

Table VIII-4. Annualized Costs for All Establishments Affected by OSHA's Final Standard for Hexavalent Chromium (by Application Group and Regulatory Requirement for a PEL of 5 ug/m<sup>3</sup>)

	Application Group	Engineering Controls	Initial Exposure Monitoring	Periodic Exposure Monitoring	Total Exposure Monitoring	Respirator Programs
1	Electroplating	\$32,993,514	\$1,868,271	\$8,037,794	\$9,906,066	\$3,834,175
2A	Welding (general industry - stainless steel)	\$26,194,600	\$1,862,872	\$2,105,903	\$3,968,775	\$19,422,964
2B	Welding (maritime industry - stainless steel)	\$3,817,884	\$59,010	\$14,050	\$73,060	\$13,885,327
2C	Welding (construction industry - stainless steel)	\$22,526,110	\$214,945	\$1,671,735	\$1,886,680	\$9,881,964
2D	Welding (government - stainless steel)	\$70,184	\$71,233	\$559,456	\$630,689	\$152,939
2A1	Welding (general industry - carbon steel)	\$5,130,000	\$2,385,283	\$0	\$2,385,283	\$4,715,849
2B1	Welding (maritime industry - carbon steel)	\$109,082	\$127,460	\$0	\$127,460	\$95,580
2C1	Welding (construction industry - carbon steel)	\$6,628,674	\$306,615	\$0	\$306,615	\$2,052,166
3A	Painting (general industry - aerospace)	\$1,188,397	\$62,640	\$274,182	\$336,822	\$6,282,571
3A1	Painting (general industry - auto repair)	\$10,698,340	\$189,780	\$344,421	\$534,201	\$767,666
3A2	Painting (general industry - coil coating)	\$0	\$18,408	\$14,751	\$33,160	\$109,978
3B	Painting (maritime industry)	\$140,150	\$163,375	\$496,135	\$659,510	\$2,931,363
3C	Painting (construction industry)	\$0	\$458,367	\$2,083,165	\$2,541,532	\$0
3D	Painting (government)	\$0	\$53,594	\$244,765	\$298,359	\$0
4	Chromate (chromite ore) production	\$0	\$3,054	\$4,974	\$8,029	\$8,130
5	Chromate Pigment Producers	\$36,867	\$4,316	\$17,667	\$21,983	\$47,000
6	Chromated Copper Arsenate (CCA) Producers	\$0	\$1,665	\$3,002	\$4,667	\$2,680
7	Chromium Catalyst Producers	\$1,693,578	\$13,742	\$45,282	\$59,024	\$34,844
8	Paint and Coatings Producers	\$1,029,714	\$65,401	\$61,749	\$127,150	\$32,797
9	Printing Ink Producers	\$0	\$14,753	\$31,046	\$45,799	\$18,965
10	Plastic Colorant Producers and Users	\$0	\$161,120	\$727,007	\$888,126	\$267,828
11	Plating Mixture Producers	\$0	\$6,369	\$18,439	\$24,808	\$6,387
12	Wood Preserving	\$0	\$0	\$0	\$0	\$0
13	Chromium Material Producers	\$6,400	\$4,659	\$4,288	\$8,947	\$4,797
14	Steel Mills (stainless)	\$42,627	\$115,093	\$121,954	\$237,047	\$1,347,550
14A	Steel Mills (carbon)	\$123,171	\$284,116	\$0	\$284,116	\$132,717
14B	Reshaping	\$0	\$64,940	\$168,866	\$233,806	\$86,821
15	Iron and Steel Foundries	\$940,658	\$878,347	\$3,546,183	\$4,424,531	\$2,371,966
16	Chromium Dioxide Producers	\$0	\$0	\$0	\$0	\$0
17	Chromium Dye Producers	\$0	\$23,448	\$112,263	\$135,710	\$57,007
18	Chromium Sulfate Producers	\$0	\$2,734	\$3,087	\$5,822	\$1,919
19	Chemical Distributors	\$0	\$502,670	\$0	\$502,670	\$0
20	Textile Dyeing	\$0	\$439,585	\$0	\$439,585	\$0
21	Colored Glass Producers	\$0	\$20,185	\$9,434	\$29,619	\$3,226
21A	Fiber, Flat, and Container Glass	\$24,624	\$34,764	\$51,629	\$86,393	\$766,567
22	Printing	\$0	\$157,113	\$0	\$157,113	\$0
23	Leather Tanning	\$0	\$0	\$0	\$0	\$0
24	Chromium Catalyst Users	\$0	\$94,408	\$59,347	\$153,756	\$566
24A	Chromium Catalyst Users (Service)	\$0	\$28,584	\$136,534	\$165,118	\$0
25	Refractory Brick Producers	\$0	\$14,484	\$0	\$14,484	\$0
26A	Woodworking (general industry)	\$0	\$75,840	\$0	\$75,840	\$0
26B	Woodworking (maritime industry)	\$0	\$19,485	\$0	\$19,485	\$0
26C	Woodworking (construction industry)	\$744,793	\$2,374,426	\$3,235,810	\$5,610,236	\$0
26D	Woodworking (government)	\$12,496	\$38,254	\$52,143	\$90,397	\$0
27	Solid Waste Incineration	\$0	\$298,340	\$0	\$298,340	\$0
27A	Incinerators (government)	\$0	\$16,688	\$0	\$16,688	\$0
28	Oil and Gas Well Drilling	\$0	\$0	\$0	\$0	\$0
29	Portland Cement Producers	\$0	\$0	\$0	\$0	\$0
30	Superalloy Producers	\$10,800	\$42,068	\$0	\$42,068	\$30,980
31B	Construction (Refractory Repair)	\$66,000	\$40,440	\$237,733	\$278,173	\$0
31C	Construction (Hazardous Waste Work)	\$0	\$47,213	\$0	\$47,213	\$0
31CG	Haz. Waste (government)	\$0	\$51,035	\$0	\$51,035	\$0
31D	Construction (Industrial Rehabilitation)	\$0	\$1,251	\$0	\$1,251	\$0
31DG	Industrial Rehab. (government)	\$0	\$33,233	\$0	\$33,233	\$0
32A	Ready-Mixed Concrete	\$0	\$0	\$0	\$0	\$0
32	Precast Concrete Products Producers	\$0	\$0	\$0	\$0	\$0
	General Industry (including Government)	\$80,195,969	\$10,003,090	\$16,756,168	\$26,759,258	\$40,508,889
	Construction	\$29,965,577	\$3,443,258	\$7,228,443	\$10,671,701	\$11,934,130
	Maritime	\$4,067,116	\$369,329	\$510,185	\$879,514	\$16,912,270
	<b>Total</b>	<b>\$114,228,662</b>	<b>\$13,815,677</b>	<b>\$24,494,795</b>	<b>\$38,310,473</b>	<b>\$69,355,289</b>

Table VIII-4. Annualized Costs for All Establishments Affected by OSHA's Final Standard for Hexavalent Chromium (by Application Group and Regulatory Requirement for a PEL of 5 ug/m<sup>3</sup>)

Application Group		Housekeeping	Medical Surveillance	Training and Familiarization	Recordkeeping
1	Electroplating	\$12,379,200	\$1,433,002	\$917,183	\$268,100
2A	Welding (general industry - stainless steel)	\$0	\$1,911,121	\$1,839,045	\$105,900
2B	Welding (maritime industry - stainless steel)	\$0	\$549,827	\$265,467	\$44,900
2C	Welding (construction industry - stainless steel)	\$0	\$3,285,863	\$1,726,575	\$171,200
2D	Welding (government - stainless steel)	\$0	\$31,783	\$82,026	\$11,800
2A1	Welding (general industry - carbon steel)	\$0	\$646,799	\$2,791,713	\$208,900
2B1	Welding (maritime industry - carbon steel)	\$0	\$14,504	\$63,508	\$2,400
2C1	Welding (construction industry - carbon steel)	\$0	\$1,729,924	\$3,060,321	\$317,600
3A	Painting (general industry - aerospace)	\$352,200	\$596,733	\$367,677	\$33,600
3A1	Painting (general industry - auto repair)	\$4,067,700	\$389,289	\$1,637,407	\$147,400
3A2	Painting (general industry - coil coating)	\$375,300	\$54,125	\$89,051	\$7,900
3B	Painting (maritime industry)	\$0	\$108,410	\$214,672	\$13,400
3C	Painting (construction industry)	\$0	\$592,592	\$2,068,114	\$155,900
3D	Painting (government)	\$0	\$125,284	\$824,567	\$43,100
4	Chromate (chromite ore) production	\$6,400	\$4,345	\$2,734	\$900
5	Chromate Pigment Producers	\$3,150	\$4,441	\$979	\$300
6	Chromated Copper Arsenate (CCA) Producers	\$0	\$1,157	\$460	\$130
7	Chromium Catalyst Producers	\$16,000	\$13,139	\$5,872	\$1,820
8	Paint and Coatings Producers	\$231,160	\$31,644	\$39,535	\$11,120
9	Printing Ink Producers	\$16,430	\$0	\$1,620	\$1,130
10	Plastic Colorant Producers and Users	\$21,320	\$0	\$12,608	\$2,860
11	Plating Mixture Producers	\$27,600	\$5,412	\$1,829	\$510
12	Wood Preserving	\$0	\$0	\$0	\$0
13	Chromium Material Producers	\$4,190	\$1,559	\$815	\$270
14	Steel Mills (stainless)	\$224,500	\$712,400	\$164,853	\$46,200
14A	Steel Mills (carbon)	\$670,500	\$153,661	\$443,738	\$120,600
14B	Reshaping	\$324,000	\$7,600	\$15,658	\$4,600
15	Iron and Steel Foundries	\$720,800	\$1,194,114	\$421,457	\$186,800
16	Chromium Dioxide Producers	\$0	\$0	\$0	\$0
17	Chromium Dye Producers	\$5,290	\$0	\$2,009	\$580
18	Chromium Sulfate Producers	\$10,100	\$1,362	\$291	\$100
19	Chemical Distributors	\$3,319,100	\$4	\$34,858	\$0
20	Textile Dyeing	\$712,800	\$0	\$276,803	\$76,300
21	Colored Glass Producers	\$18,500	\$1,289	\$1,099	\$200
21A	Fiber, Flat, and Container Glass	\$256,500	\$171,256	\$60,601	\$14,000
22	Printing	\$52,600	\$0	\$70,307	\$18,700
23	Leather Tanning	\$0	\$0	\$0	\$0
24	Chromium Catalyst Users	\$466,300	\$5,404	\$6,331	\$990
24A	Chromium Catalyst Users (Service)	\$71,510	\$27,531	\$10,593	\$3,350
25	Refractory Brick Producers	\$12,420	\$5	\$937	\$300
26A	Woodworking (general industry)	\$814,900	\$5,798	\$6,313	\$500
26B	Woodworking (maritime industry)	\$0	\$13	\$2,292	\$400
26C	Woodworking (construction industry)	\$0	\$1,241,423	\$320,136	\$44,700
26D	Woodworking (government)	\$0	\$18,620	\$3,736	\$400
27	Solid Waste Incineration	\$0	\$41	\$22,923	\$4,820
27A	Incinerators (government)	\$0	\$2	\$1,150	\$140
28	Oil and Gas Well Drilling	\$0	\$0	\$0	\$0
29	Portland Cement Producers	\$0	\$0	\$0	\$0
30	Superalloy Producers	\$16,580	\$18,828	\$11,256	\$3,530
31B	Construction (Refractory Repair)	\$0	\$52,224	\$27,554	\$4,260
31C	Construction (Hazardous Waste Work)	\$0	\$25	\$34,747	\$5,620
31CG	Haz. Waste (government)	\$0	\$14	\$22,405	\$3,270
31D	Construction (Industrial Rehabilitation)	\$0	\$34	\$50,939	\$8,220
31DG	Industrial Rehab. (government)	\$0	\$2	\$4,740	\$490
32A	Ready-Mixed Concrete	\$0	\$0	\$0	\$0
32	Precast Concrete Products Producers	\$0	\$0	\$0	\$0
General Industry (including Government)		\$25,197,050	\$7,567,765	\$10,197,180	\$1,331,610
Construction		\$0	\$6,902,085	\$7,288,387	\$707,500
Maritime		\$0	\$672,753	\$545,940	\$61,100
Total		\$25,197,050	\$15,142,603	\$18,031,507	\$2,100,210

Table VIII-4. Annualized Costs for All Establishments Affected by OSHA's Final Standard for Hexavalent Chromium (by Application Group and Regulatory Requirement for a PEL of 5 ug/m<sup>3</sup>)

Application Group	Total Costs to the National Economy	Transfer of PPE Payments	Total Costs to Employers	Associated Costs due to Non-Compliance with Existing Requirements		Total for New and Existing Requirements (a)
				PPE (not supplied in baseline)	Hygiene Areas	
1 Electroplating	\$61,731,240	\$1,219,625	\$62,950,865	\$0	\$4,439,800	\$67,390,665
2A Welding (general industry - stainless steel)	\$53,442,406	\$0	\$53,442,406	\$0	\$0	\$53,442,406
2B Welding (maritime industry - stainless steel)	\$18,636,465	\$0	\$18,636,465	\$0	\$0	\$18,636,465
2C Welding (construction industry - stainless steel)	\$39,478,391	\$0	\$39,478,391	\$0	\$0	\$39,478,391
2D Welding (government - stainless steel)	\$979,421	\$0	\$979,421	\$0	\$0	\$979,421
2A1 Welding (general industry - carbon steel)	\$15,878,544	\$0	\$15,878,544	\$0	\$0	\$15,878,544
2B1 Welding (maritime industry - carbon steel)	\$412,533	\$0	\$412,533	\$0	\$0	\$412,533
2C1 Welding (construction industry - carbon steel)	\$14,095,301	\$0	\$14,095,301	\$0	\$0	\$14,095,301
3A Painting (general industry - aerospace)	\$9,158,001	\$1,628	\$9,159,629	\$11,711,583	\$275,400	\$21,146,611
3A1 Painting (general industry - auto repair)	\$18,242,003	\$1,395,069	\$19,637,072	\$59,784,259	\$2,500,700	\$81,922,032
3A2 Painting (general industry - coil coating)	\$669,513	\$358	\$669,871	\$2,797,183	\$116,400	\$3,583,454
3B Painting (maritime industry)	\$4,067,505	\$1,220,626	\$5,288,131	\$5,661,140	\$407,800	\$11,357,071
3C Painting (construction industry)	\$5,358,139	\$930,935	\$6,289,074	\$0	\$0	\$6,289,074
3D Painting (government)	\$1,291,310	\$256,945	\$1,548,255	\$0	\$0	\$1,548,255
4 Chromate (chromite ore) production	\$30,537	\$30	\$30,567	\$0	\$4,400	\$34,967
5 Chromate Pigment Producers	\$114,720	\$10	\$114,730	\$0	\$3,000	\$117,730
6 Chromated Copper Arsenate (CCA) Producers	\$9,094	\$3	\$9,097	\$12,587	\$1,200	\$22,884
7 Chromium Catalyst Producers	\$1,824,277	\$40	\$1,824,317	\$110,290	\$12,700	\$1,947,307
8 Paint and Coatings Producers	\$1,503,120	\$213	\$1,503,332	\$3,777,438	\$142,300	\$5,423,071
9 Printing Ink Producers	\$83,944	\$1	\$83,946	\$7,570	\$7,300	\$98,816
10 Plastic Colorant Producers and Users	\$1,192,742	\$139	\$1,192,881	\$31,030	\$33,600	\$1,257,512
11 Plating Mixture Producers	\$66,546	\$20	\$66,566	\$0	\$9,400	\$75,966
12 Wood Preserving	\$0	\$0	\$0	\$0	\$0	\$0
13 Chromium Material Producers	\$26,979	\$0	\$26,979	\$0	\$0	\$26,979
14 Steel Mills (stainless)	\$2,775,177	\$0	\$2,775,177	\$0	\$0	\$2,775,177
14A Steel Mills (carbon)	\$1,928,503	\$0	\$1,928,503	\$0	\$0	\$1,928,503
14B Reshaping	\$672,485	\$0	\$672,485	\$0	\$0	\$672,485
15 Iron and Steel Foundries	\$10,260,326	\$0	\$10,260,326	\$0	\$0	\$10,260,326
16 Chromium Dioxide Producers	\$0	\$0	\$0	\$0	\$0	\$0
17 Chromium Dye Producers	\$200,596	\$2	\$200,598	\$21,250	\$5,800	\$227,648
18 Chromium Sulfate Producers	\$19,593	\$1	\$19,594	\$36,226	\$3,200	\$59,020
19 Chemical Distributors	\$3,856,632	\$0	\$3,856,632	\$0	\$0	\$3,856,632
20 Textile Dyeing	\$1,505,488	\$44,605	\$1,550,094	\$1,236,379	\$1,383,800	\$4,170,272
21 Colored Glass Producers	\$53,934	\$4	\$53,938	\$2,555	\$1,200	\$57,693
21A Fiber, Flat, and Container Glass	\$1,379,941	\$0	\$1,379,941	\$0	\$0	\$1,379,941
22 Printing	\$298,720	\$3,857	\$302,577	\$373,708	\$171,700	\$847,985
23 Leather Tanning	\$0	\$0	\$0	\$0	\$0	\$0
24 Chromium Catalyst Users	\$633,348	\$45	\$633,393	\$143,158	\$39,200	\$815,751
24A Chromium Catalyst Users (Service)	\$278,102	\$8,735	\$286,837	\$0	\$33,900	\$320,737
25 Refractory Brick Producers	\$28,146	\$42	\$28,188	\$29,900	\$5,300	\$63,388
26A Woodworking (general industry)	\$903,350	\$0	\$903,350	\$0	\$0	\$903,350
26B Woodworking (maritime industry)	\$22,190	\$0	\$22,190	\$0	\$0	\$22,190
26C Woodworking (construction industry)	\$7,961,289	\$229,988	\$8,191,277	\$5,444,838	\$2,906,900	\$16,543,015
26D Woodworking (government)	\$125,649	\$3,997	\$129,646	\$48,096	\$27,600	\$205,342
27 Solid Waste Incineration	\$326,124	\$66,100	\$392,224	\$0	\$80,200	\$472,424
27A Incinerators (government)	\$17,980	\$5,042	\$23,022	\$0	\$19,700	\$42,722
28 Oil and Gas Well Drilling	\$0	\$0	\$0	\$0	\$0	\$0
29 Portland Cement Producers	\$0	\$0	\$0	\$0	\$0	\$0
30 Superalloy Producers	\$134,042	\$0	\$134,042	\$0	\$0	\$134,042
31B Construction (Refractory Repair)	\$428,211	\$28,821	\$457,032	\$460,158	\$99,800	\$1,016,991
31C Construction (Hazardous Waste Work)	\$87,604	\$54,552	\$142,157	\$90,563	\$107,500	\$340,219
31CG Haz. Waste (government)	\$76,723	\$32,523	\$109,246	\$0	\$60,900	\$170,146
31D Construction (Industrial Rehabilitation)	\$60,445	\$0	\$60,445	\$0	\$0	\$60,445
31DG Industrial Rehab. (government)	\$38,466	\$0	\$38,466	\$0	\$0	\$38,466
32A Ready-Mixed Concrete	\$0	\$0	\$0	\$0	\$0	\$0
32 Precast Concrete Products Producers	\$0	\$0	\$0	\$0	\$0	\$0
General Industry (including Government)	\$191,757,721	\$3,039,034	\$194,796,756	\$80,123,213	\$9,378,700	\$284,298,668
Construction	\$67,469,379	\$1,244,297	\$68,713,676	\$5,995,559	\$3,114,200	\$77,823,435
Maritime	\$23,138,693	\$1,220,626	\$24,359,319	\$5,661,140	\$407,800	\$30,428,259
Total	\$282,365,793	\$5,503,957	\$287,869,751	\$91,779,911	\$12,900,700	\$392,550,362

(a) Excludes Transfer of PPE Payments.

Source: U.S. Dept. of Labor, OSHA, Office of Regulatory Analysis, based on Shaw, 2006.

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Table VIII-4 also shows the costs by application group. The various types of welding represent the most expensive

application group, accounting for 51 percent of the total costs.

Table VIII-5 presents OSHA's final total annualized costs by cost category

for each of the alternative PELs considered by OSHA in the proposed rule. At a discount rate of 7 percent, total costs range from \$112 million for