employers to adopt ergonomics programs. The ergonomics program rule thus supplements the Agency's other efforts and brings to bear the only major tool at the Agency's command that has not to date been employed in the effort to encourage employers to adopt these programs.

Some small entity stakeholders argued that because ergonomics programs are cost effective, there should be no need for regulation. Although OSHA agrees that ergonomics programs are cost effective for most small businesses, OSHA does not agree that cost effectiveness represents a sufficient motive for many small businesses to implement ergonomics programs. There are two major reasons for this.

First, many of the benefits of ergonomics programs do not accrue directly to smaller employers. Research has shown that workers' compensation costs do not, on the average, cover all income losses to injured workers, and do not attempt to account for their pain and suffering. Further, MSDs are significantly underreported to the workers' compensation system. One study found that the percent of medically diagnosed MSDs reported to the workers' compensation system ranged only from less than 1 percent to about 14 percent (Fine, Silverstein, Armstrong, Anderson and Sugano 1986 (Ex. 26-920)). An occupational safety and health professional participating in an ergonomics workshop sponsored by the Canadian Centre for Occupational Health and Safety (CCOHS) (1988) reported the same finding, stating that, "Many workers are afraid to report RSIs [repetitive strain injuries] \* \* \*. Many seek private benefits and try to avoid any contact with workers' compensation because of the [bad] experience of other workers trying to get claims accepted." Another workshop participant was of the same opinion: "the vast majority of RSIs never reach the \* \* \* workers' compensation system at all. The costs [of these injuries] are in the medical system \* \* \*." Other studies (Cannon, Bernacki, and Walter 1981 (Ex. 26-1212); Silverstein, Stetson, Keyserling, and Fine (1994) provide plant-specific evidence of this tendency (Ex. 26-28). For an analysis of the underreporting and underfiling issue as it relates to occupational injuries and illnesses generally and to MSDs in particular, see Section VII of the preamble, Significance of Risk.

The social burden of adverse health effects is also shared by taxpayer-supported programs such as welfare, social security disability payments, and Medicare. Employers therefore have less incentive to avoid such losses than they would if they were directly liable for, or even aware of, all such claims. This combination of problems not reported to employers and the transfer of risk to others is another reason why the market fails to internalize the social costs of occupationally related injuries and illnesses such as musculoskeletal disorders. If workers do not recognize a risk as work-related or do not report the problem to employers, it will not be adequately addressed by employers.

In addition, smaller employers typically are not experience-rated, so that they do not directly pay a significant share of the costs of workers' compensation claims. This is particularly true of smaller firms with fewer hazards. Economic analysis principles suggest that regulations should consider costs and benefits to all parties, not just to employers. When a substantial portion of all benefits go to parties other than employers, employers cannot be counted on to implement ergonomics programs to the extent that such programs are cost beneficial.

Second, small businesses typically take the very understandable approach of not fixing what isn't perceived to be broken. Because ergonomic injuries and illnesses are relatively rare events in small firms, and are paid for in part by workers' compensation insurance, many small employers, especially in lower hazard industries, often neglect ergonomic problems. This does not mean that ergonomics programs are not cost effective. Aggregate statistics show that small firms have a significant number

of MSDs, and studies show that these MSDs can be reduced by ergonomics programs. However, because MSDs are rare events for an individual small employer, the need for ergonomics programs may not come to the attention of busy small business employers as often as is the case for larger employers. As a result, ergonomics programs are less likely to be adopted by employers with few employees. (See discussion below.) This is unfortunate, because ergonomics programs are one of the best ways to lower workers' compensation costs for small businesses over the long run.

The threat of higher workers' compensation premiums and the presence of a substantial number of ergonomics injuries and illnesses do provide economic incentives for larger firms, because these firms are aware of and internalize a larger proportion of the true costs of the job-related injuries incurred by their workers. Thus larger firms can be expected to have done more about musculoskeletal hazards than smaller firms. Results from OSHA's ergonomics survey (OSHA survey, 1993) bear out this theoretical proposition: they show that only 28 percent of firms with fewer than 20 employees have analyzed their jobs for risk factors, while fully 80 percent of establishments with 250 or more employees, *i.e.*, the largest firms and those most likely to self-insure, have done so. The same pattern holds for following through on these job analyses: 76 percent of the largest establishments have implemented at least some engineering controls to reduce risk factors, while only 23 percent of firms with fewer than 20 employees have done so. These data suggest that, where adequate awareness and economic incentives are present, firms find it in their interest to address the risk factors responsible for musculoskeletal disorders.

#### *Alternatives 2 and 3: Tiering Approaches*

**Alternative 2: Eliminate the Basic Program Requirement for Employers in Manufacturing or Manual Handling.** The advantages of a basic program are that it assures that MSDs will be reported as soon as they occur and that a system is in place to address problems as they occur. Many stakeholders who have initiated a basic program have found that having a reporting system, conducting some basic hazard identification, and providing information on MSDs to employees increases the number of reported MSDs and thus the number of cases where early intervention is possible. OSHA has been unable to demonstrate that a "reporting blip" in fact follows increased awareness of MSDs. OSHA's survey of employers with ergonomics programs (1993) would suggest that this is not the case. Even in the absence of a full ergonomics program, the early and complete reporting of MSDs can actually serve to lower the costs of MSDs because early reporting means that simple corrective action may take care of the problem and avoid extensive lost work time. Many employers and insurers feel that awareness and MSD management alone can significantly reduce the costs of MSDs. The proposed standard's requirements for a basic program for employers with employees in manufacturing or manual handling operations result in costs of \$36 million per year for all businesses. Eliminating the basic program in manufacturing and manual handling, as this alternative would require, would lead to fewer reported MSDs and to a greater likelihood that MSDs will not receive attention until they become very expensive in terms of lost time and the costs of medical care. On the other hand, dropping the basic program requirement would eliminate the need for any program in facilities that have no covered MSDs.

**Alternative 3: Extend the Basic Program Requirement to All of General Industry.** Because OSHA believes that having

a basic program is of value to all employers whose employees are at risk of experiencing MSDs, OSHA considered extending the basic program to all employers in general industry. Because many general industry employers whose employees do not engage in manual handling or manufacturing operations generally have lower rates of injuries and illnesses, in addition to lower rates of MSDs, many of these general industry employers are not required even to maintain an injury and illness log under OSHA's recordkeeping requirements. However, employers who are not required to maintain an OSHA 200 Log or to have a basic program would be forced to rely primarily on workers' compensation claims for information about ergonomics hazards in their workplaces, and such claims have been shown to be an inadequate source of such information. Based on one study in the state of Wisconsin (NAS 1987), workers' compensation claims represented only 70% of all OSHA reportable injuries (Ex. 28-4). In the absence of a basic program with a formal reporting system, this means that 30 percent of MSDs might go unreported and uninvestigated. Extending the basic program to employers in all of general industry would result in additional initial costs of \$318 million and in significant additions to the number of MSDs reported and corrected, as well as providing employees additional protection by encouraging reporting before MSDs become workers' compensation claims. The proposed standard does not extend the basic program requirement to general industry because the Agency is committed to targeting the standard to those facilities that have been shown to have the greatest MSD hazards.

#### *Alternatives 4 through 8: Use Different Triggers*

**General Discussion.** One of the key features of the proposed standard is that a full program is only triggered by a covered MSD, and then only for employees with the same job as the employee who incurred the MSD. OSHA found that the average job had three persons per job and that the average uncontrolled job has an MSD rate of 5 percent per year. Under the proposed trigger, it would be 5 years before 50% of all of the uncontrolled jobs covered by the scope of the standard are controlled, and 15 years before 90% of such jobs are controlled. Some stakeholders were concerned that this trigger was insufficiently proactive, and, as a result, OSHA examined alternatives that would result in more rapid efforts to control currently uncontrolled jobs. Alternative 4 reflects a more proactive trigger, *i.e.*, that the signs and symptoms of MSDs be used as a trigger, and Alternative 5 is similarly proactive, because it would require a job hazard analysis of all jobs, without regard to whether MSDs have occurred to employees in them.

Other stakeholders were concerned that reliance on a trigger of one covered MSD would impose major expenses on employers to investigate and even control jobs that do not need controls, either because the job has already been controlled or because the MSD is one that has little or nothing to do with the kinds of risk factors a full ergonomics program can address. The OSHA proposal recognizes this potential problem by allowing, in section 1910.902, employers to rule out OSHA-recordable MSDs that are not related to the physical work activities and conditions in the job or do not constitute a core element or significant portion of the job. In the typical controlled job, where the average MSD rate is 2.5 percent per year, 50% of firms will incur an MSD within 9 years, and thus will have to determine if the MSD is one that will trigger a full program. Nevertheless, OSHA investigated the consequences of the use of alternative triggers involving more than one covered MSD. Alternative 6 is such an alternative: it would require a full program only

when an establishment has had two covered MSDs; Alternative 7 also reflects a more stringent trigger and would require a full program only when two MSDs have occurred in the same job within one year; Alternative 8 would require a full program only when two MSDs have occurred within two years in the same job; Alternative 9 would require a full program only when two MSDs have occurred within three years in the same job; and Alternative 10 would require a full program only when an MSD involving days away from work occurs. The analysis of alternatives 6 through 10 assumes that work restriction protection would continue to be triggered by a single MSD of any kind.

**Alternative 4: Use Signs and Symptoms to Trigger the Program.** OSHA's proposed standard uses the occurrence of a covered MSD to trigger the full ergonomics program. The use of this trigger is particularly advantageous to smaller firms, because the smaller the firm, the less likely it is to incur an MSD and thus to need a full program. The typical firm with 1 to 20 employees, for example, will need to initiate a full program only once every ten years. The majority of very small firms, those, for example, with only two or three employees, will go 10 years without ever having to initiate a full program. However, because use of this trigger also means that corrective measures will not be implemented for years even in some high risk jobs, OSHA considered other, more proactive triggers. If a more proactive trigger such as the signs or symptoms of MSDs were used to trigger the full program, the number of MSDs reported would increase by 2 to 7 times, and a substantially larger number of employers would be required to implement a formal reporting system.

**Alternative 5: Use the Results of Job Hazard Analysis to Trigger the Program.** OSHA also considered requiring employers to implement job hazard analyses for all jobs in their establishments and to implement a full program if the analysis identified any high risk jobs. OSHA has not proposed this approach because it would require substantial effort by all employers, even those whose employees do not have a high probability of incurring an MSD or have not yet incurred an MSD. In addition, such an approach would increase the first-year costs of the ergonomics program standard by a factor of at least 10.

**Alternative 6: Use a Trigger of Two MSDs per Establishment.** The SBREFA Panel recommended that OSHA consider as an alternative trigger the occurrence of two MSDs at an establishment in a one year period, rather than the proposed trigger of one MSD in a job. To analyze this alternative trigger, OSHA assumed that the two MSDs would be covered MSDs, as they are under the proposed standard. The chief advantage of the alternative two-MSD trigger is that it would eliminate the need for the employer to investigate the first MSD to occur in an establishment. This alternative trigger would therefore have little effect on larger firms. Indeed, the typical establishment with more than 100 employees and typical rates of MSDs for either controlled or uncontrolled jobs can expect to have two MSDs every year and would thus, under the two-MSD trigger, need a full program. Indeed, if two MSDs in an establishment trigger a full program for the entire establishment, larger establishments would permanently need to have a full program for all employees. For smaller establishments, however, this alternative would greatly extend the time necessary to ensure that uncontrolled jobs are controlled. For a five-employee establishment, the requirement of a two MSD per establishment trigger would mean that it would be 30 years before 50% of such establishments would have controlled any jobs. During this

time period, over 3.5 potentially controllable MSDs would have occurred in each such establishment.

**Alternative 7: Use a Trigger of Two Covered MSDs in the Same Job Within One Year.** To limit the number of situations in which employers would have to establish a full program when a full program might not be needed, many stakeholders expressed interest in alternatives involving more than one MSD. The SBREFA Panel also recommended that OSHA examine such alternatives. This section examines the alternative of using a trigger of two covered MSDs in the same job within one year.

If this trigger were adopted, it would be 95 years before 50% of all typical uncontrolled jobs (where "typical" is defined as a job with a 5% MSD rate and three persons in the job) were controlled, and 325 years before 90% of such jobs were controlled. In this typical situation, use of this trigger would mean that more than 14 preventable MSDs would occur in an uncontrolled job before a full program to control that job would be required. For situations in which there is only one employee holding a job, a full program would almost never be triggered under this alternative. On the other hand, in the typical controlled job (MSD rate of 2.5%, 3 persons per job), 50% of firms would incur 2 MSDs in a year only once every 400 years, at which time they would have to determine if the two MSDs were covered. Thus use of this alternative trigger would ensure that employers would only rarely have to address MSD problems occurring in controlled jobs; however, this alternative achieves this by allowing many preventable MSDs to occur in uncontrolled jobs.

Under this alternative, economic costs would decline to \$0.85 billion per year, while costs to employers would decline to \$1.85 billion per year. Significantly fewer employers would need to control jobs or initiate full programs; however, the costs of WRP (the proposed rule's Work Restriction Protection provision) would be higher because the standard would prevent significantly fewer MSDs but many workers would continue to need time off to recuperate. This alternative would reduce the number of establishments subject to full programs, but would do nothing to mitigate the effect of a full program on those employers required to have a full program. Thus the economic impact on affected facilities would be virtually unchanged. Direct cost savings (benefits) would decline to \$2.18 billion per year under this alternative.

This alternative also would not significantly decrease employers' costs for determining the covered status of MSDs or for recordkeeping because, for this alternative to work, employers would need to keep records of all MSDs, and the records would need to contain sufficient investigative information for employers to determine, when a second MSD occurred, what control approach to adopt to address the risk factors present in the jobs giving rise to both MSDs.

**Alternative 8: Use a Trigger of Two MSDs within Two Years in the Same Job.** Both the SBREFA Panel and OSHA stakeholders recommended that OSHA evaluate an alternative trigger of two covered MSDs in the same job occurring within a two year period. If this trigger were adopted, it would be 35 years before 50% of typical (where "typical" is defined as a 5% MSD rate and three persons in the job) uncontrolled jobs were controlled, and 100 years before 90% of such jobs were controlled. In this typical situation, use of this trigger would mean that more than four MSDs would occur in an uncontrolled job before the employer would be required to implement a full program. On the other hand, in the typical controlled job (MSD rate of 2.5%, 3 persons per job), 50% of firms would incur 2

MSDs within two years only once in 130 years (and thus would have to determine whether the second MSD triggers a full program only once in the same period). Thus this alternative would mean that employers would only rarely have to investigate problems in controlled jobs, but it would do so by allowing many preventable MSDs to occur in uncontrolled jobs.

Under this alternative, economic costs would decline to \$1.40 billion per year, while costs to employers would decline to \$2.33 billion per year. Very few employers would need to control jobs or initiate full programs; however, the costs of WRP would be higher because the standard would prevent very few MSDs but many workers would still need time off to recuperate. This alternative would reduce the number of establishments subject to full programs, but would do nothing to mitigate the effect of a full program on those employers required to have such a program. Direct cost savings (benefits) would decline to \$4.24 billion per year under this alternative.

In OSHA's view, this alternative would also not significantly decrease an employer's costs for investigating MSDs or for recordkeeping. For this alternative to work, employers would need to keep records of all MSDs, and the records would need to contain sufficient investigative information for the employer to determine, if a second MSD occurred, what kinds of controls would be appropriate to address the risk factors associated with the two MSDs.

**Alternative 9: Use a Trigger of Two MSDs within Three Years in the Same Job.** OSHA also analyzed a trigger alternative of 2 MSDs in three years in the same job. If this trigger were adopted, it would be 10 years before 50% of typical uncontrolled jobs (where "typical" is defined as a 5% MSD rate and three persons in the job) were controlled, and 30 years before 90% of such jobs were controlled. Use of this trigger would thus mean that more than four MSDs would occur in an uncontrolled job before a full program to control that job would be required. On the other hand, in the typical controlled job (MSD rate of 2.5%, 3 persons per job), 50% of firms would incur 2 MSDs within two years only once in 80 years (and would then have to determine if the MSD is covered.) Thus this alternative would also ensure that employers would rarely have to investigate problems in controlled jobs, but the alternative achieves this by allowing many preventable MSDs to occur in uncontrolled jobs.

Under this alternative, economic costs would decline to \$1.70 billion per year, while costs to employers would decline to \$2.61 billion per year. Significantly fewer employers would need to control jobs or initiate full programs under this alternative; however, the costs of WRP would be higher because the standard would prevent significantly fewer MSDs but many workers would still need time off to recuperate. This alternative would thus reduce the number of establishments subject to full programs, but would do nothing to mitigate the effect of a full program on those employers required to have a full program. Direct cost savings (benefits) would decline to \$5.05 billion per year under this alternative.

**Alternative 10: Use a Trigger of One Lost Workday MSD.** The SBREFA Panel urged OSHA to consider an alternative trigger of one lost workday MSD, *i.e.*, one MSD involving days away from work. This alternative would have the effect of reducing the probability of triggering a full program by approximately 66 percent. If this trigger were adopted, it would be 14 years before 50% of typical uncontrolled jobs (where "typical" is defined as a 5% MSD rate and three persons in the job) were controlled, and 50 years before 90%

of such jobs were controlled. On the other hand, in the typical controlled job (MSD rate of 2.5%, 3 persons per job), 50% of firms would incur 2 MSDs within two years only once in 30 years (and thus have to determine if the MSD would trigger a full program). Thus this alternative would also ensure that employers would rarely have to investigate problems in controlled jobs, but the alternative would achieve this by allowing many preventable MSDs to occur in uncontrolled jobs.

Under this alternative, economic costs would decline to \$1.64 billion per year, while costs to employers would decline to \$2.49 billion per year. This alternative would reduce the number of establishments subject to full programs, but would do nothing to mitigate the effect of a full program on those employers required to have a full program. Direct cost savings (benefits) would decline to \$5.24 billion per year under this alternative.

**Alternative 11: Use a Trigger of One Lost Workday MSD or 2 MSDs.** This alternative would provide two triggers. An employer would have to fix a job and/or implement a full program if *either* of two conditions occurred: (1) There was a lost workday MSD; or (2) There were two MSDs in that job. This alternative would remove an incentive that employers might have with the single lost workday MSD trigger, *i.e.*, to urge employee to be on restricted duty rather than away from the workplace to avoid the lost workday that would trigger the standard's job hazard analysis and control requirements. This approach would somewhat increase both the costs and direct cost savings as compared to alternative 10.

#### **OSHA's Preliminary Conclusions With Respect to Alternative Triggers**

OSHA has examined a number of alternative triggers, including triggers that are more and less proactive than the trigger included in the proposed standard. OSHA believes that the choice of trigger it has made in the proposal—reliance on the occurrence of a single covered MSD in a job to trigger the full program for that job and all jobs in the establishments that are the same with respect to physical work activities—represents a reasonable compromise between the need to protect workers from MSDs, on the one hand, and the need, on the other, to target the standard to situations where the risk is greatest. OSHA believes that use of a trigger involving more than one MSD or a single lost workday MSD would inevitably mean that many workers will be injured, *i.e.*, that many preventable MSDs will occur before action is taken. OSHA also believes that the provisions of the proposed standard that are designed to ensure that only covered (and thus job-related) MSDs trigger the full program are sufficient to ensure that full programs will not be required except where they are needed. OSHA solicits comment both on triggers and the use of more than one MSD as a trigger.

#### *Alternatives 12, 13, 14, and 15: Alternatives Related to Work Restriction Protection*

**General Discussion.** Many stakeholders objected to the work restriction protection (WRP) provisions (called medical removal protection, or MRP in the draft standard reviewed by the SBREFA Panel) of the proposed standard. The SBREFA Panel recommended that OSHA re-examine the need for WRP and explore possible alternatives to WRP. In order to do this, it is first necessary to understand that OSHA believes WRP is necessary because, absent WRP, the proposed standard provides employers and employees with significant incentives to avoid recognizing and reporting workplace MSDs. First, employees may be reluctant to

report MSDs if reporting them could cause the employee to suffer financial loss. In the hearing on OSHA's arsenic standard, for example, OSHA heard testimony to the effect that fully 42% of employees had chosen not to participate in a medical surveillance program that would potentially cause them to lose money or risk their jobs, and the rulemaking records in several other OSHA health standards (*e.g.*, lead, cadmium) also support the need for MRP on the ground that it is needed if employees are to participate fully in medical programs. Two aspects of the proposed standard are especially relevant in this connection: first, the prompt reporting of MSDs is important because MSDs reported early are less likely to lead to long-term disability. One study (see Section VIII. D.) found that the severity of MSDs could be reduced by 75 percent or more through early reporting alone. Second, the proposed standard is designed specifically so that, if no covered MSD is reported, the employer need not implement the full program. Thus, employers covered by the standard have significant new incentives to discourage the reporting of MSDs and, absent WRP, employees have a significant incentive not to report them. Three examples, which are discussed separately below, highlight the range of employee disincentives to reporting and employer policies that could be invoked in the absence of WRP: (1) MSDs involving lost worktime and not covered by workers' compensation; (2) MSDs involving lost worktime that are covered by workers' compensation; (3) and assignment to light duty ("restricted work") involving no lost worktime.

**MSD Not Covered by Workers' Compensation.** There are two common reasons why a particular work-related MSDs may not be covered by workers' compensation: first, the length of the worker's absence from work may be shorter than the workers' compensation waiting period for that state. States have waiting periods of from one to seven days before the indemnity portion of workers' compensation comes into effect. This means that an employee who reports an MSD could be out of work for one to seven days without receiving pay for this period. The likelihood of receiving no pay during this interval is particularly important for employees in the 50% of small firms that provide their employees with no sick leave (BLS 1995). Thus employees in this situation clearly have an incentive to avoid reporting an MSD, particularly when, under the proposed standard, the employer or health care professional could recommend that the employee stay home for a few days to recuperate. In addition, in the absence of WRP, employers could greatly increase the disincentive for employees to report MSDs by instituting a policy requiring any employee who reports an MSD to take from one to 5 days off from work. Such a policy would, in many cases, cost the employer nothing, and might even seem like a good way of avoiding the worsening of the MSD. However, such a policy would also ensure that employees would be extremely reluctant to report MSDs. There are also situations where many types of work-related MSDs, *e.g.*, rotator cuff tendinitis in Virginia, are not covered by workers' compensation no matter how long the absence from work. In this case, the employee could lose his or her job and all pay and benefits for an unlimited duration as a result of the MSD. Since an employee can never be certain that an MSD will be covered by workers' compensation (some employers routinely question all workers' compensation claims related to MSDs), this possibility is likely to be in the employee's mind whenever he or she reports an MSD.

**MSD Covered by Workers' Compensation.** When an MSD is covered by workers' compensation, the potential disincentives to underreporting are smaller. For example,

many States retrospectively pay indemnity for the waiting period once the claim is accepted and the waiting period is exceeded. However, workers' compensation does not address either tangible or intangible benefits other than salary. As a result, a worker out on workers' compensation could lose both tangible benefits (such as health insurance for himself/herself and his/her family) and intangible benefits, such as seniority and even the right to return to the job when able. These potential losses represent a serious threat to the income and job security of an employee and are therefore likely to lead to a reluctance to report.

**Worker with MSD Placed on Restricted Work.** When a worker is placed on restricted work within the employer's establishment, workers' compensation temporary disability payments do not come into play. In this situation, the chief disincentive to reporting is the possibility that the employer will cut pay because the available restricted work job involves lower pay, or that the employer will cut tangible or intangible benefits, such as seniority rights.

Nevertheless, to respond to the recommendation of the SBREFA Panel, OSHA examined a number of alternatives to the proposed work restriction protection provisions, which are discussed in detail below. For comparison, it should be noted that OSHA's proposed WRP provision has annualized costs of \$875 million per year. Twenty-four percent of these costs are associated with lost worktime that does not exceed the waiting limit for workers' compensation; 18 percent is associated with supplementing workers' compensation payments with additional pay and benefits; and 58 percent is associated with covered MSDs that would not be covered as workers' compensation claims at all. Alternatives 12 through 14 assume that a worker would receive 90 percent of take-home pay and full benefits when away from work.

**Alternative 12: Do Not Require Work Restriction Protection.** Work restriction protection accounts for approximately 22% of the costs of the rule to employers, or about \$875 million per year. All of these costs to employers could be saved by eliminating the WRP provision from the proposed rule. This approach would, however, provide employees with disincentives to report in any situation where either the employee's medical situation or the employer's policies would require the injured employee to spend time away from work. This approach would essentially enable the least conscientious employers to avoid the intent of the standard almost completely by adopting policies designed to discourage reporting; even employees of employers who do not intend to be punitive toward employees reporting MSDs would be somewhat discouraged from reporting because they would fear the economic loss potentially associated with reporting.

Relatively few of the SERs favored removing the WRP provision completely; many, if not most, of the objections to WRP focused on those situations where an employee would be paid for being absent from work, rather than on workers on restricted work or the loss of intangible benefits after the employee returns to work. In response, OSHA has revised the WRP provision in the proposal to differentiate somewhat between those injured workers who are out of work entirely and those who are on restricted work.

**Alternative 13: Require Worker Restriction Protection for Only Three or Seven Days.** Limiting WRP to 3 days with full pay and benefits would address the problem that the workers' compensation system in many States does not cover short term absences. This approach would reduce the costs of WRP by 76 percent, to \$210 million per year. However, this approach would still leave workers in some States subject to losses even for cases otherwise eligible for

workers' compensation because some States have waiting periods that are longer than three days. More importantly, this alternative would provide injured employees with no pay beyond three days if the MSD turned out not to be covered by workers' compensation. Since whether an MSD is covered by workers' compensation cannot be known in advance, adoption of this alternative would, OSHA believes, have a chilling effect on MSD reporting.

Increasing the coverage to seven days would assure that workers eligible for workers' compensation would be covered in all states. This approach would have costs of \$320 million per year.

**Alternative 14: Do Not Start WRP Until the Worker Has Been Absent Three Days.** This alternative would be designed to avoid requiring the employer to cover the expenses of an injured employee who would not be eligible for workers' compensation (because of the waiting period) by providing that the first three days of absence with an MSD would not be covered by WRP. This alternative would reduce the costs of WRP by 24 percent, to \$667 million per year. However, this alternative would do nothing to deter employers from setting up policies requiring, for example, that any employee reporting an MSD take three days off without pay; such policies would, needless to say, have a chilling effect on reporting. This alternative would also mean that minor MSDs, *i.e.*, those requiring a day or two away from work, could result in loss of pay for the worker. As a result, this alternative would have the perverse effect of encouraging employees to wait until an MSD is serious enough to warrant more than three days away from work before reporting the MSD.

**Alternative 15: Limit WRP to 3 Months.** This alternative would be designed to limit the employer's costs of WRP by limiting the length of time that WRP is in effect. It would lower the costs to employers of WRP by 24 percent, to \$668 million per year. OSHA is concerned that this alternative will have a chilling effect on the reporting of MSDs that could be serious enough to lead to longer term disabilities.

**Alternative 16: Provide WRP at the Level of 100% of Take Home Pay.** This alternative would ensure that the worker suffers no economic loss as a result of reporting an MSD. This alternative would increase the costs to employers of WRP by 36%, to \$1.2 billion per year. This 36% increase in costs to employers represents a transfer in costs to employers from employees, who now bear these economic losses themselves.

#### *Alternatives 17, 18, 19, and 20: Different Scope Provisions*

OSHA has considered, and asked stakeholders to consider, four alternative scopes for the proposed standard:

- (1) Apply it to manufacturing operations only;
- (2) Apply it to manufacturing operations and manual handling;
- (3) Take the approach reflected by the proposed standard, *i.e.*, provide coverage of all general industry jobs in which a covered MSD occurs; and
- (4) Exempt low hazard firms.

The first two approaches listed above—applying the standard only to manufacturing operations, or only to these operations and manual handling—would have the effect of exempting most industries with somewhat lower, but still significantly high, rates of MSDs from coverage by the proposed standard. OSHA welcomes suggestions about other approaches to the scope of the standard that would reduce the burden on industries with somewhat lower rates of

MSDs while still protecting employees from the significant risk of incurring an MSD. Each of these alternative scope provisions is discussed below.

**Alternative 17: Cover Manufacturing Operations Only.** A proposed standard covering manufacturing operations only would apply to 377,000 establishments and capture 30 percent of all lost workday MSDs. Such an approach would address one of the most concentrated areas of MSD risk. Manufacturing operations involve less than 10% of all establishments in general industry and fewer than 15% of all employees, but they account for almost one-third of all reported MSDs. This approach was strongly opposed by many stakeholders, who pointed out that many very high risk jobs and industries would not be covered by the proposed standard if this alternative were adopted.

**Alternative 18: Cover Manufacturing and Manual Handling Operations Only.** A standard covering manufacturing operations and manual handling only would cover 1.59 million establishments and capture 60 percent of all MSDs. This approach would expand coverage beyond manufacturing, particularly to the high risk transportation and health care sectors, while still maintaining a sharp focus on a limited number of establishments and employees within general industry. However, this approach would leave a large number of employees at significant risk of incurring debilitating injuries. For example, this approach would not cover carpal tunnel syndrome and tendinitis in airline ticket agents, telephone sales personnel or video display terminal personnel. Many stakeholders objected to this approach, and some stakeholders pointed out that it would not be appropriate to require a program when certain employees in an establishment incurred an MSD while other employees in the same facility would not receive the benefits of a program no matter how many MSDs they incurred.

**Alternative 19: Exempt Small Businesses in General Industry.** This option is not one that the OSH Act permits OSHA to consider; the Act requires the Agency to protect employees exposed to significant risk to the extent feasible. OSHA's data indicate that there is a significant risk of job-related MSDs even in very small general industry firms. As a result, although OSHA can and is seeking ways to mitigate the standard's impact on small firms, exempting small firms from the standard would leave their employees at significant risk when there are feasible ways of mitigating that risk. OSHA may, however, consider delaying the compliance date or otherwise modifying certain provisions for very small firms. OSHA requests comment on this alternative and on other ways of reducing the costs and impacts of the standard that would protect employees at these firms from the significant risk they face of incurring work-related MSDs.

**Alternative 20: Exempt Low Hazard Firms.** OSHA believes that the approach taken in the proposed standard of requiring a full program only when MSDs occur or persistent symptoms and supporting information are present will have the effect in practice of exempting most low hazard small firms from the coverage of the standard. However, it is possible under the proposed standard for a large firm with very low rates of MSDs still to be required to have a program. OSHA believes that coverage of such

firms is appropriate, because even low hazard firms may have a few high hazard jobs that merit attention. OSHA welcomes comments on approaches that would exempt some operations from the standard's coverage based on a well-supported demonstration that employees in those firms are not at significant risk of incurring a MSD.

**Alternative 21: Phased Implementation.** The SBREFA Panel recommended that OSHA consider the possibility of phasing in implementation of the proposed standard. OSHA has adopted a phased implementation approach in the proposed rule that allows periods of from one to three years after the effective date of the rule for the implementation of various program elements. For example, establishments are permitted three years to implement permanent engineering controls. In addition, reliance on the one MSD trigger ensures that problem jobs are addressed gradually over time; a more proactive approach would be likely to require all problem jobs to be addressed immediately. These features of the proposed rule combine to ensure that small establishments will only be required to address problem jobs gradually. OSHA therefore believes that the proposed rule is fully responsive to this Panel recommendation.

**Alternative 22: Adopt a Safety and Health Program Rule to Cover Ergonomics.** OSHA is currently considering proposing a safety and health program rule that would require all establishments in general industry to set up safety and health programs to address hazards covered by existing OSHA standards and the General Duty Clause of the Act. Because there is currently no OSHA ergonomics standard or any other standard addressing work-related MSDs, the safety and health program rule would only address those MSDs that are presently covered by the General Duty Clause. In addition, because the safety and health program rule covers safety and health hazards of all kinds, the provisions it contains are necessarily general. Given that MSDs constitute one-third of all lost workday injuries and illnesses, OSHA feels that employers need more specific direction on how to address MSDs than would be provided through the general safety and health program rule.

In addition, OSHA's experience with the Maine 200 program, which encouraged firms with high numbers of injuries and illnesses to establish safety and health programs, has shown that the establishment of such programs does not necessarily ensure that MSDs will be adequately addressed. Although some firms incorporated ergonomics into their safety and health programs, many firms in the Maine 200 program established programs designed to address traditional safety concerns, but failed to address ergonomics problems at all. OSHA believes that an ergonomics program standard is essential if all general industry firms are to begin to address their ergonomics problems.

#### 6. Responses to the SBREFA Panel Report

Because OSHA anticipated that this proposed standard would cause significant impacts on a substantial number of small entities, the Agency convened a SBREFA Panel as required by that Act. Table VIII-8 lists the recommendations of the SBREFA Panel and indicates how OSHA has responded to these recommendations.

Table VIII-8.—Summary of SBREFA Panel Recommendations and OSHA Responses

SBREFA PANEL RECOMMENDS THAT:	OSHA's RESPONSE
<p>OSHA review its cost estimates in light of these comments, with specific attention to those comments that offered alternative cost and hour estimates or explanations of why the commenters believed the costs to be underestimated and to those areas of the program highlighted by the SERs and the Panel as major cost issues (training, consulting costs, medical removal protection, job hazard analysis, job control). This review, with a presentation of the estimates provided by the SERs, should be included as part of a revised IRFA.</p>	<p>OSHA has commented on the SERs' cost estimates in detail in the Cost Chapter (Chapter V) of this economic analysis. OSHA has since reviewed its costs and has obtained expert review of the Agency's estimated costs. In several cases, the costs now shown in the analysis, such as those for job control and consultants, have been revised upward.</p>
<p>A similar presentation [to that for costs] of the assumptions underlying benefits estimates be included.</p>	<p>OSHA has added a discussion to the IRFA providing a schematic outline of the assumptions underlying the benefits analysis.</p>
<p>OSHA discuss the sources and bases of these assumptions, significant alternative assumptions, and the reasons OSHA selected the proposed assumptions.</p>	<p>OSHA has added this discussion to the IRFA.</p>
<p>OSHA reexamine its estimates of the average number of persons in similar jobs (see below for specific recommendation to modify the term "similar job"), and how this estimate may impact overall costs.</p>	<p>OSHA has revised both the proposed standard and its approach to measuring the number of jobs affected when an MSD occurs. OSHA has also changed the term to "same jobs" for clarity.</p>
<p>OSHA examine its cost estimates to be sure that it has adequately accounted for the burden on firms who do not have an MSD and are not required to have a basic program. This examination should include an examination of the costs of determining whether an MSD is work-related.</p>	<p>OSHA has added costs to its estimated costs of compliance to reflect that even establishments that do not fall within the scope of the standard will incur costs to familiarize themselves with the standard and determine that they are not covered.</p>
<p>OSHA consider whether the Agency's analysis may have underestimated the need for help from outside consultants and that OSHA examine the necessity for, and cost and availability of, the services of ergonomic consultants.</p>	<p>OSHA has reviewed its estimates of the need for consultants and special expertise, and has revised upward both its estimate of the time required for employers to select necessary job controls, the percentage of time consultants will be needed, and the costs associated with consultant services.</p>
<p>OSHA consider the extent to which small firms can pass along any price increases to consumers or might experience feasibility problems if such costs could not be passed along.</p>	<p>This issue is addressed in the economic impact section of the Preliminary Economic Analysis (Chapter VII).</p>
<p>OSHA assess the SERs' statements [concerning selective hiring] as part of its analysis, consider how to mitigate any potential that may exist for expanding such selective hiring incentives or creating new ones, and solicit comment on these issues.</p>	<p>This issue is addressed in the Preamble to the proposed standard (in Section XI) and has been raised as an issue for comment.</p>

Table VIII-8.—Summary of SBREFA Panel Recommendations and OSHA Responses—Continued

SBREFA PANEL RECOMMENDS THAT:	OSHA's RESPONSE
OSHA assess these data [on increases in the number of injuries and illnesses as a result of programs] as part of its analysis. In addition, OSHA provide additional data to support its arguments about the costs and cost-savings implications of these programs and specifically address any potential effects of medical removal protection in encouraging workers to remain off work.	OSHA has reviewed the responses employers made to the Agency's ergonomics survey, and found that even in the first year of a program, firms typically have fewer rather than more MSDs. As discussed in the benefits section of the economic analysis (Chapter IV), OSHA estimates that the work restriction protection provision (formerly the medical removal protection provision) will help to counter the disincentives to employees to report MSDs early.
OSHA conduct the analysis at a level of detail that does not mask the relevant economic differences among industries through aggregation.	OSHA has revised its analysis to conduct the analysis at the three rather than the two digit SIC Code level of detail.
OSHA review whether small businesses would need consultants for other elements of the program, whether they may be necessary in a greater percentage of cases, and to what degree these factors would alter cost estimates.	As discussed in the cost analysis, OSHA has reviewed whether consultants would be needed for other elements of the program and found that consultants will not be needed, given the materials available on how to set up a program.
OSHA evaluate the usefulness of checklists for these purposes. In the event OSHA develops checklists for its own enforcement personnel, it should make these checklists available to the public.	This issue is discussed in the Preamble and is raised as an issue for comment.
OSHA should either consider alternative approaches to this issue [the trigger criteria for a full program] or clarify these criteria.	Both the Preamble to the proposed standard and the IRFA provide discussions of alternative trigger provisions.
OSHA clarify that employers may, if they wish, rely on a physician's opinion in making a work-relatedness determination, and that OSHA would bear the burden of proof if it disagreed with such an opinion.	This issue is discussed in the Preamble.
OSHA clarify and consider alternatives to this trigger [known hazards] (these are discussed in the Alternatives Section at the end of this report), and that OSHA assure that any provision it adopts would not create disincentives to the proactive identification of ergonomic hazards.	OSHA has deleted the "known hazards" provision and is instead relying on a persistent-symptoms-plus-supporting information trigger in manufacturing and manual handling jobs.
OSHA seek ways to clarify, explain, and provide examples of these terms [key terms used in the reg text].	The Preamble to the proposed standard provides additional definitions and examples of the key terms used in the regulatory text.
OSHA clarify the idea of similar jobs and use a more precise term, such as "similar work activities," in light of SER comments that all or a portion of employees sometimes engage in all or a portion of the work activities in the establishment. In addition, OSHA provide in the regulatory document examples of which similar work activities would or would not be covered by the standard.	The concept of "similar" jobs has been deleted from the proposed rule and been replaced with "same" jobs, which are defined in terms of the same work activities.
OSHA clarify that the draft proposed rule only requires the employer to control hazards to the extent feasible for that firm, using the normal OSH Act definition of feasibility ( <i>i.e.</i> , "Is it capable of being done"), discuss in the preamble the factors that go into that determination, and seek ways to include such explanatory information in the preamble, outreach, and compliance assistance materials.	The technological feasibility chapter of the economic analysis discusses this issue, as does the Job Hazard Analysis and Control section of the preamble.

Table VIII-8.—Summary of SBREFA Panel Recommendations and OSHA Responses—Continued

SBREFA PANEL RECOMMENDS THAT:	OSHA's RESPONSE
Definitions of personal protective equipment and engineering controls be added to the proposed standard, with ergonomic examples that help to explain how they differ.	Definitions of these terms, with examples, have been added to the regulatory text.
OSHA discuss the issue of adequate control and provide examples. In addition, OSHA clarify the meaning of the proposed rule so that employers will have a better idea of when they have done enough to comply with the standard. Examples should be added to the preamble to further clarify this point.	Examples of adequate control have been provided in the technological feasibility section of the economic analysis and are discussed in the Preamble as well. In addition, the regulatory text now includes a step-by-step incremental abatement process.
The proposed standard be modified to clarify the requirement for program evaluations. Such modifications should reflect the flexibility of employers to use non-quantitative measures, quantitative measures, or a combination of these to evaluate their ergonomics programs.	This issue has been clarified in the regulatory text and the Preamble.
If MRP is included in the proposed rule, OSHA explain in the preamble how the proposed provision interacts with state workers' compensation laws and why OSHA believes the rule's MRP provision is not in conflict with Section 4(b)(4) of the OSH Act, and solicit comment on this issue.	OSHA has an extensive discussion of Work Restriction Protection in the Preamble, including a discussion of the relationship between WRP and workers' compensation.
OSHA draft the proposed rule to achieve these objectives [of EEO laws, the ADA and ADEA].	These issues are discussed in the Preamble to the proposed standard.
OSHA address how the ergonomics program accommodates the requirements of the ADA. Also, OSHA seek to minimize any unintended consequences of the rule that might undermine the protections afforded under the ADA, as well as the ADEA.	This issue is addressed in the Preamble to the proposed standard.
OSHA draft the proposed rule to achieve these objectives [of the NLRA] and discuss and give examples of employee participation mechanisms that would allow employers to be in full compliance with both the NLRA and the proposed rule.	OSHA has added this material to the Preamble.
OSHA ensure that the two rules [the ergonomics proposal and the safety and health program proposal] are developed in a way that allows an employer's ergonomics program to be an integral part of that employer's general safety and health program and to avoid duplicative requirements or recordkeeping (for example, by making clear that an ergonomics program can be part of an effective safety and health program). In addition, the economic analyses supporting the two rules be compatible and not double count either costs or benefits. In addition, that OSHA ensure consistency between relevant definitions in their upcoming revision of the recordkeeping rule and the proposed ergonomics standard.	OSHA is developing the two rules so they will be compatible. Because this rule precedes the safety and health program rule, the benefits and costs for this rule have not considered possible overlaps with the safety and health program rule. OSHA has ensured consistency between the definitions of "MSD" and "recordable" in this proposed ergonomics rule and the recordkeeping rule.
OSHA further explain its non-regulatory guidance efforts to date, the basis for its belief that a significant risk remains, and why it believes a proposed rule is now appropriate to reduce that risk. The Panel recommends that OSHA solicit comments on the need for a rule and on the effectiveness of non-regulatory approaches.	Discussions of these topics are included in the Preamble and in the IRFA.
OSHA discuss whether a safety and health program rule would adequately address MSDs, thereby eliminating the need for a separate ergonomics rule.	A discussion of this topic has been included in the IRFA.
OSHA explain why it does not wish to delay this proposed regulatory action until that time [when the second NAS study is completed], and consider any available results of the NAS study that are in the record of the final rule.	This topic is discussed in the Preamble to the proposed standard.
OSHA consider phased implementation, allowing additional time for small employers and/or employers in particular industries where feasibility may be a concern.	A discussion of phased implementation has been included in the Preamble to the proposed rule and in the discussion of alternatives in the IRFA.

Table VIII-8.—Summary of SBREFA Panel Recommendations and OSHA Responses—Continued

SBREFA PANEL RECOMMENDS THAT:	OSHA's RESPONSE
<p>In addition to OSHA's proposed trigger of one work-related MSD, where regular work activities expose the employee to hazards likely to cause or contribute to that MSD, OSHA analyze and consider a variety of alternative triggers, paying special attention to:</p>	<p>A discussion of trigger alternatives has been added to the IRFA.</p>
<ul style="list-style-type: none"> <li>• A trigger using multiple work-related MSDs over a time frame that might exceed one year; and</li> <li>• Staged implementation of program elements based on multiple work-related MSDs.</li> </ul> <p>In addition, the Panel recommends that OSHA look at other types of triggers, including lost workday MSDs, MSD rates, numbers of MSDs or MSD rates for different sizes of firms and different periods of time, as well as the use of a checklist to determine the presence of a hazard.</p> <p>OSHA consider this issue [the known hazard provision] and ensure that any provision it adopts would avoid disincentives to identify hazards. In addition, OSHA consider not including this provision in the proposed rule.</p>	<p>OSHA had deleted the provision about known hazards.</p>
<p>The proposed rule clearly indicate which manual handling and other operations are included in the proposed rule and which are excluded from it.</p>	<p>The regulatory text and definitions section clearly delineate which operations are included and which are excluded, and the Preamble also clarifies this issue.</p>
<p>OSHA continue to analyze and solicit comments on the alternatives of limiting the proposed standard to manufacturing only, and to manufacturing and manual handling only.</p>	<p>The preamble and the IRFA continue to solicit comment on these issues, and the IRFA considers these alternatives.</p>
<p>OSHA pay particular attention to the following issues related to MRP (now called WRP):</p> <ul style="list-style-type: none"> <li>• Determine whether the evidence indicates that MRP or other provisions are necessary to achieve the goal of prompt and complete reporting of MSDs. The Panel realizes that, as with any other decision, OSHA's final determination of whether MRP is necessary must be based on substantial evidence in the standard's record considered as a whole. In addition, recommend that OSHA solicit comment on the alternative of excluding MRP from the rule;</li> <li>• If MRP or another provision is necessary, examine whether the purposes of MRP could be met with a more limited form of MRP, such as a shorter time limit for MRP coverage, a smaller percentage of income replacement, or recognition of a feasibility limitation on MRP at the firm level, such as that used in OSHA's Methylene Chloride standard;</li> <li>• Assess whether alternatives other than MRP would be as effective in achieving the goals of prompt and complete reporting, such as alternatives that may not involve payments to employees; and</li> <li>• Examine whether MRP should be phased in over a period of time.</li> </ul> <p>Some SERs also expressed concern that, as currently drafted, OSHA's regulatory language could be interpreted as providing injured employees on MRP with more take-home pay than they would have had before the injury. The Panel recommends that, if a form of MRP is included in the proposed rule, OSHA make it clear that MRP will not result in higher take-home income for removed employees than they would otherwise have received.</p>	<p>OSHA has modified the provision to require a lower percentage of take-home pay for workers absent from work. These issues are discussed in detail both in the Preamble and in the IRFA.</p>

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## IX. Unfunded Mandates

OSHA reviewed the proposed ergonomics program standard in accordance with the Unfunded Mandates Reform Act of 1995 (UMRA) (2 U.S.C. 1501 *et seq.*) and Executive Order 12875. As discussed above in the Summary of the Preliminary Economic Analysis (Section VIII of the preamble), OSHA estimates that compliance with the proposed ergonomics program standard will require the expenditure of approximately \$4.2 billion dollars each year by employers in the private sector. Therefore, the proposed ergonomics program standard establishes a federal private sector mandate and is a significant regulatory action, within the meaning of Section 202 of UMRA (2 U.S.C. 1532). OSHA has included this statement to address the anticipated effects of the proposed ergonomics program standard pursuant to Section 202.

OSHA standards do not apply to state and local governments, except in states that have voluntarily elected to adopt an OSHA State Plan. Consequently, the proposed ergonomics program standard does not meet the definition of a "Federal intergovernmental mandate" (Section 421(5) of UMRA (2 U.S.C. 658(5)). In addition, the Agency has preliminarily concluded, based on review of the rulemaking

record to date, that few, if any, of the affected employers are state, local and tribal governments. In sum, the proposed ergonomics program standard does not impose unfunded mandates on state, local and tribal governments.

The anticipated benefits and costs of this proposed standard are addressed in the Summary of the Preliminary Economic Analysis (Section VIII of this preamble), above, and in the Preliminary Economic Analysis (Ex. 28-1). In addition, pursuant to Section 205 of the UMRA (2 U.S.C. 1535), having considered a reasonable number of alternatives as outlined in this Preamble and in the economic analysis (Ex. 28-1), the Agency has preliminarily concluded that the proposed standard is the most cost-effective alternative for implementation of OSHA's statutory objective of reducing significant risk to the extent feasible. This is discussed at length in the economic analysis (Ex. 28-1) and in the Summary and Explanation (Section IV of this preamble) for the various provisions of the proposed ergonomics program standard.

## X. Environmental Impact

OSHA has reviewed its proposed ergonomics standard in accordance with the National Environmental Policy Act (NEPA) (42 USC 4321 *et seq.*), the regulations of the Council on Environmental Quality (40 CFR Part 1500), and DOL's procedures (29 Part 11).

The proposed ergonomics standard will require businesses to correct those jobs that contribute to musculoskeletal disorders (MSDs) by modifying the conditions in which the work is performed. In investigating the regulatory impacts of the proposal, OSHA has identified a large number of possible forms of job modifications. The types of job modifications include work station modification, redesign of tools, job rotation, full or partial automation of tasks, and other changes.

Ergonomics is the science of fitting jobs to people. Job modifications typically result in greater productive efficiencies without the ongoing need for additional resources or increased discharge of pollutants. Frequently, process redesign results in improved quality control, resulting in fewer wasted materials. More broadly, reducing MSDs will reduce the need for medical care resources. For these reasons, OSHA has determined that these job modifications will not generate a significant impact on the external environment.

The proposed ergonomics standard would also require employers to develop ergonomic programs that train workers to recognize and avoid unhealthy work positions, provide for the management of MSDs, and perform analyses of the ergonomic characteristics of jobs. None of these programmatic activities would generate a significant environmental impact.

As a result of this review, OSHA has preliminarily concluded that no significant environmental impacts would result from this proposed rulemaking.

## XI. Additional Statutory Issues

This chapter addresses additional issues OSHA has considered in developing this proposed rule. OSHA sets forth preliminary conclusions on each issue. The agency invites public comment on these issues.

*A. Occupational hazard—Does OSHA have the authority to regulate MSD hazards, as occupational hazards that cause or contribute to occupational injuries?*

OSHA's authority to set standards is limited to ameliorating "conditions that exist in the workplace."

*Industrial Union Dep't, AFL-CIO v. American Petroleum Inst. et al. (Benzene)*, 448 U.S. 607, 642 (1980). Before OSHA can promulgate a standard, the Agency must make a "threshold finding that a place of employment is unsafe." *Id.* (emphasis added). See also *Atlas Roofing Co. v. OSHRC*, 430 U.S. 442, 445 (1977) ("The [OSH] Act created a new statutory duty to avoid maintaining unsafe or unhealthy working conditions." (emphasis added)).

Some stakeholders have suggested that because MSDs can result from outside activities as well as from work conditions, OSHA lacks authority to protect workers from occupational exposures that can contribute to MSDs. This suggestion is contrary to precedent and common sense and is antithetical to the purpose of the Act to provide safe and healthy working conditions for every man and woman in the nation.

Many, if not most, of the adverse health conditions OSHA seeks to prevent can be caused by non-work as well as work activities. For example, many health standards, such as the asbestos standard, are designed to protect employees from lung and other cancers.

The courts have made clear that OSHA has authority to regulate workplace conditions that create a significant risk of an impairment, even if such impairments can also be caused by non-work activities. This authority was upheld by the en banc Court of Appeals for the Fourth Circuit in *Forging Industry Assn. v. Secretary of Labor*, 773 F.2d 1436, 1442 (4th Cir. 1985) (Noise).

That case dealt with a challenge to the Hearing Conservation Amendment to OSHA's Occupational Noise standard. That amendment establishes certain requirements that must be met to reduce the incidence of and/or prevent hearing impairment due to occupational noise exposure. Before issuing the amendment, OSHA found that 10–15% of workers exposed to noise levels below the previous permissible exposure limit (PEL) would suffer material hearing impairment. *Id.* at 1443. OSHA based this finding on a "panoply of scientific reports and studies," including studies done by the National Institute for Occupational Safety and Health (NIOSH) and the Environmental Protection Agency (EPA). *Id.* OSHA also found that those employees who had suffered a hearing decrement of 10 decibels in either ear faced a greater risk from continued exposure to high levels of workplace noise than workers whose hearing was unimpaired. *Id.* OSHA's Hearing Conservation Amendment provided hearing-endangered workers with protection in the workplace in order to decrease the risk of hearing impairment. *Id.*

The Forging Industry Association (FIA) argued that "because hearing loss may be sustained as a result of activities which take place outside the workplace—such as listening to loud music, age, or engaging in certain recreational activities—OSHA acted beyond its statutory authority by regulating non-occupational conditions or causes." Noise, 773 F.2d at 1442. The court found "no merit" in FIA's argument. *Id.* The court ruled that OSHA properly relied on "the extensive and thorough research of several scientific institutions in defining the problems related to industrially-caused hearing loss and designing its proposal." *Id.* at 1443. The court also stressed that OSHA excluded non-occupational hearing loss from the proposed rule. *Id.* at 1444 ("To be sure, some hearing loss occurs as a part of the aging process and can vary according to non-occupational noise to which employees are exposed. The amendment, however, is concerned with occupational noise—a hazard of the workplace."). The court ruled that the fact that non-occupational hazards may contribute to hearing

loss does not mean that OSHA should reform from regulating workplace conditions that are shown to cause such loss:

The amendment provides that non-occupationally caused hearing loss be excluded from its regulation. See 29 CFR §§ 1910.95(g)(8)(ii), 1910.95(g)(10)(ii) (1984). Assuming, however, that some loss caused by aging of smaller amounts of noise sustained for shorter periods also aggravates the hearing loss incurred by an individual employed in a high noise-producing industry, that is scant reason to characterize the primary risk factor as non-occupational. Breathing automobile exhaust and general air pollution, for example, is damaging to lungs, whether healthy or not. The presence of unhealthy lungs in the workplace, however, hardly justifies failure to regulate noxious workplace fumes. Nor would there be logic to characterizing regulation of the fumes as non-occupational because the condition inflicted is aggravated by outside irritants. Noise, 773 F.2d at 1444.

As with the Hearing Conservation Amendment to the Noise standard, the proposed ergonomics rule is limited to regulating work-related MSDs and occupational MSD hazards. The proposed standard requires employers to set up an ergonomics program to eliminate or control workplace MSD hazards. In addition, the proposed rule contains language that ensures that the OSHA recordable MSDs that trigger action under the proposed rule are work-related (e.g., the MSD occurred in a job where the employee is exposed to MSD hazards and the workplace conditions and physical work activities are reasonably likely to cause or contribute to the type of MSD reported).

The Occupational Safety and Health Review Commission has reached the same conclusion in an ergonomics case brought under the Act's general duty clause. In *Secretary of Labor v. Pepperidge Farm, Inc.*, 17 O.S.H. Cas. (BNA) 1993 (April 26, 1997) (*Pepperidge Farm*), the Commission held that where work was shown to be a substantial contributing factor to MSDs, the fact that non-work factors may also play a role did not preclude OSHA from requiring the employer to abate the workplace hazards. In that case, Pepperidge Farm contested a number of citations for recordkeeping and repetitive motion violations that OSHA had issued under section 5(a)(1) of the OSH Act. In order to prove a section 5(a)(1) violation, OSHA had the burden of showing that "a condition or activity in the employer's workplace presents a hazard to employees." *Id.* at 2009 (emphasis added). Pepperidge Farm argued that section 5(a)(1) should not apply to MSD workplace hazards because, among other things, "non-workplace factors may cause or contribute to the illnesses at issue and that individuals differ in their susceptibility to potential causal factors." *Id.* at 2013. The Commission held that such factors should not "ipso facto" preclude the possibility of enforcement under section 5(a)(1). *Id.* at 2013. The Commission also analyzed a significant amount of evidence that showed a causal relationship between MSDs and workplace hazards, including testimony from medical personnel who examined injured workers, epidemiological data, and injury incidence at a Pepperidge Farm plant. *Id.* at 2020–26. The Commission ultimately found that there was a causal connection:

We therefore conclude that the Secretary has established on this record a causal connection between [MSDs] affecting the employees at Downingtown [a Pepperidge Farm plant] and their work on the biscuit lines. In doing so, we are mindful that many of these injuries may have had more than one causal factor and of the experts who contend that the specific cause of such injuries is, essentially, unknowable or presently unknown. As is the case with many occupational ills with multiple possible causes, employees are more or less susceptible to injury on the job because of the individual attributes and backgrounds they bring to the workplace. As with

these other ills, the Secretary is not thus foreclosed from attempting to eliminate or significantly reduce the hazard by regulating what is shown to be a substantial contributing factor to the worker injuries. *Id.* at 2029.

The fact that certain physical characteristics of employees may make them more susceptible to developing MSDs also does not divest OSHA of authority to issue the proposed rule. In setting standards under section 6(b)(5) of the OSH Act, OSHA must set the standard "which most adequately assures \* \* \* that *no employee* will suffer material impairment of health or functional capacity even if such employee has regular exposure to the hazard dealt with by such standard for the period of his working life." 29 U.S.C. 655(b)(5) (emphasis added). OSHA may not decline to regulate a hazard because certain people are more susceptible or less susceptible than others to disease or injury if exposed to that hazard.

This principle was upheld by the Court of Appeals for the D.C. Circuit in a challenge to OSHA's Asbestos standard. In the Asbestos rulemaking, OSHA based its significant risk determination, in part, on epidemiologic studies that included workers who smoked. Asbestos, 838 F.2d at 1264–65. The Asbestos Information Association (AIA) claimed that because smoking and asbestos worked synergistically (*i.e.*, the cancer risks of smoking workers exposed to asbestos were greater than the sum of the risks of smoking and asbestos), OSHA overestimated the risks posed by asbestos. *Id.* at 1265. AIA did not claim that OSHA failed to control for smoking. Rather, AIA claimed that OSHA improperly considered smokers' incremental risks from asbestos. *Id.* In rejecting AIA's claim, the court stated:

[Section] 6(b)(5) calls on OSHA to set standards such that "no employee" will experience the forbidden level of risk. We understand the employers' aggravation that they are being forced to bear part of the burden imposed by employees' decision to smoke, but we do not think that at this stage of American history smokers can be regarded as so far beyond the pale as to require OSHA to disregard them in computing the risks of asbestos. *Id.*

See also *Reich v. Arcadian Corp.* 110 F3rd 1192 (5th Cir. 1987) (Act's general duty clause protects especially susceptible employees). OSHA is properly regulating workplace MSD hazards and work-related MSDs.

#### B. Health standards—Is this proposed rule a section 6(b)(5) standard?

To determine whether the proposed rule is a section 6(b)(5) "health" standard first requires determining whether MSD hazards are the type of "health hazards" section 6(b)(5) is intended to cover.

##### 1. Section 6(b)(5) "health" standards

"The [OSH] Act delegates broad authority to the Secretary to promulgate different kinds of standards." *Industrial Union Dept., AFL-CIO v. American Petroleum Institute*, 448 U.S. 607, 611 (1980) (Benzene). Where toxic substances or harmful physical agents are concerned, not only must a standard meet the requirements of section 3(8), it must also comply with section 6(b)(5) of the OSH Act. Section 6(b)(5) provides that in promulgating standards dealing with "toxic materials or harmful physical agents," OSHA shall:

- Set the standard which most adequately assures,
- To the extent feasible,
- On the basis of the best available evidence,
- That no employee will suffer material impairment of health or functional capacity,

- Even if such employee has regular exposure to the hazard dealt with by such standard for the period of his working life. 29 U.S.C. 655(b)(5).

While all standards must be highly protective, the "feasibility mandate" of section 6(b)(5) also requires OSHA to select "the most protective standard consistent with feasibility" that is needed to reduce significant risk of harm due to exposure to a health hazard. *American Textile Mfrs. Institute v. Donovan (Cotton Dust)*, 452 U.S. 490, 509 (1981). To help ensure that health standards provide such protection, Congress authorized OSHA to include the following among a health standard's requirements:

- Appropriate information or forms of warning about exposure to hazards, relevant symptoms, proper conditions and precautions, and appropriate emergency treatment;
- Monitoring or measuring of employee exposure;
- Medical examinations or tests;
- Suitable protective equipment and control or technological procedures;
- Other information gathering and transmittal provisions. 29 U.S.C. 655(b)(7).

##### 2. Harmful physical agents

Section 6(b)(5) applies only to "toxic substances or harmful physical agents." 29 U.S.C. 655(b)(5). While the OSH Act does not define these terms, the courts have looked to the Act's legislative history and have concluded that Congress intended section 6(b)(5) to address "latent" risks of harm; that is, hazard exposures that take their toll over time or whose deleterious effect is not readily apparent. *International Union, UAW v. OSHA (LOTO I)*, 938 F.2d 1310, 1314–15 (D.C. Cir. 1991); S. Rep. 91–1282, 91st Cong., 2d Sess. 2–39 (1970); H.R. Rep. 91–1291, 91st Cong., 2d Sess. 15 (1970), reprinted in Senate Committee on Labor and Public Welfare, Legislative History of the Occupational Safety and Health Act of 1970 (Legislative History).

In Senate debates, Senator Williams, sponsor of the OSH Act, and Senator Dominick referred to toxic materials and harmful physical agents as "hidden hazards" because of the latency period that exists between exposure to these hazards and the occurrence of harm:

A particularly urgent concern repeatedly brought out during our hearings is the frequent exposure of many workers to a great variety of toxic materials or harmful physical agents. [Workers] are often unaware of the nature of such exposure or of its extent. In some cases, the consequences of overexposure may be severe and immediate; in other cases, effects may be delayed or latent. Senator Williams, Legislative History at 415 (emphasis added).<sup>8</sup>

[A]nyone working in toxic agents and physical agents which might be harmful may be subjected to such conditions for the rest of his working life, *so that we can get at something which might not be toxic now, if he works in it a short time, but if he works in it the rest of his life might be very dangerous \* \* \** Senator Dominick, Legislative History at 503 (emphasis added).

The courts have looked to the legislative history for determining whether a particular rule is a "health" or "safety" standard. In the Benzene decision, the Supreme Court also said:

<sup>8</sup> Congress codified in the OSH Act this distinction between "health" and "safety" standards. See 29 U.S.C. 651(6) ("[E]xplor[e] way to discover latent diseases \* \* \* relating to health problems, in recognition of the fact that occupational health standards present problems often different from those involved in occupational safety"); 29 U.S.C. 655(c)(1) (OSHA's authority to issue emergency temporary standard limited to new hazards or to "health" hazards whose hazardous character is newly-discovered).

The reason that Congress drafted a special section for [toxic substances and harmful physical agents] was not \* \* \* because it thought that there was a need for special protection in these areas. Rather, it was because Congress recognized that there were special problems in regulating health risks as opposed to safety risks. *In the latter case, the risks are generally immediate and obvious, while in the former, the risks may not be evident until a worker has been exposed for long periods of time to particular substances.* It was to assure that the secretary took account of these long-term risks that Congress enacted § 6(b)(5). Benzene, 448 U.S. at 649 n. 54 (emphasis added).

In the challenge to the Lockout/Tagout standard, 29 CFR 1910.147, the court applied this test in upholding OSHA's determination that unexpected energization of equipment was not a harmful physical agent because it was not the type of "gradually accumulating hazard" and "latent-hazard[]" contemplated by section 6(b)(5). *International Union, UAW v. OSHA (LOTO I)*, 938 F.2d 1310, 1314-15 (D.C. Cir. 1991). The court accepted OSHA's position of viewing health standards as coextensive with standards governing latent hazards, "which are frequently undetectable to the casual observer because they are subtle or develop slowly or after latency periods;" contrasting them from "safety" standards, which address hazards that cause immediately visible physical harm. *LOTO I*, 938 F.2d at 1313. See also *National Grain and Feed Assn. v. OSHA (Grain-Handling)*, 866 F.2d 717 (5th Cir. 1989) (holding that "the immediate and obvious danger posed by grain dust in grain-handling facilities [i.e., explosion] does not constitute a "harmful physical agent" within the contemplation of section 6(b)(5)").

The legislative history, case law, past OSHA practice and evidence in the record all indicate that MSD hazards are the type of latent and insidious hazards which Congress intended section 6(b)(5) to address. The legislative history indicates that Congress, in discussing the hazards covered by section 6(b)(5), repeatedly referred to vibration (one of the MSD hazards this proposed standard covers) as an example of a harmful physical agent. Legislative History at 142-43 (discussing 1967 Surgeon General study finding that 65% of employees in industrial plants were "potentially exposed to harmful physical agents, such as severe noise or vibration, or to toxic materials"), 412, 415, 446, 516, 845 (Committee Print 1971).

Past OSHA practice also shows that OSHA has consistently regarded MSD hazards as latent hazards. In the OSHA rule on Access to Employee Exposure and Medical Records, for example, MSD hazards are included in the definition of harmful physical agents, which are among the hazards section 6(b)(5) covers:

*Toxic substances or harmful physical agent means* \* \* \* physical stress (noise, heat, cold, vibration, repetitive motion, ionizing and non-ionizing radiation, hypo- or hyperbaric pressure, etc.) which \* \* \* [h]as yielded positive evidence of an acute or chronic health hazard in human, animal, or other biological testing conducted by, or known to, the employer \* \* \* 29 CFR 1910.1020 (emphasis added).

OSHA's Ergonomics Program Management Guidelines for Meatpacking Plants also treat MSD hazards as latent hazards. This document, which provides guidance on preventing and reducing MSDs and which OSHA has drawn upon heavily in developing the proposed standard, includes elements that typically (if not exclusively) are found in OSHA standards dealing with latent hazards, such as:

- Medical surveillance and evaluation,

- Employee exposure monitoring and measuring,
- Information gathering (system for reporting signs and/or symptoms of MSDs), and
- Analysis of trends in injury/illness rates (records review).

See 29 U.S.C. 657(c)(3) (OSHA may issue regulations requiring employers to monitor or measure and record employee exposure to toxic materials and harmful physical agents).

Evidence in the record, which is discussed in greater detail in the Health Effects section above, also shows that MSD hazards are latent hazards. Exposure to these hazards at low levels, infrequently or for short periods of time are not generally associated with the occurrence of MSDs. Rather, it is the cumulative effects of exposure over time to workplace risk factors that result in injury. It ordinarily takes a period of weeks, months or years, depending on the level of the employee's exposure to the hazards, for employees to feel the cumulative effects. Therefore, at the early stages of the latency period employees can easily overlook or ignore MSD hazards because they are not yet experiencing the effects of the exposure to the various risk factors. Employees usually only recognize the effects of exposure as they begin to experience mild symptoms, and they may not recognize the cumulative effect until after symptoms become severe. At this later stage the effects may be permanent damage or disability.

In addition, MSD hazards are also considered latent hazards because they are not obvious or readily observable. This is in part because MSD hazards are multifactorial (Bernard, 1997). They result from exposure to a combination of workplace risk factors and conditions. Moreover, the level of risk also depends on intensity, frequency and duration of exposure to these workplace factors. For example, stakeholders have repeatedly told OSHA that employees often are unaware of either their exposure to or the potential harmful effect of these physical stresses until signs and/or symptoms of MSDs appear.

#### C. Is the proposed rule cost-effective?

All OSHA standards must be cost-effective. Cotton Dust, 452 U.S. 514 n.32. A standard is cost effective if the protective measures it requires are the least costly of the available alternatives that achieve the same level of protection. *Id.*; see also *LOTO II*, 37 F.2d at 668.

OSHA has worked to ensure that the proposed rule is cost-effective. Below are key provisions OSHA has included in the proposed to contribute to cost-effectiveness. OSHA requests comment on whether these provisions are consistent with the cost-effectiveness criterion—maintaining the same level of protection at reduced cost—and whether there are additional provisions OSHA could include in the rule that would contribute to its cost-effectiveness. First, OSHA is proposing a "performance-based" program rule. OSHA is not proposing to require employers to comply with a specific set of work requirements, work limits or equipment requirements. The proposed rule allows employers to select the most cost-effective controls they reasonably anticipate would control the MSD hazard.

Second, OSHA is proposing to allow employers to select from a broad range of types of control to correct problems. OSHA is proposing to allow employers to use any combination of engineering, work practice and administrative measures to control MSD hazards. This would allow employers to implement inexpensive administrative controls (e.g., rest breaks) where they are

effective rather than redesigning workplaces or investing in new equipment. The only exception to the flexibility in the controls permitted is that the proposed rule does not permit employers to use personal protective equipment (PPE) alone to protect employees from MSD hazards if feasible engineering, work practice, or administrative controls are available. PPE may be used to supplement other controls, however.

Third, OSHA is proposing to delay up-front costs to employers by the inclusion of the incident trigger. Employers who have no manufacturing or manual handling jobs do not have to take any action under the proposed rule until an MSD is reported. The initial responsibilities of employers with manufacturing and manual handling jobs have been limited to the minimum necessary to assure that employees in these high risks jobs are able to recognize and report MSDs. Employers with these jobs must establish a hazard reporting system and provide information about MSDs to employees. It is only when a covered MSD is reported that employers who have manufacturing and manual handling jobs must implement other elements of the ergonomics program standard such as job hazard analysis.

Fourth, OSHA is proposing a Quick Fix mechanism to allow employers to fix problem jobs without incurring the additional costs of setting up the entire ergonomics program. The Quick Fix provides a process for fixing a problem job quickly and completely. Employers may use a Quick Fix the first time a job is identified as a problem job, provided that the employer (1) puts in Quick Fix controls within 90 days after the job is identified as a problem job; (2) checks the Quick Fix controls within 30 days of implementation to ensure that they have eliminated the hazards, and keeps records of the Quick Fix process; and (3) provides the hazard information the proposed rule requires to employees in the job within 90 days after the job is identified as a problem job. It is only if the Quick Fix controls do not eliminate MSD hazards within the Quick Fix deadline or an MSD is reported in the job within 36 months, that an employer must set up a full ergonomics program. The rule contains an exception that allows employers to use a Quick Fix the second time a covered MSD occurs in a job if the second MSD is related to work activities or job conditions other than those that gave rise to the first MSD.

Fifth, OSHA is proposing to permit employers to discontinue certain aspects of their programs if no MSDs are reported for 3 years. If no MSDs are reported for 3 years, employers who have manufacturing and manual handling jobs must only maintain the following three elements of their ergonomics program: (1) Management leadership and employee participation; (2) hazard information and reporting; and (3) maintenance of implemented controls and training related to those controls. For other jobs where MSDs had been previously reported, if no MSDs are reported for three years, an employer need only maintain existing controls and training for those jobs.

Sixth, OSHA is proposing to allow employers to use an incremental abatement process to control hazards. Rather than requiring all controls to be implemented at once, employers would be free to first try a control, presumably a less costly control, that is reasonably anticipated to eliminate or substantially reduce the hazard. If that control proves ineffective, the employer would be required to proceed to other feasible controls until the hazard was controlled.

Seventh, OSHA is proposing to allow employers to have up to three years to implement permanent controls. This would give employers additional time to find the cheapest

controls and/or allow them to purchase off-the-shelf technology rather than hiring outside experts to develop specific interventions.

Finally, OSHA is permitting employers to continue with their existing ergonomics programs, rather than incurring costs to set up an entire new program, if they can show that: (1) Their program satisfies the basic obligation paragraph of each program element and they are in compliance with the recordkeeping requirements of this standard; (2) they implemented and evaluated the program before the effective date of the standard; (3) their evaluation of the program indicates that it is functioning properly; and (4) if MSDs are still occurring, they are complying with section 1910.922 of the proposed rule.

#### *D. Is the proposed rule consistent with the Americans with Disabilities Act?*

During the SBREFA process, some small employer representatives (SERs) expressed concerns about the interaction between the proposed rule and the Americans with Disabilities Act (ADA), 42 U.S.C. 12101 *et seq.* (1990). Specifically, they were concerned that the proposed rule might conflict with the ADA and/or create selective hiring incentives that could potentially result in discrimination against qualified individuals with disabilities.

##### 1. Does the proposed ergonomics rule conflict with the ADA?

The ADA prohibits employers with 15 or more employees from discriminating against qualified individuals with disabilities with regard to terms, conditions, and privileges of employment. 42 U.S.C. 12112(a) and (b); 29 CFR 1630.4; EEOC Technical Assistance on the Employment Provisions (Title I) of the ADA (January 1992) ("ADATAM"). The prohibition against discrimination applies to all aspects of employment, including:

- Job application
- Testing
- Evaluations
- Promotion
- Layoff/recall
- Compensation
- Benefits
- Hiring
- Placement/assignment
- Training
- Medical examinations
- Termination
- Leave

When requested, employers must provide reasonable accommodation to qualified individuals with disabilities for any of those aspects. 42 U.S.C. 12112 (b)(5)(A); 29 CFR 1630.9. Employers are not required, however, to provide accommodation that would pose undue hardship. 42 U.S.C. 12102(10); 29 CFR 1630.9.

The proposed ergonomics rule does not conflict with the ADA. The ADA prohibits discrimination against qualified persons with disabilities, and nothing in the proposed ergonomics rule authorizes or requires such discrimination. The goals of the ADA and the proposed ergonomics rule are fully compatible, and in many ways similar. The goal of the ADA is to protect qualified persons with substantially

limiting impairments from discrimination on the basis of the impairment so they may fully participate in work:

[I]ndividuals with disabilities \* \* \* have been faced with restrictions and limitations, subjected to a history of purposeful unequal treatment, and relegated to a position of political powerlessness in our society, based on characteristics that are beyond the control of such individuals and resulting from stereotypic assumptions not truly indicative of the individual ability of such individuals to participate in, and contribute to, society. \* \* \* 42 U.S.C. 12101(a)(7).

The ADA achieves this goal by prohibiting an employer from denying employment opportunities or taking actions that adversely affect a person with a disability who is currently able to perform the essential functions of the job without posing a direct threat to the safety or health of the disabled person or others. 42 U.S.C. 12112(b)(5)(A); 29 CFR 1630.9; ADATAM I-3. The ADA also achieves this goal by requiring employers to provide reasonable accommodation (e.g., modifications or adjustments to the job or removal of barriers) where necessary to enable the disabled person to perform the job (ADATAM I-3.5).

The proposed ergonomics rule seeks to prevent material impairment, which includes less severe impairments than disabilities covered under the ADA, from occurring in the first place. In general terms, the proposed rule proposes to achieve this by requiring employers to fit the job to the worker, not the worker to the job:

Ergonomics is the science of fitting workplace conditions and job demands to the capabilities of the working populations. Effective and successful "fits" assure high productivity, avoidance of illness and injury risks, and increased satisfaction among the workforce. NIOSH, Elements of Ergonomics Programs, p. 2 (1998).

More specifically, the ergonomics rule would achieve this by requiring employers to implement measures in problem jobs that eliminate or control the physical work activities and job conditions that are reasonably likely to cause, contribute to or aggravate an MSD. Not only will these control measures prevent the likelihood of OSHA recordable MSDs from occurring, but also they should make it easier for persons with more severe impairments to work in those jobs. This is because the proposed rule would require employers to eliminate or control hazards that aggravate pre-existing MSDs.

In many instances the ergonomic solutions to control problem jobs will be similar or related to the type of action an employer might take to provide reasonable accommodation. The following table shows some of the similarities between types of ergonomic controls and reasonable accommodation:

**Examples of Reasonable Accommodations Under the ADA and Ergonomic Controls**

TYPES OF REASONABLE ACCOMMODATION	TYPES OF ERGONOMIC CONTROLS
<ul style="list-style-type: none"> <li>Restructuring jobs by re-distributing certain non-essential job functions</li> </ul>	<ul style="list-style-type: none"> <li>Rotating employees</li> <li>Enlarging job (more task variation)</li> <li>Adding more employees to job (assembly line)</li> </ul>
<ul style="list-style-type: none"> <li>Altering how and when essential job functions are performed</li> </ul>	<ul style="list-style-type: none"> <li>Redesigning job</li> <li>Providing rest breaks</li> </ul>

**Examples of Reasonable Accommodations Under the ADA and Ergonomic Controls—Continued**

TYPES OF REASONABLE ACCOMMODATION	TYPES OF ERGONOMIC CONTROLS
<ul style="list-style-type: none"> <li>Using modified, flexible or part-time work schedules</li> </ul>	<ul style="list-style-type: none"> <li>Limiting total workday exposure</li> </ul>
<ul style="list-style-type: none"> <li>Acquiring or modifying tools, equipment, workstations</li> </ul>	<ul style="list-style-type: none"> <li>Designing and/or purchasing new tools and equipment</li> <li>Rearranging workstation layout</li> </ul>
<ul style="list-style-type: none"> <li>Reassigning to vacant position</li> </ul>	<ul style="list-style-type: none"> <li>Using alternative duty jobs during the recovery period for employees with MSDs</li> <li>Transferring employee to job with a better fit</li> </ul>

ASource: ADATAM I-3.10.

2. Would the proposed ergonomics rule increase existing selective hiring incentives?

The SERs' other concern is about whether there would be increased incentives for employers to use selective hiring practices against qualified persons with disabilities because of the proposed ergonomics rule. For the reasons discussed below, OSHA believes the rule would not create such incentives. Hiring practices that discriminate against qualified persons with disabilities are illegal under the ADA, and the ADA has strong remedies to deter such discrimination. In addition, to the extent that selective hiring incentives exist, their existence is not because of the proposed ergonomics standard. In fact, an effective ergonomics program and implementation of measures that control MSD hazards in problem jobs should help to remove job barriers that may have made it difficult for employers to hire qualified persons with disabilities, thus reducing selective hiring incentives.

Under the ADA, it is unlawful for an employer to limit, segregate or classify a job applicant "in a way that adversely impacts his or her employment opportunities or status on the basis of disability." 29 CFR 630.5. During the pre-offer stage of the hiring process, employers are not allowed to ask applicants questions that are likely to elicit information about a disability or conduct medical examinations. 42 U.S.C. 12112(d)(2)(A); 29 CFR 1630.13; ADATAM I-5.1. For example, during the pre-offer stage employers may not ask applicants about existing disabilities, prior job-related injuries, hospitalizations, prescription medications, absenteeism record or workers' compensation history. ADATAM I-5.5; Pre-employment Disability-Related Questions and Medical Examinations, EEOC Notice 915.002 (Oct. 10, 1995). Thus, employers are unlikely even to know that an applicant has a disability (unless the condition is apparent). The purpose of this prohibition is to ensure that persons with disabilities, like other job applicants, are evaluated on their ability to perform the essential functions of the job:

This prohibition is necessary to assure that qualified candidates are not screened out because of their disability before their actual ability to do a job is evaluated. ADATAM I-5.5

At the pre-offer stage, employers may ask applicants about their ability to perform specific functions of the job. 42

U.S.C. 12112(d)(2)(B). They may also may establish job qualifications or hiring criteria (e.g., education, skills, work experience, physical abilities necessary for job performance and health or safety), provided they are uniformly applied to all applicants. ADATAM I-4.1. The ADA does not require employers to hire persons with disabilities who are not capable of performing the essential functions of the job (even with reasonable accommodation). In addition, the ADA does not require employers to lower existing production standards applicable to quality or quantity of work for a given job, provided that these standards are uniformly applied to all applicants and employees in the job. ADATAM I-4.2.

Where hiring criteria tend to screen out individuals based on their disability, the ADA requires that the criteria be both job-related and consistent with business necessity. 42 U.S.C. 12112(b)(6), 42 U.S.C. 12113(a); 29 CFR 1630.10. A job qualification or hiring test meets these criteria only where it is a legitimate measurement of the qualifications or requirements of a specific job, not range or general class of jobs (ADATAM I-4.1-4.1), and only where it relates to the essential functions of the job. 29 CFR 1630.2; ADATAM I-4.3. For example, a hiring test that requires applicants for any manual handling job to safely lift objects weighing 50 pounds would be prohibited if the specific manual handling job only involved lifting objects weighing half that amount or if manual handling was only an incidental or minor part of the job.

Employers who violate these requirements are subject to hefty remedies under the ADA, including compensatory and punitive damages. Damages may include compensation for actual monetary loss, future monetary loss, mental anguish, and inconvenience. Compensatory and punitive damages may be awarded for future monetary loss and emotional injury; with total damages ranging as high as \$50,000 to \$300,000 based on size of the establishment. These remedies, among others, appear to provide adequate and appropriate deterrence regarding discriminatory selective hiring practices. See also, *Goodman v. Boeing* (Under a State law prohibiting discrimination against disabled workers, employee was awarded \$1.6 million for the employer's failure to provide reasonable accommodation).

The ADA recognizes employers' obligations to comply with other Federal laws or regulations, such as safety and health laws, as a defense to a claim of discrimination. However, this defense is available only where the discriminatory action is specifically required by the other Federal law. OSHA stresses that there is nothing in the proposed ergonomics standard that would "require" employers to act in violation of any of the hiring process requirements of the ADA, or would authorize employers to establish discriminatory selective hiring practices. The proposed ergonomics standard does not contain hiring requirements. It does not require employers to establish job selection standards (e.g., safety and health qualifications). Conversely, it does not prohibit employers from continuing to comply with the hiring process requirements of the ADA.

If selective hiring incentives exist, they are not because of an ergonomics standard. Such incentives are largely the result of other concerns, such as perceptions that disabled persons may not be able to perform the job, may be more likely to suffer workplace injuries, or may request or require expensive accommodations. Under the ADA, discriminatory action on the basis of such perceptions is illegal. The proposed ergonomics rule should not increase these concerns and may help reduce them. The purpose and focus of the proposed standard is to require employers to fix jobs

that are posing a significant risk of material harm to workers. OSHA is proposing that employers may use any combination of engineering, work practice or administrative controls to fix the job. Adopting selective hiring practices that exclude disabled workers, however, is not a permissible control measure since it does nothing to reduce the MSD hazards in the job. Therefore, employers could not demonstrate they are in compliance with the ergonomics standard because they have implemented selective hiring practices to control the problem.

Nevertheless, several SERs were convinced that the standard would increase incentives for employers to hire employees selectively. According to these commenters, the standard would do this because it would put employers who hire workers with less than optimal physical capabilities at a disadvantage because such workers are more likely than stronger workers to experience a covered MSD. Employers who believe that they will be able to identify especially "strong" persons do not understand that MSDs are cumulative hazards that cause tissue damage over time, and that this tissue damage is generally not apparent until the damage has progressed to the point of clinical injury. These employers are thus unaware that selective hiring practices are generally illegal and are also unlikely to be effective. OSHA believes that the increased awareness of these facts engendered by the standard will over time change these perceptions.

The proposed rule should reduce selective hiring incentives because once MSD hazards are controlled the job should not pose a risk of harm to any qualified person, including those with disabilities. The successful control of problem jobs, therefore, should make it easier for employers to hire disabled workers. Moreover, it should reduce the risk that employers will screen out disabled persons based safety and health concerns. Under the ADA, the employer may require, in a job qualification standard that is uniformly applied to all applicants, that an applicant not pose a direct threat to the health or safety to himself or others. 42 U.S.C. 12113(b). Employer action based on this justification is a recognized defense to a claim of discrimination. 29 CFR 1630.15. However, the employer's action is only justified if this type of qualification standard meets very specific and stringent requirements under the ADA. (29 CFR 1630.2(r); ADATAM I-4.5). The employer must show, based on objective medical or other objective factual evidence, that employment of the particular applicant poses a current and specific significant risk of substantial harm to the health or safety of himself or others which cannot be eliminated or reduced through reasonable accommodation. (29 CFR 1630.2(r). ADATAM I-4.5).

Requiring employers to control problem jobs so that it is no longer reasonably likely that an MSD will occur should reduce employers' concerns about disabled persons presenting a direct threat to safety or health. As such, it should reduce the possibility that employers will rely on the direct threat justification and make it less likely for employers to be able to meet the stringent requirements of that provision.

## XII. Federalism

OSHA has reviewed the proposed program rule in accordance with the Executive Order on Federalism (Executive Order 12612, 52 FR 41685, October 30, 1987). This Order requires that agencies, to the extent possible, refrain from limiting state policy options, consult with States prior to taking any actions that would restrict state policy options, and take such actions only when there is clear constitutional authority and the presence of a problem

of national scope. The Order provides for preemption of State law only if there is a clear Congressional intent for the agency to do so. Any such preemption is to be limited to the extent possible.

Section 18 of the Occupational Safety and Health Act (OSH Act) expresses Congress' clear intent to preempt State laws with respect to which Federal OSHA has promulgated occupational safety or health standards. Under the OSH Act a State can avoid preemption only if it submits, and obtains Federal approval of, a plan for the development of such standards and their enforcement. Occupational safety and health standards developed by such State Plan States must, among other things, be at least as effective as the Federal standards in providing safe and healthful employment and places of employment.

Since many work-related MSDs are reported every year in every State and since MSD hazards are present in workplaces in every state of the Union, the risk of work-related MSD disorders is a national problem.

The Federally proposed ergonomics program standard is drafted so that employees in every State would be protected by the standard. To the extent that there are any State or regional peculiarities, States with occupational safety and health plans approved under section 18 of the OSH Act would be able to develop their own comparable State standards to deal with any special problems.

In short, there is a clear national problem related to occupational safety and health for employees exposed to MSD hazards in the workplace. Any rule pertaining to ergonomics developed by States that have elected to participate under Section 18 of the OSH Act would not be preempted by this proposed regulation if the State rule is determined by Federal OSHA to be "at least as effective" as the Federal rule.

State comments are invited on this proposal and will be fully considered prior to promulgation of a final rule. OSHA has involved representatives of State and local governments in the development of this proposed rule. Several representatives of State and local governments participated in the extensive stakeholders meetings that were held to assist OSHA in developing this proposal.

### **XIII. State Plans States**

The 23 states and 2 territories which operate their own Federally-approved occupational safety and health plans must adopt a comparable standard within six months of the publication date of a final standard. These States include: Alaska, Arizona, California, Connecticut (for State and local government employees only), Hawaii, Indiana, Iowa, Kentucky, Maryland, Michigan, Minnesota, Nevada, New Mexico, New York (for State and local government employees only), North Carolina, Oregon, Puerto Rico, South Carolina, Tennessee, Utah, Vermont, Virginia, Virgin Islands, Washington, Wyoming. Until such time as a state or territorial standard is promulgated, Federal OSHA will provide interim enforcement assistance, as appropriate.

### **XIV. Issues on Which OSHA Seeks Comment**

OSHA seeks comment and information from interested parties on all issues raised by the proposed ergonomics program rule. Comments that provide data and information to support the position taken by the commenter are particularly valuable to the Agency, because they permit OSHA to evaluate the point of view of the commenter. Comments in response to these issues, and any other that commenters care to raise, should be submitted to the Agency in accordance with the informations in the **DATES** and

**ADDRESSES** sections of this preamble. The issues below are grouped according to the major topics identified in the headings.

#### **A. Scope**

1. OSHA requests information and comment on the jobs (manual handling and manufacturing jobs) that the Agency has decided to cover in the first phase of its ergonomics rulemaking. Are these jobs the right ones on which to focus coverage of the standard? Are there other equally or more hazardous jobs that OSHA should include in the Scope? If so, what are these jobs and why should they be included? Conversely, are there jobs that OSHA should exclude from the Scope? If so, why? Please provide as much data and information as you have to support your answer.

2. OSHA requests information and comment on the definitions of manufacturing and manual handling jobs used in the proposed standard. Are these definitions clear? Could they be improved upon? If so, how? Are the examples OSHA provides of jobs that typically would be classified as manual handling or manufacturing jobs appropriate? Should others be added? Are there jobs that OSHA has identified as not typically constituting manual handling or manufacturing jobs that should be classified as manual handling or manufacturing jobs? If so, why? Should OSHA's definitions include more specification? For example, should the manual handling definition specify the total amount of weight an employee can lift in a day without having the job identified as a manual handling job? Should OSHA attempt to specify how many hours an employee must work at a manufacturing job in a day before the job is identified as a manufacturing job? Should the definition of manual handling be based on quantitative methods such as the NIOSH Lifting Equation?

3. OSHA requests information and comment on defining the term "covered MSD" as an "OSHA recordable MSD" that additionally meets the standard's screening criteria. Are there alternative definitions of the term covered MSD that would be as protective as the proposed definition? Do the screening criteria in the standard serve the purpose for which they were intended, *i.e.*, do they permit employers to rule out some MSDs that are OSHA-recordable MSDs but that are not a type of MSD that could reasonably be related to the physical work activities and conditions of the employee's job? What other screening criteria might be useful? Please provide examples of MSDs, based on your experience, that are OSHA-recordable MSDs that you believe would be screened out by the standard's screening criteria. In your experience, what proportion of all recordable MSDs might be screened out by these criteria? Please provide any data you have to support the benefits of including the screening criteria in the rule.

4. OSHA requests information and comment on whether the terms, "core element" and "significant amount," which are used in the definitions of manual handling and manufacturing jobs, are clear? If not, are there other terms OSHA could use that would capture OSHA's meaning? If so, what are they, and how should they be defined?

5. OSHA requests comments and information about whether agriculture, construction and maritime operations should be included in this first phase of ergonomics rulemaking. Should all of these operations be covered in a second phase, or should OSHA propose the next phase of an ergonomics standard only for one of these industries? If so, which one or ones should be included, and what evidence is there they should be either included or excluded? In addition, should the first phase of this rulemaking cover some operations, such as manual

handling, wherever they occur, including in construction and marine operations?

#### *B. Use of Covered MSD as a Trigger to Implement the Full Program*

1. All of OSHA's health standards require employers to conduct exposure assessments to identify the most highly exposed employees and to determine where engineering and work practice controls must be implemented to control exposures. In contrast, the proposed ergonomics program standard uses an MSD incident trigger to initiate job hazard analysis and implementation of exposure controls. OSHA is aware that many employers who have ergonomics programs take a more proactive approach to identify and fix hazardous jobs before injuries occur. What approaches are used to identify hazardous jobs under a proactive program? What criteria are used to identify hazardous jobs? What tools or guidelines are available to employers who wish to identify hazardous jobs before any injuries take place, and what level of expertise is required to use these tools? Are there methods and guidelines available that would enable employers (particularly those in small businesses) to identify hazardous jobs without the need for specialized equipment or expertise? If so, how has it been proven that such methods are reliable and cost-effective?

2. OSHA solicits comment on the use of one MSD as a trigger for fixing jobs and/or implementing a full program. Many commenters expressed interest in alternative triggers such as two MSDs in the same job over various time periods, one lost workday MSD, or persistent signs of MSDs. Others expressed interest in a proactive approach that did not wait until an MSD occurred. OSHA welcomes comment on these and other alternatives. The Initial Regulatory Flexibility Analysis, in section VIII. H., provides a discussion of the pros and cons and the costs and projected benefits of several possible trigger alternatives.

#### *C. Grandfather Clause*

1. The Agency seeks comment on whether allowing employers with effective programs that have the core elements of the proposed program to "grandfather" their programs in is protective of workers and useful to employers. Is this provision necessary, or is the proposed standard so performance based and flexible that employers would not have to revamp their existing programs to accommodate the ergonomics program standard? Please provide data and examples to support your responses. If the grandfather clause is useful, are there changes that should be made to it to make it more useful? Does it need to be strengthened in any way to ensure employee protection? Are there ways of measuring the effectiveness of ergonomics programs that are reliable and easily implemented for the purpose of determining whether an employer's existing program is effective? If so, could such a measure be the principal means of determining whether a program is eligible for being grandfathered?

#### *D. Quick Fix Option*

1. OSHA would like comments on the usefulness of the Quick Fix option. Is it adequately protective of employee health? If so, why? If not, why not? Is it useful for employers? Will it permit them to eliminate MSD hazards and save time and money while still protecting their employees? How often do you think employers should be permitted to avail themselves of this option in a particular job? Are there particular types of jobs to which Quick Fixes are readily applicable and others to which they would not be applicable? If so, what are they? In addition, OSHA

would like comments on the time frames provided in the proposed rule's Quick Fix provision.

#### *E. Hazard Information and Reporting*

1. OSHA welcomes comments on the adequacy and appropriateness of the proposed standard's requirements for reporting systems. Will the approach used in the standard encourage the early reporting of MSDs? Are there ways that these provisions should be strengthened? For example, should the standard require employers to survey their employees to identify the early signs and symptoms of MSDs? Please provide any data you have on the effectiveness of various employee reporting systems.

#### *F. Job Hazard Analysis and Control*

1. OSHA is requesting information on the usefulness of checklists to help small businesses conduct job hazard analyses. Specifically, should OSHA require that employers, or small employers, use these checklists? Should OSHA merely provide checklists as compliance assistance materials at the time of the final rule?

2. OSHA is seeking comments and information on the appropriateness of the risk factors, physical work activities, and job conditions it has identified in this section of the standard. Are there other risk factors that should be included? What assistance could OSHA provide employers to assist them in identifying the risk factors in problem jobs that need to be controlled to prevent recurrences of MSDs? Is the table found in § 1910.918 useful in assisting employers conducting a job hazard analysis?

3. How can OSHA best assist employers to select the appropriate controls to address various kinds or combinations of risk factors? Would including a list of the most commonly used controls to address various ergonomic problems (unassisted manual handling, use of excessive force, repetitive keying) be useful? If so, what are good sources of such lists? Please be as specific as possible in your answers.

4. Are the definitions used in the proposed standard for "engineering controls," "administrative controls," and "personal protective equipment" sufficient? Is it clear from these definitions what kinds of equipment and procedures fall into each category of control? Are there any data on the effectiveness of back braces or back belts that would support defining these devices as personal protective equipment? Is the hierarchy of controls clear? Are there any controls that would be defined as personal protective equipment that would be as effective as engineering, administrative, or work practice controls? If so, please submit data supporting the effectiveness of this personal protective equipment.

5. Are the compliance endpoints described in the proposed standard clear and understandable? Are there other ways to define when an employer should be considered to have eliminated or substantially reduced MSD hazards? OSHA believes that many employers use an incremental approach to implementing ergonomic fixes, such as that laid out in the proposed standard. Is the approach taken in the standard reasonable and effective? Are there other approaches that could be taken by employers?

6. Computer vision syndrome (CVS), defined as a complex of eye and vision problems that are experienced during and related to computer use, is a repetitive strain disorder that appears to be growing rapidly, with some studies estimating that 90 percent of the 70 million U.S. workers using computers for more than 3 hours per day experience it in some form. What work practices or controls can employers

use to prevent or reduce the occurrence of CVS? Are studies of the effectiveness of these approaches available?

7. What OSHA compliance assistance materials would be helpful to employers? To employees?

#### G. MSD Management

1. OSHA would like comments and information on the essential components of an effective MSD management process that OSHA should include as part of the standard. Specifically, should OSHA specify when and under what conditions employers should be required to send employees with MSDs to a health care professional?

2. What studies are available on the percentage of work-related MSDs that recur among employees whose jobs have been controlled? Do the percentages of recurrence differ for different kinds of MSDs?

3. OSHA solicits data on the frequency with which persistent symptoms (*i.e.*, those lasting for 7 days or longer) progress to recordable MSD if (1) the symptoms are treated early; or (2) they are not treated early.

4. OSHA solicits comment on employers' experiences in encouraging the early reporting of signs and symptoms. Which approaches have worked and which have not proven useful?

5. The medical management section of the proposed standard requires an employer to make available medical care whenever an employee has a covered MSD. The employer is required to provide prompt access to a health care professional for effective evaluation, management, and follow up. The standard defines a health care professional as a physician or other licensed health care provider whose legally permitted scope of practice (*e.g.*, license, registration, or certification) allows them to provide some or all of the activities described in the MSD management requirements of the standard. This language permits states to determine the appropriate scope of practice for health care professionals providing the medical management services. Similar language has been incorporated in all of OSHA's health standards promulgated since 1990 and reflects a growing societal trend to reduce medical costs and improve access to health care. Is it appropriate for OSHA to recognize or promote the role of the non-physician provider with respect to the ergonomics standard? What are the advantages and disadvantages to both employers and employees in using any health care professional with respect to MSDs? Are state scope of practice laws sufficient to ensure that medical management is of sufficient quality to protect the health of employees, and to what extent do these laws create a potential for disparity in treatment between states? Should OSHA more clearly define the competencies necessary for a health care professional with respect to the medical management of MSDs?

6. OSHA welcomes comments on the standard's work restriction provision (WRP). For example, should WRP be provided for a longer period than the 6 months proposed? Is the 6 month period too long? Should WRP cover a much shorter time period such as 3 days or 7 days? What percentage of earnings should WRP cover? Should WRP be expressed as a percentage of earnings or of take-home pay? Are there other methods that might achieve the goals of WRP, *i.e.*, the complete and early reporting of MSDs by employees?

#### H. When must my program be in place? (Compliance deadlines)

1. MSD management is to be provided as soon as possible or within 5 days, whichever comes first. OSHA would like

comments and information on the adequacy and appropriateness of this time period. For example, is it short enough to ensure that employee MSDs are addressed so that they will not progress further?

2. OSHA requests comment on the appropriateness of the proposed start up times contained in § 1910.942 for implementing the various elements of the ergonomics standard.

#### I. Program Approach

1. OSHA has used a program approach to develop the proposed ergonomics standard. Should this standard be program-based? Should the program elements be spelled out in more detail? Are other elements necessary to ensure that the ergonomics program protects workers? How should the program address management leadership and employee participation?

2. OSHA requests data and additional case studies describing the effect of ergonomics programs on MSD rates, lost-work time, productivity, and medical and worker's compensation costs.

#### J. Economic Impact Analysis

OSHA solicits comment on the following aspects of the economic analysis and requests any additional relevant information, suggestions, or data:

1. The methodologies for estimating costs and benefits. These methodologies are described in detail in the Preliminary Economic Analysis. The basic unit cost estimates are provided in a summary table in the Initial Regulatory Flexibility Analysis (Section VIII. H.)

2. Data or information on the indirect costs and benefits of the proposed standard. OSHA estimated costs and benefits assuming that industry remains as it is today. OSHA welcomes comment on ways the proposed standard may alter the economy that could lead either to changes in the costs or benefits or to the standard's indirect benefits and costs.

3. Data on the economic impacts of the proposed standard. OSHA summarizes the economic impacts of the Standard in Section VIII of this preamble, and describes them in greater detail in Chapter VIII of the Preliminary Economic Impact Analysis. OSHA welcomes comment on all aspects of its estimates of the economic impacts of the standard.

4. Data on the control costs associated with the job hazard analysis and control provisions of the standard. The control costs associated with these activities and the methodologies for deriving them are documented in detail in the Preliminary Economic Analysis. These cost estimates rely primarily on the judgments of ergonomists with experience in implementing ergonomics programs in a variety of settings. For the purposes of establishing technological feasibility and capturing the productivity effects of ergonomic job interventions, OSHA developed or took from the literature a set of 170 scenarios representing actual workplace jobs and appropriate controls under the proposed standard. Although the scenarios were not used to develop the costs of the job controls for the cost analysis, the scenario costs are consistent with the cost estimates for higher-tech interventions reflected in the cost analysis. If these costs are demonstrated to be under- or overestimated, OSHA will review the basis of its estimates of the costs of job controls. OSHA welcomes comment on these scenarios, and seeks additional scenarios representing specific examples of problem jobs, with or without actual job controls or cost and effectiveness information.

5. Data on the use and effectiveness of specific ergonomic controls. OSHA estimates, based on epidemiological data and examples of program interventions, that ergonomic controls can reduce MSD rates by 50%. OSHA welcomes comment on this estimate (described in greater detail in the Preliminary Risk Assessment of the Preamble and Chapter IV of the Preliminary Economic Analysis). OSHA also welcomes examples of the effectiveness of particular programs and particular types of controls.

6. Data on the productivity impacts of specific ergonomic controls. OSHA's economic analysis attempts to capture these productivity gains by applying reported improvements occurring in a particular job to other jobs involving the same work activities. OSHA estimated that productivity impacts reduce the gross costs of ergonomic job controls by approximately one third. OSHA welcomes comment on this estimate, the job intervention scenarios on which it is based (presented in the Appendix to Chapter III of the Preliminary Economic Analysis), and data on the experience concerning productivity effects of ergonomic job interventions. Are there better ways of reflecting ergonomically generated productivity gains? For example, would applying a generic productivity factor across the board be a reasonable approach? If so, what should that factor be and what data are available to support it?

7. Data on the effectiveness of ergonomics programs. Please describe the program and the types and percentages of MSDs it has prevented. Are there any particular types of MSDs that ergonomics programs have been more or less effective at preventing, such as particularly severe MSDs or MSDs of certain types, such as low back pain?

8. Data on changes in the reporting of MSDs resulting from implementing ergonomics programs. (There are anecdotal data suggesting that MSD reporting may increase as a result of implementing the employee participation and hazard information aspects of ergonomics programs.) OSHA is particularly interested in quantitative data on the actual experience of employers concerning any increases in MSD reporting, the severity of the MSDs reported, and the length of time any change in the rate of reporting lasted.

9. Data on the annual incidence of lost workday MSDs and non-lost workday MSDs. OSHA particularly welcomes data on the ratio of the total number of MSDs to the total number of MSDs involving days away from work. (These data are not collected by BLS.) OSHA has preliminarily estimated the total number of MSDs using BLS data for all injuries and illnesses (not for MSDs specifically) on the total number of injuries and illnesses involving days away from work and the total number of injuries and illnesses.

10. Data on what percentage of all MSDs would pass the screening criteria of the standard and be considered by the standard to be covered MSDs, thus requiring the jobs in which the covered MSD occurred to be fixed and/or the implementation of a full program. OSHA has preliminarily assumed that all MSDs occurring in jobs that have not yet been fixed will be covered MSDs. Is this a reasonable assumption? If so, why? If not, why not?

11. Data on the nature and costs associated with MSDs that are recorded in the OSHA log but are not workers' compensation claims. OSHA has preliminarily estimated that 30% of all lost workday injuries and illnesses recorded on OSHA logs (OSHA recordables) do not result in accepted workers' compensation claims and that the recordables that do not become accepted workers' compensation claims have the same severity and durations as those injuries and

illnesses that are accepted as workers' compensation claims. Is this a reasonable assumption? If so, why? If not, why not?

12. Data or studies on the overreporting or underreporting of MSDs. Many employers fear that the proposed standard could increase the reporting of MSDs, and even perhaps increase the fraudulent reporting of MSDs. Many studies (see the Preliminary Risk Assessment of the Preamble) have shown that many work-related MSDs are not reported either on the OSHA 200 log or filed as workers' compensation claims. OSHA welcomes comment on all aspects of both the current rate of reporting of work-related MSDs to employers and the possible impacts of the proposed standard in increasing or reducing the reporting of work-related MSDs.

13. Comments or data on the time it will take employers to implement the various provisions of the standard. OSHA's estimates are in the Initial Regulatory Flexibility Analysis, Section VIII. H).

14. Comments on the proportion of all covered MSDs that will lead to job analyses requiring an outside consultant. OSHA has estimated that 15 percent of all covered MSDs will lead to job analyses requiring an outside consultant.

15. Comments on the estimates of manufacturing and manual handling jobs and on the estimates of the number of workers in each job. Industry by industry estimates are present in Chapter II of the Preliminary Economic Impact Analysis.

16. Comments on OSHA's methodology for estimating the effect of using multiple MSD triggers to determine coverage by the full ergonomics program. OSHA's methodology assumed that all establishments in an industry without ergonomics programs would have the same risks.

17. In Chapter I of the Preliminary Economic Impact Analysis, OSHA lists ergonomics regulations issued by many countries around the world, as well as several guidelines on ergonomics practices issued by national and international organizations. Are there other standards or guidelines that should be added to this list?

18. Comments on the cost-effectiveness of the proposed standard. Is the standard cost effective or are there changes that could be made that would accomplish the goals of the standard at a lower cost?

## **XV. Public Participation—Notice of Hearing**

### *A. Written Comments*

Interested persons are invited to submit written data, views and arguments concerning the proposed standard. Responses to the questions and issues raised by OSHA at various places in the proposal are particularly encouraged. These comments, including materials such as studies or journal articles, must be postmarked by February 1, 2000. Written submissions must clearly identify:

- The provisions of the proposal that are being addressed,
- The position taken with respect to each issue, and
- The basis for that position.

*Mail:* Comments must be submitted in duplicate to: OSHA Docket Office, Docket No. S-777, U.S. Department of Labor, 200 Constitution Avenue, N.W., Room N-2625, Washington, DC 20210, (202) 693-2350.

*Facsimile:* Comments limited to 10 pages or less may be transmitted by facsimile to (202)-693-1648 by February 1, 2000.

*Electronic:* Written comments may also be submitted electronically through the OSHA Homepage at

www.osha.gov. Electronic comments must be transmitted by February 1, 2000. Please note that you may not attach materials such as studies or journal articles. If you wish to include such materials, you must submit them separately in duplicate to the OSHA Docket Office at the address above. When submitting such materials to the OSHA Docket Office, you must clearly identify your electronic comments by name, date, and subject, so that we can attach them to your electronic comments.

All written comments, along with supporting data and references, received within the specified comment period will be made a part of the record and will be available for public inspection and copying at the above Docket Office address. All timely written submissions will be made a part of the record of the proceeding.

#### *B. Notice of Hearings*

Pursuant to section 6(b)(3) of the Act, an opportunity to submit oral testimony concerning the issues raised by the proposed standard, including economic and environmental impacts, will be provided at informal public hearings scheduled to begin at 9:30 a.m., February 22, 2000, in the auditorium of the Frances Perkins Building, U.S. Department of Labor, 200 Constitution Avenue, N.W., Washington, DC 20210.

Regional hearings will also be held in March 21–31, 2000, in Portland, OR, and April 11–21, 2000, in Chicago, IL. Actual times and addresses for the location of the regional hearings will be announced in a later **Federal Register** notice.

#### *C. Notice of Intention To Appear at the Hearings*

Persons desiring to participate at the informal public hearing must file a notice of intention to appear by January 18, 2000. The notices of intention to appear must contain the following information:

1. The name, address, and telephone number of each person to appear;
2. The capacity in which each person will appear;
3. The approximate amount of time required for the presentation;
4. The specific issues that will be addressed;
5. A brief statement of the position that will be taken with respect to each issue;
6. Whether the party intends to submit documentary evidence and, if so, a brief summary of that evidence; and
7. The hearing at which the party wishes to testify.

*Mail:* The notice of intention to appear may be sent to: Ms. Veneta Chatmon, OSHA Office of Public Affairs, Docket No. S-777, U.S. Department of Labor, 200 Constitution Avenue, N.W., Room N-3649, Washington, DC 20210, (202) 693-2119.

*Facsimile:* A notice of intention to appear also may be transmitted by facsimile to (202) 693-1634, by January 24, 2000.

*Electronic:* A notice of intention to appear may be submitted electronically through the OSHA Homepage at www.osha.gov by January 24, 2000. Notices of intention to appear will be available for inspection and copying at the OSHA Docket Office at the address above.

#### *D. Filing of Hearing Testimony and Documentary Evidence Before the Hearing*

Any party requesting more than 10 minutes for presentation at the informal public hearing, or who intends

to submit documentary evidence at the hearing, must provide the complete text of the testimony, and documentary evidence to Ms. Veneta Chatmon, at the address above. These materials must be postmarked by February 1, 2000. Testimony and documentary evidence must be submitted either in quadruplicate, or 1 original (hardcopy) and 1 disk (3½) in WP 5.1, 6.1, 8.0 or ASCII. Any information not contained on disk, e.g., studies, articles, etc., must be submitted in quadruplicate to Ms. Veneta Chatmon. One copy of the testimony and supporting documentary evidence must be suitable for copying and must not be stapled. Notices of intention to appear, hearing testimony and documentary evidence will be available for inspection and copying at the OSHA Docket Office.

Each submission will be reviewed in light of the amount of time requested in the notice of intention to appear. In instances where the information contained in the submission does not justify the amount of time requested, a more appropriate amount of time will be allocated and the participant will be notified of that fact prior to the informal hearing.

Any party who has not substantially complied with this requirement may be limited to a 10-minute presentation, and be requested to return for questioning at a later time. Any party who has not filed a Notice of Intention to Appear may be allowed to testify, as time permits, at the discretion of the Administrative Law Judge.

OSHA emphasizes that the hearing is open to the public, and that interested persons are welcome to attend. However, only persons who have filed proper Notices of Intention to Appear at the hearing will be entitled to ask questions and otherwise participate fully in the proceedings.

#### *E. Conduct and Nature of the Informal Public Hearing*

The hearings will commence at 9:30 a.m. on the first day. At that time, any procedural matters relating to the proceeding will be resolved. The hearings will reconvene on subsequent days at 8:30 a.m.

The nature of an informal rulemaking hearing is established in the legislative history of section 6 of the OSH Act and is reflected by OSHA's rules of procedure for hearings (29 CFR 1911.15(a)). Although the presiding officer is an Administrative Law Judge and questioning by interested persons is allowed on crucial issues, the proceeding is informal and legislative in type. The Agency's intent, in essence, is to provide interested persons with an opportunity to make effective oral presentations that can be carried out expeditiously in the absence of procedural restraints or rigid procedures that might unduly impede or protract the rulemaking process.

Additionally, since the hearing is primarily for information gathering and clarification, it is an informal administrative proceeding rather than adjudicative one; the technical rules of evidence, for example, do not apply. The regulations that govern hearings and the pre-hearing guidelines to be issued for this hearing will ensure fairness and due process and also facilitate the development of a clear, accurate and complete record. Those rules and guidelines will be interpreted in a manner that furthers that development. Thus, questions of relevance, procedure and participation generally will be decided so as to favor development of the record.

The hearing will be conducted in accordance with 29 CFR part 1911. It should be noted that § 1911.4 specifies that the Assistant Secretary may upon reasonable notice issue alternative procedures to expedite proceedings or for other

good cause. The hearing will be presided over by an Administrative Law Judge who makes no decision or recommendation on the merits of OSHA's proposal. The responsibility of the Administrative Law Judge is to ensure that the hearing proceeds at a reasonable pace and in an orderly manner. The Administrative Law Judge, therefore, will have all the powers necessary and appropriate to conduct a full and fair informal hearing as provided in 29 CFR part 1911, including the powers:

1. To regulate the course of the proceedings;
2. To dispose of procedural requests, objections and comparable matters;
3. To confine the presentations to the matters pertinent to the issues raised;
4. To regulate the conduct of those present at the hearing by appropriate means;
5. In the Judge's discretion, to question and permit the questioning of any witnesses and to limit the time for questioning; and
6. In the Judge's discretion, to keep the record open for a reasonable, stated time (known as the post-hearing comment period) to receive written information and additional data, views and arguments from any person who has participated in the oral proceedings.

OSHA recognizes that there may be interested persons or organizations who, through their knowledge of the subject matter or their experience in the field, would wish to endorse or support the whole proposal or certain provisions of the proposal. OSHA welcomes such supportive comments, including any pertinent data and cost information which may be available, in order that the record of this rulemaking will present a balanced picture of public response on the issues involved.

At the close of the hearing, the Administrative Law Judge will set a post-hearing comment period for those persons participating in the hearing. The first part of that period will be for the submission of additional data and information to OSHA. The second part will be for the submission of briefs, arguments and summations. Only those persons who have submitted a proper Notice of Intention to Appear at the hearing will be entitled to participate in the posthearing comment period.

#### *F. Certification of Record and Final Determination After the Informal Public Hearing*

Following the close of the hearing and post-hearing comment period, the presiding Administrative Law Judge will certify the record to the Assistant Secretary of Labor for Occupational Safety and Health. The Administrative Law Judge does not make or recommend any decisions as to the content of the final standard.

The proposed standard will be reviewed in light of all oral and written submissions received as part of the record, and a permanent Ergonomics Program Standard will be issued, based upon the entire record in the proceeding, including the written comments and data received from the public.

#### **XVI. OMB Review under the Paperwork Reduction Act of 1995**

This proposed ergonomics program standard contains collections of information that are subject to review by the Office of Management and Budget (OMB) under the Paperwork Reduction Act of 1995 (PRA'95), 44 U.S.C. 3501 *et seq.* and its regulation at 5 CFR part 1320. PRA'95 defines collection of information to mean, "the obtaining, causing

to be obtained, soliciting, or requiring the disclosure to third parties or the public of facts or opinions by or for an agency regardless of form or format." [44 U.S.C. 3502(3) (A)].

The title, description of the need for and proposed use of the information, summary of the collections of information, description of the respondents, and frequency of response of the information collection are described below with an estimate of the annual cost and reporting burden as required by § 1320.5(a)(1)(iv) and § 1320.8(d)(2). Reporting burden includes the time for reviewing instructions, gathering and maintaining the data needed, and completing and reviewing the collection of information.

OSHA invites comments on whether the proposed collection of information:

- (1) Ensures that the collection of information is necessary for the proper performance of the functions of the agency, including whether the information will have practical utility;
- (2) Estimates the projected burden accurately, including the validity of methodology and assumptions used;
- (3) Enhances the quality, utility, and clarity of the information to be collected; and
- (4) Minimizes the burden of the collection of information on those who are to respond, including through the use of appropriate automated, electronic, mechanical, or other technological collection techniques or other forms of information technology, *e.g.*, permitting electronic submissions of responses.

*Title:* The ergonomics program standard Subpart Y, 29 CFR 1910.900 through 1910.945.

*Description:* The proposed ergonomics program standard is an occupational safety and health standard that will address the significant risk of work-related musculoskeletal disorders (MSDs) confronting employees in various jobs in general industry workplaces. The standard's information collection requirements are essential components that will assist both employers and their employees in identifying MSDs as well as identifying means to take to reduce or eliminate MSDs. OSHA compliance officers will use some of the information in their enforcement of the standard.

*Summary of the Collections of Information:* The collections of information contained in the standard are for establishing and evaluating an ergonomics program, and for developing and maintaining records associated with the ergonomic program standard. The following ergonomics program elements contain collections of information:

1. Management Leadership and Employee Participation (sections 1910.911 through 1910.913);
2. Hazard Information and Reporting (sections 1910.914 through 1910.916);
3. Job Hazard Analysis and Control (sections 1910.917 through 1910.922);
4. MSD Management (sections 1910.929 through 1910.935); and
5. Program Evaluation (sections 1910.936 through 1910.938).

Records, as identified in sections 1910.939 through 1910.940, include employee reports of MSDs and the employer's response, job hazard analysis results, hazard control, quick fix process, ergonomics program evaluation and MSD management records.

*Respondents:* Employers in general industry whose employees work in manufacturing jobs or manual handling