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Combustion of Hazardous Wastes Containing Arsenic, Lead, and Mercury

1. INTRODUCTION AND APPROACH

To support the clarification for applying the Land Disposal Restrictions (LDRs) dilution prohibition as part of EPA's hazardous waste combustion strategy, the Agency initiated a project to study the management of hazardous wastes containing arsenic, lead, and/or mercury. This report is a product of that study, and is based on an analysis of data compiled in the 1991 Biennial Reporting System (BRS) for the 1991 Hazardous Waste Report.

The purpose of this report is to determine the extent to which wastes containing arsenic, lead, and mercury constituents are currently "combusted" and to profile these practices based on the type of combustion facility and type of wastes burned. In this report, the term "combustion" denotes both the destruction of wastes in incinerators and the burning of wastes as fuel in boilers and industrial furnaces.

The approach used to prepare this report entailed the following steps:

- Extract and download raw BRS data and convert it to a dBase III environment to facilitate querying, sorting, counting, and subtotaling (1991 BRS data from March 1994 were used).
- Identify waste code, form code, and waste management system code groupings to be used in the report, and determine the BRS forms from which these data were to be taken.
- Prepare computer programs to present base results (the Clipper application language was used).
- Analyze base results for key observations.

Key components of this approach are summarized below.

Arsenic, lead, and mercury wastes were identified from the BRS data based solely on their RCRA waste codes. Table 1 lists the arsenic, lead, and mercury waste codes examined in this report. An "X" in a column indicates that a waste contains the constituent represented by the column.[1]

This report distinguishes between three different types of treatment facilities identified as follows:

On-site: Waste quantities reported on GM forms as managed on site by non-commercial facilities.

Captive: Waste quantities reported on WR forms as received from off site by non-commercial facilities.

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[1] The wastes containing arsenic, lead, and mercury constituents examined in this report comprised (1) wastes selected from an EPA list of inorganic metal-bearing wastes that were not expected to contain organic constituents, and (2) wastes bearing the characteristic hazardous waste codes for arsenic (D004), lead (D008), or mercury (D009).

Table 1
Hazardous Wastes Examined in This Report

Waste Code	As	Pb	Hg
K002		X	
K003		X	
K004		X	
K005		X	
K006		X	
K007		X	
K008		X	
K061	X	X	X
K069		X	
K071			X
K100		X	
K106			X
P010	X		
P011	X		
P012	X		
U145		X	
U151			X
F006		X	
F007		X	
F008		X	
F009		X	
F010		X	
F011		X	
F012		X	
D004	X		
D008		X	
D009			X

Commercial: Waste quantities reported on GM forms as managed on site or waste quantities reported on WR forms as received from off site by facilities identified as commercial in the 1991 BRS (form GM), the *1993 EI Digest Directory of Commercial Facilities*, or EPA's Resource Conservation and Recovery Information System (RCRIS), as of November 15, 1993.

Given the importance of waste form in selecting waste treatment, EPA defined the following waste physical form categories to allow comparisons of management practices between various waste physical forms from the BRS:

- Lab Packs (B001-B009)
- Other Inorganic Solids (B303-B319)
- Organic Solids (B401-B409)
- Aqueous Liquids (B101, 102, 105, 110, 111, 112, 113, 114, 115, 116)
- Other Inorganic Liquids (B103, 104, 106, 107, 108, 109, 117, 119)
- Organic Liquids (B201-B219)
- Inorganic Sludges (B501-B519)
- Organic Sludges (B601-B609)
- Soil (B301, B302)
- Gases (B701, B801)
- Other form codes (including B999 and blanks)

2. PRESENTATION OF BASE RESULTS

Exhibits 1A through 1K (at the end of this report) present EPA's estimates for the total quantities of hazardous wastes containing arsenic, lead or mercury managed at on-site, captive and commercial facilities, organized by management practice. These exhibits present estimates for each of the 11 physical forms defined in Section 1 (e.g., Exhibit 1A presents quantities of Aqueous Liquids). The first column of Exhibit 1 lists methods of hazardous waste management, as defined by various combinations of BRS waste management system type ("M") codes. For each metal constituent, Exhibit 1 shows the quantity of hazardous waste managed in a particular way, the number of facilities managing this waste, and the number of waste streams managed. The total column lists the total quantity of hazardous waste containing arsenic, lead, or mercury managed in a given manner, the total number of facilities managing the hazardous waste in this manner, and the total number of waste streams managed. Because waste streams may contain more than one of the metal constituents, the quantities presented in the total column are the actual quantities of waste managed, not the simple summation of the waste quantities containing the individual metal constituents (i.e., none of the waste quantities are double counted). Likewise, none of the estimates for total number of waste streams and total facilities contain double counting errors.

Exhibits 2A through 2L present a more detailed analysis of the current management practices for arsenic, lead, and mercury hazardous wastes. These exhibits expand the 16 waste management categories presented in Exhibit 1 into 24 categories, in order to highlight incineration and energy recovery. These exhibits present separate estimates for the quantities of liquids and gases, sludges and solids, and unknown physical forms of hazardous waste combusted. At this

level of detail, the physical form of the waste is apparent for many of the waste management categories.

Exhibit 2A presents EPA's estimates for the quantities of all hazardous wastes managed at on-site, captive, and commercial facilities for each of the 24 waste management categories. For each of the management categories, Exhibit 2A shows the quantity of hazardous waste managed, the number of facilities managing the waste, and the number of waste streams managed. The "Total" column shows the total quantity of hazardous waste managed by each management category, the total number of facilities that manage hazardous waste in this manner, and the total number of hazardous waste streams managed. The last column indicates the relative percentage of wastes managed at commercial facilities. EPA calculated these percentages by dividing the quantity of hazardous waste managed at commercial facilities by the total quantity of hazardous waste managed at all facilities (i.e., on-site, captive and commercial) for each of the 24 waste management categories.

Exhibit 2B presents EPA's estimates for the quantities of hazardous waste containing arsenic, lead, and/or mercury managed at all facilities. For each management category, EPA divided the waste universe into seven subcategories to take into account all possible mixtures of the three metal constituents in a given waste stream and to present separate estimates for the quantities of hazardous wastes containing: (1) arsenic only[2]; (2) arsenic with lead; (3) arsenic with mercury; (4) arsenic with lead and mercury; (5) lead only; (6) mercury only; and (7) mercury with lead. The next column indicates the total quantity of hazardous waste containing arsenic, lead, and/or mercury. The two remaining columns of Exhibit 2B indicate, for each management category, the total quantity of hazardous wastes managed at all facilities (from Exhibit 2A) and the percentage of hazardous wastes that contain arsenic, lead, and/or mercury managed at all facilities. EPA calculated these percentages by dividing the total quantity of hazardous waste containing arsenic, lead, and/or mercury by the quantity of hazardous waste managed at all facilities.

Exhibit 2C presents similar information to Exhibit 2B, but focuses only on waste managed at commercial facilities. The last columns in the Exhibit list the percentage of wastes containing arsenic, lead and/or mercury that are managed at commercial facilities ("% Comm'l As,Pb,Hg") and the percentage of all wastes managed at commercial facilities that contain arsenic, lead and/or mercury ("% Comm'l Total"). EPA calculated the "% Comm'l As,Pb,Hg" values by dividing the quantity of wastes containing arsenic, lead and/or mercury managed at commercial facilities ("Comm'l As,Pb,Hg") by the total quantity of wastes containing these metals ("Total As,Pb,Hg"). Likewise, EPA calculated the "% Comm'l Total" values by dividing the quantity of wastes containing arsenic, lead and/or mercury managed at commercial facilities ("Comm'l As,Pb,Hg") by the quantity of all wastes managed at commercial facilities ("Total Comm'l").

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[2] "Arsenic only" means hazardous wastes containing arsenic constituents but not lead or mercury constituents. Likewise, "arsenic with lead" means those hazardous wastes containing arsenic and lead constituents but not mercury constituents; "arsenic with mercury" means those hazardous wastes containing arsenic and mercury constituents but not lead constituents; and "arsenic with lead and mercury" means those hazardous wastes containing arsenic and lead and mercury constituents. The same nomenclature applies for lead and mercury containing wastes. In addition, wastes in any of the seven categories may contain other metal constituents such as cadmium or chromium.

Exhibits 2D through 2F present further details on the quantities of hazardous wastes containing arsenic, lead, and mercury managed on-site. In addition to the quantity of hazardous wastes managed via each management category, these exhibits indicate the number of generators that manage these wastes on-site, and the number of waste streams managed. Exhibits 2G through 2I and 2J through 2L present similar estimates for the quantities of hazardous wastes containing arsenic, lead, and mercury managed at captive and commercial facilities, respectively.

3. ANALYSIS OF RESULTS

This section presents the results of EPA's analysis of the base results presented above. This analysis summarizes key information for understanding the national combustion system and to highlight salient statistics with potential policy implications. This analysis is based on data compiled in the March 1994 version of the 1991 Biennial Reporting System (BRS) for the 1991 Hazardous Waste Report and does not include facilities that requested their responses be treated as Confidential Business Information. Because these results are based on 1991 data, they do not reflect changes in waste management practices based on Phase I or Phase II LDRs for newly identified wastes or Third Third wastes that were given two-year capacity variances. These data also do not reflect management changes resulting from implementation of the BIF rule which was originally promulgated in February 1991, but did not impose many substantive requirements until 1992.

Combustion Summary by Type of Combustion and Waste Form

According to the 1991 BRS data, as shown in Exhibit 2A, almost 3.6 million tons of hazardous wastes were burned in incinerators (1.9 million tons) and BIFs (1.7 million tons) in 1991. Most of this waste was liquid or gas (3.0 million tons). About 0.5 million tons of sludges and solids were combusted, and the form was unknown for about 0.1 million tons.

Combustion Summary by Type of Facility

About 1.8 million tons, or half of all combusted wastes, were burned at commercial facilities, as shown in Exhibit 2A. Almost all of the remainder (1.7 million tons) of combusted wastes were burned on site. Captive facilities received about 63,000 tons or about two percent of the total. Commercial facilities provide a larger share of energy recovery (64 percent of 1.7 million tons) than of incineration (37 percent of 1.9 million tons).

Overall Combustion of Arsenic, Lead, and Mercury Wastes

From Exhibit 2B, we find that about 580,000 tons or about one half of one percent of all wastes containing arsenic, lead, and mercury constituents were burned in combustion units. Excluding wastes sent to aqueous treatment, about three percent of all arsenic, lead, and mercury containing wastes went to combustion. These arsenic, lead, and mercury wastes represent 16 percent of all combusted wastes. Not surprisingly, lead wastes represent the largest of the groups studied. About 80 percent (463,000 tons) of the 580,000 total tons of these metal-bearing wastes combusted contained lead. About 289,000 tons of arsenic-bearing wastes and about 253,000 tons of mercury-bearing wastes were combusted in 1991. About 191,000 tons of combusted wastes

contained arsenic, lead, and mercury constituents according to the waste codes associated with these wastes.

Arsenic, Lead, and Mercury Combustion by Type of Combustion System

About 70 percent of the combusted arsenic, lead, and mercury wastes are combusted in energy recovery systems, as shown in Exhibit 2B. Arsenic, lead, and mercury wastes comprise almost one fourth (23 percent) of the 1.7 million tons of wastes burned for energy recovery compared to about 10 percent of the 1.8 million tons of wastes incinerated. As might be expected, arsenic, lead, and mercury wastes comprise a higher portion of combusted sludges and solids (37 percent) than they do of liquids (12 percent). More than half (54 percent) of the sludges and solids sent to energy recovery contain arsenic, lead, and/or mercury. About 236,000 tons of arsenic, lead, and/or mercury-bearing wastes went to fuel blenders. These wastes represent about seven percent of the total amount of waste sent to fuel blending.[3]

Arsenic, Lead, and Mercury Combustion By Facility Type

Sixteen percent of all hazardous wastes combusted contain arsenic, lead, and mercury (Exhibit 2B), compared to 25 percent of all commercially combusted wastes (Exhibit 2C). Arsenic, lead, and mercury wastes comprise a larger portion of commercial energy recovery wastes (34 percent) than of commercially incinerated wastes (12 percent). Again, energy recovery of sludges and solids tops the list of commercial arsenic, lead, and mercury waste burners. About 64 percent of the sludges and solids burned commercially for energy recovery contain arsenic, lead, and/or mercury.

These biases in the commercial combustion data for arsenic, lead, and mercury wastes become even more apparent when the focus is narrowed to just the universe of wastes that contain arsenic, lead and mercury. Compared to all combusted hazardous wastes, three to four times more combusted arsenic, lead, and mercury wastes are combusted at commercial facilities, as shown in Exhibit 2C. For example, whereas arsenic, lead, and mercury wastes may comprise 25 percent of all wastes combusted commercially, almost 78 percent of the arsenic, lead, and mercury wastes treated via combustion are combusted at commercial facilities. Likewise, whereas arsenic, lead, and mercury wastes comprise 34 percent of all wastes sent to commercial energy recovery and 12 percent of wastes commercially incinerated, 93 percent of the arsenic, lead, and mercury wastes sent to energy recovery and 44 percent of arsenic, lead, and mercury wastes sent to incineration are sent to commercial facilities. The same biases are reflected consistently in the arsenic, lead, and mercury commercial combustion data for each waste physical form. These data indicate a strong preference among facilities to send hazardous wastes containing arsenic, lead, and mercury to commercial combustion facilities rather than to combust these wastes on-site.

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[3] Without a more detailed analysis of fuel blenders, it is impossible to determine how much of the combusted arsenic, lead, and mercury wastes came from blenders. It is likely that some of the arsenic, lead, and mercury wastes going to fuel blending are not reported with these codes after they are blended.

Distribution of Arsenic, Lead, and Mercury Combinations

Overall, as shown in Exhibit 2B, the single largest class of arsenic, lead, and mercury waste is waste with lead only. Lead-only wastes comprise 89 percent of the total quantity of arsenic, lead, and mercury wastes managed. Notably, the distribution is slightly different for combusted wastes. For combusted wastes, lead-only wastes represent only 41 percent of the total, with much of the difference taken up by the second largest group -- wastes with arsenic, lead, and mercury. This observation could be anomalous, however, since K061 is classified as a waste with arsenic, lead, and mercury, and EPA has observed misclassification of K061 HTMR as combustion in Texas. Because of the potential for treatment misclassification, combusted wastes with arsenic, lead, and mercury should be further scrutinized.

Distribution of Combusted Arsenic, Lead, and Mercury Wastes by Waste Form

Exhibits 1A-1K show how arsenic, lead, and mercury-bearing wastes of different forms are managed. Almost half of the arsenic, lead, and/or mercury wastes burned for energy recovery are organic liquids according to their form codes (contrary to the premise, based on the waste codes, that these wastes generally do not contain organics). Organic solids comprise the next largest portion at about 10 percent. Incinerated arsenic, lead, and/or mercury-bearing wastes are far more evenly distributed among waste forms. Organic liquids are also the largest group for incinerators (26 percent), followed by blank forms (24 percent), aqueous liquids (18 percent) and inorganic sludges (16 percent). Review of Exhibits 1A-1K reveals additional differences between the arsenic, lead, and mercury wastes burned at incinerators and those burned for energy recovery:

- While over 32,000 tons of arsenic, lead, and/or mercury-bearing aqueous liquids were burned at incinerators, only about 200 tons went to fuel blenders and energy recovery facilities combined.

- Like aqueous liquids, almost all arsenic, lead, and/or mercury-bearing inorganic sludges that are combusted are burned at incinerators (29,000 tons).

- More than four times as much arsenic, lead, and/or mercury bearing organic liquids are burned at energy recovery facilities than at incinerators (199,000 tons versus 46,000 tons).

- More arsenic, lead, and/or mercury-bearing organic liquids are sent to fuel blending than to energy recovery, suggesting that some fuel-blended wastes do not carry the same codes as the wastes prior to blending.

- More than five times as much arsenic, lead, and/or mercury-bearing organic solids are burned for energy recovery than at incinerators (39,000 tons versus 7,000 tons).

- Almost all of the combusted soil containing arsenic, lead, and/or mercury is burned at incinerators (13,000 tons at incinerators versus 5 tons at energy recovery facilities).

- Almost 10 percent of combusted arsenic, lead, and/or mercury waste (about 56,000 tons) are not reported with a distinguishable form code in the 1991 BRS data.

Exhibit 1A: Quantities of Organic Liquids (B201-B219) Containing Arsenic, Lead, or Mercury

Current Management	As			Pb			Hg			Total		
	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons
Metals Recovery (M011-M019)	0	0	0	3	2	841	0	0	0	3	2	841
Solvent Recovery (M021-M029)	15	11	125	1,351	81	22,050	18	6	157	1,365	84	22,185
Other Recovery (M031-M039)	15	3	45	416	18	3,020	15	2	88	429	19	3,034
Incineration (M041-M049)	79	17	6,168	392	28	28,166	101	12	16,665	479	31	46,331
Energy Recovery (M051-M059)	42	17	80,412	143	27	149,582	28	9	32,499	157	29	198,578
Fuel Blending (M061)	212	30	64,334	2,783	61	178,282	265	28	39,270	2,940	61	204,551
Aqueous Treatment (M071-M099)	7	6	226,672	109	26	2,098,044	8	3	226,665	115	27	2,098,067
Sludge Treatment (M101-M109)	0	0	0	0	0	0	0	0	0	0	0	0
Stabilization (M111-M119)	6	5	35	133	12	2,021	3	3	7	139	12	2,056
Other Treatment (M121-M129)	7	5	334	90	23	7,790	19	6	344	102	23	8,033
Land Disposal (M131-M134)	12	5	347	28	5	196	14	6	145	41	7	410
Discharge to POTW (M135)	0	0	0	0	0	0	0	0	0	0	0	0
Discharge via NPDES (M136)	0	0	0	0	0	0	0	0	0	0	0	0
Other Disposal (M137)	0	0	0	0	0	0	0	0	0	0	0	0
Transfer (M141)	168	53	4,556	16,151	295	46,870	292	59	4,276	16,432	299	47,408
Other (incl. M999 and blanks)	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	563	N/A	383,029	21,599	N/A	2,536,882	763	N/A	320,317	22,202	N/A	2,631,495

Source: 1991 Biennial Report.

Exhibit 1B: Quantities of Organic Sludges (B601-B609) Containing Arsenic, Lead, or Mercury

Current Management	As			Pb			Hg			Total		
	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons
Metals Recovery (M011-M019)	0	0	0	0	0	0	0	0	0	0	0	0
Solvent Recovery (M021-M029)	1	1	1,861	6	6	1,909	1	1	1,861	6	6	1,909
Other Recovery (M031-M039)	1	1	270	4	3	515	1	1	13	5	3	528
Incineration (M041-M049)	16	6	1,788	87	10	2,115	18	6	810	94	10	2,308
Energy Recovery (M051-M059)	6	3	132,371	27	7	148,294	4	2	130,306	29	7	148,300
Fuel Blending (M061)	22	11	2,536	220	27	5,585	20	9	2,557	230	29	5,676
Aqueous Treatment (M071-M099)	0	0	0	8	5	4,056	1	1	14	8	5	4,056
Sludge Treatment (M101-M109)	0	0	0	6	3	492	3	1	18	6	3	492
Stabilization (M111-M119)	19	4	159	191	12	2,789	25	5	271	216	13	3,000
Other Treatment (M121-M129)	3	1	3	49	8	8,686	3	1	2	51	8	8,688
Land Disposal (M131-M134)	11	5	341	52	5	1,969	12	5	423	61	6	2,174
Discharge to POTW (M135)	0	0	0	0	0	0	0	0	0	0	0	0
Discharge via NPDES (M136)	0	0	0	0	0	0	0	0	0	0	0	0
Other Disposal (M137)	0	0	0	0	0	0	0	0	0	0	0	0
Transfer (M141)	20	15	176	334	58	1,151	37	15	251	355	59	1,238
Other (incl. M999 and blanks)	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	99	N/A	139,505	984	N/A	177,582	125	N/A	136,526	1,063	N/A	178,368

Source 1991 Biennial Report

Exhibit 1C: Quantities of Organic Solids (B401-B409) Containing Arsenic, Lead, or Mercury

Current Management	As			Pb			Hg			Total		
	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons
Metals Recovery (M011-M019)	0	0	0	8	2	9	0	0	0	8	2	9
Solvent Recovery (M021-M029)	1	1	2	14	2	22	1	1	9	16	3	34
Other Recovery (M031-M039)	0	0	0	3	3	31	0	0	0	3	3	31
Incineration (M041-M049)	155	12	1,926	798	15	6,276	121	12	1,116	906	16	7,390
Energy Recovery (M051-M059)	16	4	15,326	50	10	28,922	11	4	6,299	54	10	38,989
Fuel Blending (M061)	57	5	2,506	337	15	5,326	57	5	368	358	15	7,680
Aqueous Treatment (M071-M099)	0	0	0	7	4	21	1	1	0	8	5	21
Sludge Treatment (M101-M109)	0	0	0	14	1	6	0	0	0	14	1	6
Stabilization (M111-M119)	65	6	7,900	428	12	20,503	83	6	6,907	512	13	21,187
Other Treatment (M121-M129)	13	5	26	89	16	414	13	5	90	98	16	493
Land Disposal (M131-M134)	30	7	636	54	10	12,751	25	7	654	90	11	13,520
Discharge to POTW (M135)	0	0	0	0	0	0	0	0	0	0	0	0
Discharge via NPDES (M136)	0	0	0	0	0	0	0	0	0	0	0	0
Other Disposal (M137)	0	0	0	0	0	0	0	0	0	0	0	0
Transfer (M141)	68	24	317	539	75	1,598	69	34	139	633	85	1,816
Other (incl. M999 and blanks)	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	405	N/A	28,640	2,341	N/A	75,880	381	N/A	15,582	2,700	N/A	91,178

Source: 1991 Biennial Report

Exhibit 1D: Quantities of Other Form Codes (including B999 and blanks) Containing Arsenic, Lead, or Mercury

Current Management	As			Pb			Hg			Total		
	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons
Metals Recovery (M011-M019)	2	2	117	175	7	79,575	0	0	0	176	7	79,691
Solvent Recovery (M021-M029)	1	1	2,018	132	8	4,944	5	2	2,050	134	8	4,945
Other Recovery (M031-M039)	211	1	1,233	690	4	3,674	0	0	0	775	4	3,922
Incineration (M041-M049)	1,044	10	11,111	2,179	17	42,583	917	14	12,282	2,433	18	43,910
Energy Recovery (M051-M059)	280	1	2,587	1,120	2	11,877	0	0	0	1,184	2	12,123
Fuel Blending (M061)	92	4	203	298	11	15,048	121	5	550	347	11	15,515
Aqueous Treatment (M071-M099)	52	9	25,191	571	17	1,015,293	125	7	1,994	654	19	1,023,601
Sludge Treatment (M101-M109)	0	0	0	1	1	112	0	0	0	1	1	112
Stabilization (M111-M119)	77	6	22,664	1,096	8	112,552	129	6	20,113	1,209	10	114,828
Other Treatment (M121-M129)	758	7	1,424	1,410	17	28,780	1,151	10	1,669	1,786	19	29,060
Land Disposal (M131-M134)	2,656	9	93,430	2,516	15	127,025	1,299	5	35,076	4,446	17	185,400
Discharge to POTW (M135)	0	0	0	1	1	26	0	0	0	1	1	26
Discharge via NPDES (M136)	0	0	0	0	0	0	1	1	0	1	1	0
Other Disposal (M137)	392	14	1,907	1,831	27	38,468	659	17	136,953	2,766	30	174,486
Transfer (M141)	886	24	1,014	7,194	102	17,177	875	33	1,196	8,295	111	18,711
Other (incl. M999 & blanks)	0	0	0	10	1	41,362	0	0	0	10	1	41,362
TOTAL	6,451	N/A	163,099	19,224	N/A	1,538,694	5,282	N/A	211,882	24,218	N/A	1,747,694

Source: 1991 Biennial Report.

Exhibit 1E: Quantities of Aqueous Liquids (B101, 102, 105, 110-116) Containing Arsenic, Lead, or Mercury

Current Management	As			Pb			Hg			Total		
	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac	Tons
Metals Recovery (M011-M019)	1	1	5	9	8	61,843	0	0	0	10	9	61,848
Solvent Recovery (M021-M029)	0	0	0	1	1	30	0	0	0	1	1	30
Other Recovery (M031-M039)	1	1	0	10	6	378,060	0	0	0	11	7	378,060
Incineration (M041-M049)	32	9	32,019	62	10	23,484	37	8	22,390	101	12	32,447
Energy Recovery (M051-M059)	0	0	0	1	1	1	0	0	0	1	1	1
Fuel Blending (M061)	2	2	0	30	12	197	5	3	7	33	12	202
Aqueous Treatment (M071-M099)	93	33	917,950	785	199	60,128,203	93	31	1,824,926	881	217	62,073,345
Sludge Treatment (M101-M109)	0	0	0	8	7	422,801	0	0	0	8	7	422,801
Stabilization (M111-M119)	15	6	348	73	11	10,507	24	6	285	96	13	10,652
Other Treatment (M121-M129)	27	20	2,931,003	144	70	6,797,363	29	19	3,469,647	171	79	6,963,406
Land Disposal (M131-M134)	50	12	1,385,721	79	13	2,705,016	51	10	1,384,851	116	16	2,705,961
Discharge to POTW (M135)	3	2	236	7	5	12,400	3	2	53	10	5	12,676
Discharge via NPDES (M136)	1	1	894,787	1	1	894,787	1	1	894,787	1	1	894,787
Other Disposal (M137)	0	0	0	1	1	0	0	0	0	1	1	0
Transfer (M141)	144	37	10,687	1,253	75	1,091,296	270	42	12,874	1,493	81	1,091,953
Other (incl. M999 and blanks)	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	369	N/A	6,172,756	2,464	N/A	72,525,987	513	N/A	7,609,820	2,934	N/A	74,648,167

Source 1991 Biennial Report

Exhibit 1F: Quantities of Other Inorganic Liquids (B103, 104, 106-109, 117, 119) Containing Arsenic, Lead, or Mercury

Current Management	As			Pb			Hg			Total		
	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons
Metals Recovery (M011-M019)	42	5	313	115	29	55,295	24	3	5	174	33	55,433
Solvent Recovery (M021-M029)	0	0	0	2	2	5	0	0	0	2	2	5
Other Recovery (M031-M039)	7	2	1,140	18	7	12,773	2	1	33	23	7	13,328
Incineration (M041-M049)	10	4	45	27	9	137	12	5	38	45	12	188
Energy Recovery (M051-M059)	0	0	0	4	4	83	1	1	60	4	4	83
Fuel Blending (M061)	6	2	6	60	15	741	12	4	20	92	17	752
Aqueous Treatment (M071-M099)	124	32	255,956	1,901	290	11,434,836	200	29	687,364	2,064	300	12,133,857
Sludge Treatment (M101-M109)	1	1	68	11	7	1,024	1	1	75	12	8	1,099
Stabilization (M111-M119)	65	9	4,837	434	16	9,834	107	10	362	555	16	10,477
Other Treatment (M121-M129)	105	19	46,366	500	68	563,078	147	16	38,530	642	78	570,801
Land Disposal (M131-M134)	17	5	1,471	48	11	46,134	16	5	1,440	62	11	48,175
Discharge to POTW (M135)	1	1	5	6	4	55	2	2	1	8	6	56
Discharge via NPDES (M136)	0	0	0	1	1	2,265,788	0	0	0	1	1	2,265,788
Other Disposal (M137)	1	1	2,798	8	3	18,920	0	0	0	8	3	18,920
Transfer (M141)	168	44	977	1,306	97	18,005	669	86	1,266	1,955	133	18,747
Other (incl. M999 and blanks)	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	547	N/A	313,983	4,461	N/A	14,428,707	1,193	N/A	729,196	5,647	N/A	15,137,707

Source: 1991 Biennial Report.

Exhibit 1G: Quantities of Inorganic Sludges (B501-B519) Containing Arsenic, Lead, or Mercury

Current Management	As			Pb			Hg			Total		
	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons
Metals Recovery (M011-M019)	2	1	2,498	70	10	6,136	3	2	2,522	71	11	6,161
Solvent Recovery (M021-M029)	0	0	0	0	0	0	0	0	0	0	0	0
Other Recovery (M031-M039)	1	1	10,043	13	6	12,396	1	1	10,043	13	6	12,396
Incineration (M041-M049)	7	3	322	43	8	361	3	3	28,311	50	9	28,988
Energy Recovery (M051-M059)	0	0	0	2	2	236	0	0	0	2	2	236
Fuel Blending (M061)	2	2	4	22	10	39	4	2	5	26	10	43
Aqueous Treatment (M071-M099)	38	7	59,804	473	77	480,069	33	6	65,582	493	79	486,026
Sludge Treatment (M101-M109)	2	2	25	89	42	16,126	0	0	0	89	42	16,126
Stabilization (M111-M119)	59	12	55,021	534	26	346,431	56	12	54,990	585	27	348,235
Other Treatment (M121-M129)	6	4	517	268	31	61,880	4	3	16	272	32	61,885
Land Disposal (M131-M134)	41	6	3,596	216	15	239,160	42	9	5,202	264	17	242,606
Discharge to POTW (M135)	0	0	0	0	0	0	0	0	0	0	0	0
Discharge via NPDES (M136)	0	0	0	0	0	0	0	0	0	0	0	0
Other Disposal (M137)	0	0	0	0	0	0	0	0	0	0	0	0
Transfer (M141)	24	17	1,074	572	68	4,966	41	18	334	613	74	5,917
Other (incl. M999 and blanks)	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	182	N/A	132,904	2,302	N/A	1,167,799	187	N/A	167,006	2,478	N/A	1,208,617

Source: 1991 Biennial Report

Exhibit 1H: Quantities of Other Inorganic Solids (B303-B319) Containing Arsenic, Lead, or Mercury

Current Management	As			Pb			Hg			Total		
	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons
Metals Recovery (M011-M019)	49	9	248,492	436	43	463,214	130	13	246,981	533	47	464,978
Solvent Recovery (M021-M029)	0	0	0	2	2	10	1	1	10	2	2	10
Other Recovery (M031-M039)	0	0	0	18	11	1,821	2	1	1	20	11	1,822
Incineration (M041-M049)	111	12	1,066	578	21	3,090	95	13	550	705	21	3,739
Energy Recovery (M051-M059)	3	2	1,566	20	5	2,266	4	3	7	22	5	2,267
Fuel Blending (M061)	10	4	1,672	61	11	1,846	1	1	8	69	12	1,870
Aqueous Treatment (M071-M099)	6	4	117	111	56	192,041	4	4	113	114	56	192,044
Sludge Treatment (M101-M109)	1	1	40	44	24	53,549	0	0	0	45	25	53,590
Stabilization (M111-M119)	313	18	78,600	1,817	39	354,572	225	20	121,000	1,789	41	360,188
Other Treatment (M121-M129)	64	11	6,014	211	38	150,068	145	7	5,653	308	40	150,696
Land Disposal (M131-M134)	350	17	137,265	791	25	277,235	418	20	109,798	1,245	27	315,879
Discharge to POTW (M135)	1	1	1	1	1	0	0	0	0	2	2	1
Discharge via NPDES (M136)	0	0	0	0	0	0	0	0	0	0	0	0
Other Disposal (M137)	1	1	0	4	3	197,883	1	1	13	5	4	197,883
Transfer (M141)	307	70	10,150	1,634	154	22,492	677	103	11,621	2,308	188	24,740
Other (incl. M999 and blanks)	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	1,216	N/A	485,204	5,528	N/A	1,720,068	1,703	N/A	495,755	7,165	N/A	1,769,706

Source: 1991 Biennial Report.

Exhibit 1I: Quantities of Lab Packs (B001-B009) Containing Arsenic, Lead, or Mercury

Current Management	As			Pb			Hg			Total		
	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac	Tons
Metals Recovery (M011-M019)	0	0	0	2	1	0	8	3	3	10	3	3
Solvent Recovery (M021-M029)	0	0	0	1	1	27	0	0	0	1	1	27
Other Recovery (M031-M039)	3	1	5	4	2	7	9	1	3	13	2	8
Incineration (M041-M049)	1,068	12	1,294	1,672	12	1,850	1,035	12	1,305	2,958	14	2,709
Energy Recovery (M051-M059)	3	2	15	1	1	15	2	2	15	4	3	15
Fuel Blending (M061)	0	0	0	4	3	1	8	2	1	12	4	1
Aqueous Treatment (M071-M099)	90	7	1,388	177	9	949	151	5	744	333	11	1,678
Sludge Treatment (M101-M109)	34	3	81	38	5	83	62	6	79	89	6	106
Stabilization (M111-M119)	0	0	0	0	0	0	0	0	0	0	0	0
Other Treatment (M121-M129)	7	5	2	36	7	11	21	5	4	50	8	14
Land Disposal (M131-M134)	17	7	828	14	6	658	48	11	849	62	11	1,026
Discharge to POTW (M135)	0	0	0	0	0	0	0	0	0	0	0	0
Discharge via NPDES (M136)	0	0	0	0	0	0	0	0	0	0	0	0
Other Disposal (M137)	0	0	0	1	1	0	0	0	0	1	1	0
Transfer (M141)	1,697	51	855	2,236	59	1,332	2,703	68	1,289	5,261	76	1,971
Other (incl. M999 and blanks)	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	2,939	N/A	4,468	4,186	N/A	4,931	4,047	N/A	4,293	8,794	N/A	7,560

Source 1991 Biennial Report

Exhibit 1J: Quantities of Soil (B301, B302) Containing Arsenic, Lead, or Mercury

Current Management	As			Pb			Hg			Total		
	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons
Metals Recovery (M011-M019)	0	0	0	0	0	0	0	0	0	0	0	0
Solvent Recovery (M021-M029)	0	0	0	0	0	0	1	1	0	1	1	0
Other Recovery (M031-M039)	0	0	0	2	2	1	0	0	0	2	2	1
Incineration (M041-M049)	12	5	590	73	12	13,401	15	4	456	78	12	13,472
Energy Recovery (M051-M059)	0	0	0	2	1	5	0	0	0	2	1	5
Fuel Blending (M061)	0	0	0	5	4	53	0	0	0	5	4	53
Aqueous Treatment (M071-M099)	1	1	29	3	2	38	1	1	29	3	2	38
Sludge Treatment (M101-M109)	0	0	0	0	0	0	0	0	0	0	0	0
Stabilization (M111-M119)	13	9	1,345	196	16	37,752	15	6	2,662	207	16	36,837
Other Treatment (M121-M129)	3	3	170	3	3	175	3	2	1	6	3	176
Land Disposal (M131-M134)	100	8	37,635	253	13	79,841	99	9	19,665	375	14	125,899
Discharge to POTW (M135)	0	0	0	0	0	0	0	0	0	0	0	0
Discharge via NPDES (M136)	0	0	0	0	0	0	0	0	0	0	0	0
Other Disposal (M137)	0	0	0	0	0	0	0	0	0	0	0	0
Transfer (M141)	73	14	498	385	55	3,127	106	27	299	497	66	3,619
Other (incl. M999 and blanks)	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	202	N/A	40,267	924	N/A	134,393	240	N/A	23,113	1,176	N/A	182,102

Source: 1991 Biennial Report.

Exhibit 1K: Quantities of Gases (B701, B801) Containing Arsenic, Lead, or Mercury

Current Management	As			Pb			Hg			Total		
	# Streams	# Gen.	Tons	# Streams	# Gen.	Tons	# Streams	# Gen.	Tons	# Streams	# Gen.	Tons
Metals Recovery (M011-M019)	0	0	0	0	0	0	0	0	0	0	0	0
Solvent Recovery (M021-M029)	0	0	0	0	0	0	0	0	0	0	0	0
Other Recovery (M031-M039)	0	0	0	0	0	0	0	0	0	0	0	0
Incineration (M041-M049)	2	1	1	2	1	5	1	1	3	4	2	8
Energy Recovery (M051-M059)	0	0	0	0	0	0	0	0	0	0	0	0
Fuel Blending (M061)	0	0	0	3	2	15	0	0	0	3	2	15
Aqueous Treatment (M071-M099)	0	0	0	0	0	0	0	0	0	0	0	0
Sludge Treatment (M101-M109)	0	0	0	0	0	0	0	0	0	0	0	0
Stabilization (M111-M119)	0	0	0	0	0	0	0	0	0	0	0	0
Other Treatment (M121-M129)	0	0	0	1	1	0	0	0	0	1	1	0
Land Disposal (M131-M134)	0	0	0	0	0	0	0	0	0	0	0	0
Discharge to POTW (M135)	0	0	0	0	0	0	0	0	0	0	0	0
Discharge via NPDES (M136)	0	0	0	0	0	0	0	0	0	0	0	0
Other Disposal (M137)	0	0	0	0	0	0	0	0	0	0	0	0
Transfer (M141)	1	1	0	33	5	12	1	1	2	34	6	12
Other (Incl. M999 and blanks)	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	3	N/A	1	39	N/A	32	2	N/A	5	42	N/A	35

Source 1991 Biennial Report

Exhibit 2A: Quantities of All Hazardous Waste Managed at On-site, Captive, and Commercial Facilities

Current Management	Total On-site			Total Captive			Total Commercial			Total for All Facilities			% Comm'l
	# Streams	# Gen.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	(Tons)
HTMR (M011)	47	9	19,223	3	3	127	202	13	264,809	252	25	284,159	93 2
Retorting (M012)	3	3	822	0	0	0	108	3	148	111	6	969	15 2
Secondary Smelting (M013)	3	3	501	4	2	3,629	100	13	165,398	107	18	169,527	97 6
Other Metals Recovery (M014)	261	177	851,931	18	7	602	2,562	35	151,786	2,841	217	1,004,318	15 1
Metals Recovery - Unknown (M019)	26	21	6,333	5	2	1	131	9	61,348	162	31	67,681	90 6
Solvent Recovery (M021-M029)	1,429	1,124	346,710	382	25	6,503	30,062	107	5,938,759	31,873	1,245	6,293,972	94 4
Other Recovery (M031-M039)	1,479	264	4,583,497	11	11	16,801	11,472	43	963,768	12,961	315	5,564,066	17 3
Incineration - Liquids and Gases (M041, M044)	548	103	1,016,012	347	24	14,436	16,885	38	395,536	17,760	149	1,425,984	27 7
Incineration - Sludges and Solids (M042, M043)	105	44	100,285	228	13	4,140	22,690	40	248,218	23,015	93	352,643	70 4
Incineration - Unknown (M049)	82	18	30,416	10	5	75	526	5	45,575	618	26	76,068	59 9
Total Incineration	735	N/A	1,146,715	585	N/A	18,652	40,101	60	689,329	41,393	230	1,854,695	37 2
Energy Recovery - Liquids (M051)	355	161	546,153	1,978	16	42,911	4,864	39	947,041	7,195	206	1,536,106	61 7
Energy Recovery - Sludges and Solids (M052, M053)	43	31	26,212	9	4	1,836	3,495	14	165,059	3,547	46	193,107	85 5
Energy Recovery - Unknown (M059)	34	8	12,215	1	1	0	16	2	20	51	11	12,236	0 2
Total Energy Recovery	432	N/A	584,580	1,988	N/A	44,748	8,375	48	1,112,120	10,793	252	1,741,448	63 9
Combustion - Liquids and Gases	903	N/A	1,582,165	2,325	N/A	57,347	21,749	N/A	1,342,577	24,955	N/A	2,962,090	45 3
Combustion - Sludges and Solids	148	N/A	126,497	237	N/A	5,976	26,185	N/A	413,276	26,562	N/A	545,750	75 7
Combustion - Type Unknown	116	N/A	42,633	11	N/A	76	542	N/A	45,595	669	N/A	88,304	51 6
Total Combustion	1,167	N/A	1,731,295	2,573	N/A	63,399	48,476	97	1,801,449	52,186	457	3,596,143	50 1
Fuel Blending (M061)	31	24	1,652	127	8	269	74,823	89	3,497,192	74,980	119	3,499,112	99 9
Aqueous Treatment (M071-M079; M081-M089; M091-M099)	3,705	1,668	252,120,735	193	38	1,934,172	15,365	122	183,750,223	19,255	1,804	437,805,130	42 0
Sludge Treatment (M101-M109)	165	131	3,803,143	27	6	931	255	21	20,664	446	155	3,824,738	0 5
Stabilization (M111-M119)	71	48	328,576	7	3	11	9,624	39	849,145	9,702	90	1,177,732	72 1
Other Treatment (M121-M129)	2,170	1,051	69,583,441	182	48	488,557	15,396	93	8,447,878	17,743	1,171	78,519,876	10 8
Land Disposal (M131-M134)	148	82	19,160,591	9,040	16	313,492	40,678	52	8,166,897	49,863	146	27,640,980	29 5
Discharge to POTW (M135)	178	115	2,540,689	0	0	0	16	9	247,799	196	124	2,788,488	8 9
Discharge via NPDES (M136)	15	9	5,457,189	0	0	0	3	2	894,855	18	11	6,352,044	14 1
Transfer (M141)	1,419	436	2,232,978	5,169	186	37,278	252,314	388	787,619	258,818	1,000	3,057,875	25 8
Other Disposal	893	99	1,923,083	1,766	11	3,403	12,784	22	83,922	15,431	127	2,010,408	4 2
Other (including M999 and blank)	0	0	0	3	1	2	164	3	117,191	167	4	117,193	100 0
Total	13,210	N/A	364,692,389	19,510	N/A	2,871,175	514,537	N/A	216,210,848	547,112	N/A	583,774,412	37 0

Source 1991 Bie ial Report On-site and Captive data obtained from GM and WR forms, respectively, for non-c cial facilities; Commercial data obtained from GM and WR forms

Exhibit 28: Quantities (in Tons) of Hazardous Waste Containing Arsenic, Lead, and Mercury Managed at On-site, Captive, and Commercial Facilities

Current Management	Only As	As With Pb	As With Hg	As, Pb, Hg	Only Pb	Only Hg	Hg With Pb	Total As, Pb, Hg	All Wastes	% Total
HTMR (M011)	0	0	0	249,168	22,135	21	0	271,325	284,159	95 5
Retorting (M012)	0	0	0	0	811	107	0	918	969	94 7
Secondary Smelting (M013)	0	0	0	0	169,464	0	0	169,464	169,527	100 0
Other Metals Recovery (M014)	244	191	0	184	188,717	30	1	189,366	1,004,318	18 9
Unknown (M019)	1,637	0	0	0	40,105	0	0	41,742	67,681	61 7
Solvent Recovery (M021-M029)	101	24	0	3,880	24,976	47	160	29,188	6,293,972	0 5
Other Recovery (M031-M039)	616	2,049	0	10,072	400,455	18	91	413,301	5,564,066	7 4
Incineration - Liquids and Gases (M041, M044)	12,532	2,231	598	6,730	24,309	9,055	855	56,309	1,425,984	3 9
Incineration - Sludges and Solids (M042, M043)	2,265	2,935	628	27,796	49,946	11,648	2,888	98,107	352,643	27 8
Incineration Unknown (M049)	0	0	0	634	3,446	23,268	26	27,374	76,068	36 0
Total Incineration	14,797	5,166	1,227	35,160	77,701	43,970	3,768	181,790	1,854,695	9 8
Energy Recovery - Liquids (M051)	6,091	8,239	7,416	152,117	118,382	33	3,325	295,602	1,536,106	19 2
Energy Recovery - Sludges and Solids (M052, M053)	45,775	9,418	0	3,224	43,507	1	3,071	104,996	193,107	54 4
Energy Recovery - Unknown (M059)	0	0	0	0	0	0	0	0	12,236	0 0
Total Energy Recovery	51,866	17,657	7,416	155,341	161,889	34	6,396	400,598	1,741,448	23 0
Combustion - Liquids and gases	18,623	10,470	8,014	158,847	142,691	9,088	4,179	351,912	2,962,090	11 9
Combustion - Sludges and solids	48,040	12,353	628	31,020	93,454	11,648	5,959	203,102	545,750	37 2
Combustion - Type unknown	0	0	0	634	3,446	23,268	26	27,374	88,304	31 0
Total Combustion	66,663	22,823	8,642	190,501	239,591	44,004	10,164	582,388	3,596,143	16 2
Fuel Blending (M061)	27,234	12,132	1,198	30,698	154,399	794	10,097	236,552	3,499,112	6 8
Aqueous Treatment (M071-M079; M081-M089; M091-M099)	668,936	57,262	199	760,710	76,016,908	1,990,045	56,478	79,550,538	437,805,130	18 2
Sludge Treatment (M101-M109)	40	93	0	0	494,018	0	93	494,244	3,824,738	12 9
Stabilization (M111-M119)	7,706	14,163	1,211	148,310	685,002	3,605	53,550	913,547	1,177,732	77 6
Other Treatment (M121-M129)	173,705	2,388	533	2,809,233	4,126,805	767	705,424	7,818,854	78,519,876	10 0
Land Disposal (M131-M134)	87,101	75,340	7,377	1,491,452	1,925,215	54,397	4,878	3,645,760	27,640,980	13 2
Discharge to POTW (M135)	237	5	0	0	13,673	42	11	13,969	2,788,488	0 5
Discharge via NPDES (M136)	0	0	0	894,787	2,273,100	0	0	3,167,888	6,352,044	49 9
Transfer (M141)	2,973	1,821	296	25,214	1,207,522	4,835	3,203	1,245,864	3,057,875	40 7
Other Disposal	937	2,995	8	766	423,529	135,074	1,117	564,426	2,010,408	28 1
Other Including M999 and blank	0	0	0	0	41,362	0	0	41,362	117,193	35 3
Total for Each Mixture of Arsenic, Lead and Mercury	1,038,130	191,287	19,463	6,614,975	88,447,788	2,233,788	845,267	99,390,698	583,774,412	17 0
Total % for Each Mixture of Arsenic, Lead and Mercury	1.04	0.19	0.02	6.66	88.99	2.25	0.85	100 00		

Source 1991 Biennial Report

Exhibit 2C: Quantities (in Tons) of Hazardous Waste Containing Arsenic, Lead, and Mercury as a Percentage of Hazardous Wastes Managed at Commercial Facilities

Current Management	Only As	As With Pb	As With Hg	As, Hg, Pb	Only Pb	Only Hg	Hg With Pb	Comm'l As,Pb,Hg	Total As,Pb,Hg	% Comm'l As,Pb,Hg	Total Comm'l	% Comm'l Total
HTMR (M011)	0	0	0	231,677	21,510	21	0	253,208	271,325	93 3	264,809	95 6
Retorting (M012)	0	0	0	0	0	100	0	100	918	10 9	148	67 9
Secondary Smelting (M013)	0	0	0	0	165,322	0	0	165,322	169,464	97 6	165,398	100 0
Other Metals Recovery (M014)	240	161	0	184	69,932	1	0	70,537	189,366	37 2	151,786	46 5
Unknown (M019)	1,637	0	0	0	34,446	0	0	36,083	41,742	86 4	61,348	58 8
Solvent Recovery (M021-M029)	77	20	0	3,880	16,993	27	151	21,149	29,188	72 5	5,938,759	0 4
Other Recovery (M031-M039)	603	2,049	0	29	7,722	18	88	10,509	413,301	2 5	963,768	1 1
Incineration - Liquids and Gases (M041, M044)	3,520	1,040	596	6,729	13,438	461	847	26,633	56,309	47 3	395,536	6 7
Incineration - Sludges and Solids (M042, M043)	2,265	2,912	628	12,369	28,314	874	2,887	50,249	98,107	51 2	248,218	20 2
Incineration Unknown (M049)	0	0	0	0	3,400	65	4	3,469	27,374	12 7	45,575	7 6
Total Incineration	5,785	3,952	1,227	19,099	45,152	1,399	3,737	80,351	181,790	44 2	689,329	11 7
Energy Recovery - Liquids (M051)	5,244	8,037	7,416	151,982	91,444	33	3,219	267,375	295,602	90 5	947,041	28 2
Energy Recovery - Sludges and Solids (M052, M053)	45,775	9,418	0	3,224	43,507	1	3,071	104,996	104,996	100 0	165,059	63 6
Energy Recovery - Unknown (M059)	0	0	0	0	0	0	0	0	0	0 0	20	0 0
Total Energy Recovery	51,020	17,455	7,416	155,206	134,951	34	6,290	372,371	400,598	93 0	1,112,120	33 5
Combustion - Liquids and gases	8,765	9,077	8,014	158,711	104,883	494	4,066	294,009	351,912	83 5	1,342,577	21 9
Combustion - Sludges and solids	48,040	12,329	628	15,593	71,821	874	5,958	155,244	203,102	76 4	413,276	37 6
Combustion - Type unknown	0	0	0	0	3,400	65	4	3,469	27,374	12 7	45,595	7 6
Total Combustion	56,805	21,407	8,642	174,304	180,103	1,433	10,028	452,722	582,388	77 7	1,801,449	25 1
Fuel Blending (M061)	27,234	12,132	1,198	30,698	153,991	794	10,097	236,144	236,552	99 8	3,497,192	6 8
Aqueous Treatment (M071-M079; M081-M089; M091-M099)	14,228	29,876	199	192,865	56,099,116	1,470	3,320	56,341,074	79,550,538	70 8	183,750,223	30 7
Sludge Treatment (M101-M109)	0	83	0	0	5,983			6,066	494,244	1 2	20,664	29 4
Stabilization (M111-M119)	7,706	14,163	1,211	115,095	426,566	3,602	52,777	621,119	913,547	68 0	849,145	73 1
Other Treatment (M121-M129)	561	1,706	533	450,588	199,997	553	650	654,587	7,818,854	8 4	8,447,878	7 7
Land Disposal (M131-M134)	67,947	75,340	7,567	240,292	972,890	50,383	4,849	1,419,269	3,645,760	38 9	8,166,897	17 4
Discharge to POTW (M135)	1	0	0	0	12,088			12,089	13,969	86 5	247,799	4 9
Discharge via NPDES (M136)	0	0	0	894,787	0	0	0	894,787	3,167,888	28 2	894,855	100 0
Transfer (M141)	1,984	1,776	294	6,182	87,862	4,493	1,022	103,613	1,245,864	8 3	787,619	13 2
Other Disposal	866	196	4	0	18,532	493	276	20,367	564,426	3 6	83,922	24 1
Other including M999 and blank	0	0	0	0	41,362	0	0	41,362	41,362	100 0	117,191	35 1
Total Commercial	179,889	158,929	19,647	2,340,580	58,514,415	63,390	83,257	61,360,108	99,390,698	61 7	216,210,848	28 4
Total Commercial %	0.29	0.26	0.03	3.81	95.36	0.10	0.14	100.00				

Source 1991 Biennial Report

Exhibit 2D: Quantities of Hazardous Waste Containing Arsenic Managed On-site

Current Management	Only As			With Pb			With Hg			With (Pb and Hg)			Total		
	# Streams	# Gen.	Tons	# Streams	# Gen.	Tons	# Streams	# Gen.	Tons	# Streams	# Gen.	Tons	# Streams	# Gen	Tons
HTMR (M011)	0	0	0	0	0	0	0	0	0	4	4	17,491	4	4	17,491
Retorting (M012)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Secondary Smelting (M013)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Metals Recovery (M014)	2	2	14	0	0	0	0	0	0	0	0	0	2	2	14
Unknown (M019)	0	0	0	0	0	0	0	0	0	1	1	0	1	1	0
Solvent Recovery (M021-M029)	2	2	24	2	1	4	0	0	0	0	0	0	4	3	28
Other Recovery (M031-M039)	12	1	13	0	0	0	0	0	0	1	1	10,043	13	2	10,056
Incineration - Liquids and Gases (M041, M044)	3	3	9,010	1	1	1,190	0	0	0	0	0	0	4	4	10,201
Incineration - Sludges and Solids (M042, M043)	0	0	0	2	2	23	0	0	0	7	3	13,413	9	4	13,436
Incineration - Unknown (M049)	1	1	0	0	0	0	1	1	0	1	1	634	3	2	634
Energy Recovery - Liquids (M051)	2	2	846	1	1	202	0	0	0	2	2	135	5	5	1,184
Energy Recovery - Sludges and Solids (M052, M053)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Energy Recovery - Unknown (M059)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fuel Blending (M061)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aqueous Treatment (M071-M079; M081-M089; M091-M099)	15	14	654,713	9	9	27,381	0	0	0	7	7	567,845	31	29	1,249,938
Sludge Treatment (M101-M109)	1	1	40	1	1	10	0	0	0	0	0	0	2	2	50
Stabilization (M111-M119)	0	0	0	0	0	0	0	0	0	3	3	33,215	3	3	33,215
Other Treatment (M121-M129)	14	14	173,144	4	4	681	0	0	0	12	6	2,358,645	30	24	2,532,471
Land Disposal (M131-M134)	2	1	19,040	0	0	0	0	0	0	3	3	1,250,970	5	4	1,270,010
Discharge to POTW (M135)	2	1	235	1	1	5	0	0	0	1	1	0	4	3	241
Discharge via NPDES (M136)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Transfer (M141)	18	15	36	7	7	27	1	1	0	21	13	11,427	47	30	11,490
Other Disposal	13	6	24	1	1	2,796	2	1	0	1	1	764	17	8	3,584
Other (including M999 and blank)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	87	N/A	857,141	29	N/A	32,322	4	N/A	0	64	N/A	4,264,583	184	N/A	5,154,046

Source 1991 Biennial Report On-site facility data obtained from GM forms for non-commercial facilities

Exhibit 2E: Quantities of Hazardous Waste Containing Lead Managed On-site

Current Management	Only Pb			With As			With Hg			With (As and Hg)			Total		
	# Streams	# Gen.	Tons	# Streams	# Gen.	Tons	# Streams	# Gen.	Tons	# Streams	# Gen.	Tons	# Streams	# Gen.	Tons
HTMR (M011)	13	3	513	0	0	0	0	0	0	4	4	17,491	17	6	18,005
Retorting (M012)	1	1	811	0	0	0	0	0	0	0	0	0	1	1	811
Secondary Smelting (M013)	3	3	501	0	0	0	0	0	0	0	0	0	3	3	501
Other Metals Recovery (M014)	27	21	114,821	0	0	0	0	0	0	0	0	0	27	21	114,821
Unknown (M019)	6	4	5,480	0	0	0	0	0	0	1	1	0	7	5	5,480
Solvent Recovery (M021-M029)	55	53	7,569	2	1	4	2	2	9	0	0	0	59	55	7,581
Other Recovery (M031-M039)	70	23	392,562	0	0	0	12	1	3	1	1	10,043	83	25	402,608
Incineration - Liquids and Gases (M041, M044)	5	5	10,182	1	1	1,190	0	0	0	0	0	0	6	6	11,372
Incineration - Sludges and Solids (M042, M043)	7	5	21,500	2	2	23	0	0	0	7	3	13,413	16	8	34,936
Incineration - Unknown (M049)	8	2	46	0	0	0	1	1	22	1	1	634	10	4	702
Energy Recovery - Liquids (M051)	12	11	26,936	1	1	202	2	1	106	2	2	135	17	14	27,379
Energy Recovery - Sludges and Solids (M052, M053)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Energy Recovery - Unknown (M059)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fuel Blending (M061)	2	2	208	0	0	0	0	0	0	0	0	0	2	2	208
Aqueous Treatment (M071-M079; M081-M089; M091-M099)	718	486	16,950,889	9	9	27,381	6	6	354	7	7	567,845	740	481	17,546,468
Sludge Treatment (M101-M109)	71	67	487,970	1	1	10	0	0	0	0	0	0	72	68	487,980
Stabilization (M111-M119)	30	26	254,448	0	0	0	4	2	773	3	3	33,215	37	28	288,436
Other Treatment (M121-M129)	169	126	3,900,897	4	4	681	6	4	704,772	12	6	2,358,645	191	134	6,964,995
Land Disposal (M131-M134)	9	8	947,457	0	0	0	2	2	29	3	3	1,250,970	14	12	2,198,456
Discharge to POTW (M135)	9	8	376	1	1	5	1	1	11	1	1	0	12	9	393
Discharge via NPDES (M136)	1	1	2,265,788	0	0	0	0	0	0	0	0	0	1	1	2,265,788
Transfer (M141)	160	98	1,076,674	7	7	27	14	7	2,147	21	13	11,427	202	109	1,090,275
Other Disposal	77	16	231,271	1	1	2,798	13	3	818	1	1	764	92	19	235,651
Other (including M999 and blank)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	1,453	N/A	28,696,696	29	N/A	32,322	63	N/A	709,043	64	N/A	4,264,583	1,609	N/A	31,702,846

Source: 1991 Biennial Report. On-site facility data obtained from GM forms for non-commercial facilities.

Exhibit 2F: Quantities of Hazardous Waste Containing Mercury Managed On-site

Current Management	Only Hg			With As			With Pb			With (As and Pb)			Total		
	# Streams	# Gen.	Tons	# Streams	# Gen.	Tons	# Streams	# Gen.	Tons	# Streams	# Gen.	Tons	# Streams	# Gen	Tons
HTMR (M011)	0	0	0	0	0	0	0	0	0	4	4	17,491	4	4	17,491
Retorting (M012)	1	1	7	0	0	0	0	0	0	0	0	0	1	1	7
Secondary Smelting (M013)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Metals Recovery (M014)	3	3	30	0	0	0	0	0	0	0	0	0	3	3	30
Unknown (M019)	1	1	0	0	0	0	0	0	0	1	1	0	2	2	0
Solvent Recovery (M021-M029)	1	1	19	0	0	0	2	2	9	0	0	0	3	3	28
Other Recovery (M031-M039)	0	0	0	0	0	0	12	1	3	1	1	10,043	13	2	10,046
Incineration - Liquids and Gases (M041, M044)	1	1	8,602	0	0	0	0	0	0	0	0	0	1	1	8,602
Incineration - Sludges and Solids (M042, M043)	2	1	10,723	0	0	0	0	0	0	7	3	13,413	9	4	24,136
Incineration - Unknown (M049)	4	2	23,203	1	1	0	1	1	22	1	1	634	7	4	23,859
Energy Recovery - Liquids (M051)	0	0	0	0	0	0	2	1	106	2	2	135	4	3	240
Energy Recovery - Sludges and Solids (M052, M053)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Energy Recovery - Unknown (M059)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fuel Blending (M061)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aqueous Treatment (M071-M079; M081-M089; M091-M099)	28	18	1,988,575	0	0	0	6	6	354	7	7	567,845	41	29	2,556,773
Sludge Treatment (M101-M109)	1	1	75	0	0	0	0	0	0	0	0	0	1	1	75
Stabilization (M111-M119)	2	1	3	0	0	0	4	2	773	3	3	33,215	9	5	33,992
Other Treatment (M121-M129)	9	9	217	0	0	0	6	4	704,772	12	6	2,358,645	27	17	3,063,633
Land Disposal (M131-M134)	3	2	4,014	0	0	0	2	2	29	3	3	1,250,970	8	6	1,255,013
Discharge to POTW (M135)	3	3	42	0	0	0	1	1	11	1	1	0	5	4	54
Discharge via NPDES (M136)	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0
Transfer (M141)	31	27	289	1	1	0	14	7	2,147	21	13	11,427	67	38	13,863
Other Disposal	51	6	134,552	2	1	0	13	3	818	1	1	764	67	8	136,134
Other (including M999 and blanks)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	142	N/A	2,170,351	4	N/A	0	63	N/A	709,043	64	N/A	4,264,583	273	N/A	7,143,977

Source 1991 Biennial Report On site facility data obtained from GM forms for non-commercial facilities.

Exhibit 2G: Quantities of Hazardous Waste Containing Arsenic Managed at Captive Facilities

Current Management	Only As			With Pb			With Hg			With (Pb and Hg)			Total		
	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons
HTMR (M011)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Retorting (M012)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Secondary Smelting (M013)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Metals Recovery (M014)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unknown (M019)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Solvent Recovery (M021-M029)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Recovery (M031-M039)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Incineration - Liquids and Gases (M041, M044)	3	2	2	1	1	1	0	0	0	1	1	1	5	4	3
Incineration - Sludges and Solids (M042, M043)	0	0	0	0	0	0	0	0	0	103	1	2,014	103	1	2,014
Incineration - Unknown (M049)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Energy Recovery - Liquids (M051)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Energy Recovery - Sludges and Solids (M052, M053)	2	1	0	0	0	0	0	0	0	0	0	0	2	1	0
Energy Recovery - Unknown (M059)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fuel Blending (M061)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aqueous Treatment (M071-M079; M081-M089; M091-M099)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sludge Treatment (M101-M109)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Stabilization (M111-M119)	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0
Other Treatment (M121-M129)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Land Disposal (M131-M134)	6	1	114	0	0	0	0	0	0	0	0	0	6	1	114
Discharge to POTW (M135)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Discharge via NPDES (M136)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Transfer (M141)	31	16	955	5	4	17	5	4	2	89	7	7,605	127	25	8,579
Other Disposal	28	3	46	7	1	1	5	1	4	2	1	2	42	3	53
Other (including M999 and blank)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	71	N/A	1,117	13	N/A	19	10	N/A	6	195	N/A	9,622	286	N/A	10,763

Source: 1991 Biennial Report. Captive facility data obtained from WR forms for non-commercial facilities.

Exhibit 2H: Quantities of Hazardous Waste Containing Lead Managed at Captive Facilities

Current Management	Only Pb			With As			With Hg			With (As and Hg)			Total		
	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac	Tons
HTMR (M011)	1	1	107	0	0	0	0	0	0	0	0	0	1	1	107
Retorting (M012)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Secondary Smelting (M013)	4	2	3,629	0	0	0	0	0	0	0	0	0	4	2	3,629
Other Metals Recovery (M014)	1	1	308	0	0	0	0	0	0	0	0	0	1	1	308
Unknown (M019)	2	1	0	0	0	0	0	0	0	0	0	0	2	1	0
Solvent Recovery (M021-M029)	1	1	371	0	0	0	0	0	0	0	0	0	1	1	371
Other Recovery (M031-M039)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Incineration - Liquids and Gases (M041, M044)	5	2	519	1	1	1	0	0	0	1	1	1	7	4	520
Incineration - Sludges and Solids (M042, M043)	1	1	3	0	0	0	0	0	0	103	1	2,014	104	2	2,017
Incineration - Unknown (M049)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Energy Recovery - Liquids (M051)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Energy Recovery - Sludges and Solids (M052, M053)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Energy Recovery - Unknown (M059)	3	1	7	0	0	0	0	0	0	0	0	0	3	1	7
Fuel Blending (M061)	5	5	1,429,100	0	0	0	1	1	52,804	0	0	0	6	6	1,481,904
Aqueous Treatment (M071-M079; M081-M089; M091-M099)	4	3	46	0	0	0	3	1	18	0	0	0	7	3	64
Sludge Treatment (M101-M109)	1	1	8	0	0	0	0	0	0	0	0	0	1	1	8
Stabilization (M111-M119)	8	7	310	0	0	0	0	0	0	0	0	0	8	7	310
Other Treatment (M121-M129)	9	1	158	0	0	0	0	0	0	0	0	0	9	1	158
Land Disposal (M131-M134)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Discharge to POTW (M135)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Discharge via NPDES (M136)	348	66	13,253	5	4	17	17	9	34	89	7	7,605	456	74	20,910
Transfer (M141)	362	3	590	7	1	1	12	2	23	2	1	2	383	3	616
Other Disposal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other (including M999 and blank)															
TOTAL	755	N/A	1,448,407	13	N/A	19	33	N/A	52,880	195	N/A	9,622	993	N/A	1,510,927

Source: 1991 Biennial Report. Captive facility data obtained from WR forms for non-commercial facilities.

Exhibit 21: Quantities of Hazardous Waste Containing Mercury Managed at Captive Facilities

Current Management	Only Hg			With As			With Pb			With (As and Pb)			Total		
	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac	Tons
HTMR (M011)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Retorting (M012)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Secondary Smelting (M013)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Metals Recovery (M014)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unknown (M019)	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0
Solvent Recovery (M021-M029)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Recovery (M031-M039)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Incineration - Liquids and Gases (M041, M044)	1	1	0	0	0	0	0	0	0	1	1	1	2	2	1
Incineration - Sludges and Solids (M042, M043)	5	1	52	0	0	0	0	0	0	103	1	2,014	108	2	2,066
Incineration - Unknown (M049)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Energy Recovery - Liquids (M051)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Energy Recovery - Sludges and Solids (M052, M053)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Energy Recovery - Unknown (M059)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fuel Blending (M061)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aqueous Treatment (M071-M079; M081-M089; M091-M099)	1	1	0	0	0	0	1	1	52,804	0	0	0	2	2	52,804
Sludge Treatment (M101-M109)	0	0	0	0	0	0	3	1	18	0	0	0	3	1	18
Stabilization (M111-M119)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Treatment (M121-M129)	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0
Land Disposal (M131-M134)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Discharge to POTW (M135)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Discharge via NPDES (M136)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Transfer (M141)	111	41	53	5	4	2	17	9	34	89	7	7,605	220	51	7,694
Other Disposal	116	5	30	5	1	4	12	2	23	2	1	2	135	5	59
Other (including M999 and blank)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	236	N/A	135	10	N/A	6	33	N/A	52,880	195	N/A	9,622	472	N/A	62,642

Source: 1991 Biennial Report. Captive facility data obtained from WR forms for non-commercial facilities.

Exhibit 2J: Quantities of Hazardous Waste Containing Arsenic Managed at Commercial Facilities

Current Management	Only As			With Pb			With Hg			With (Pb and Hg)			Total		
	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons
HTMR (M011)	0	0	0	0	0	0	0	0	0	36	2	231,677	36	2	231,677
Retorting (M012)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Secondary Smelting (M013)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Metals Recovery (M014)	35	4	240	8	4	181	0	0	0	1	1	184	44	7	604
Unknown (M019)	9	1	1,637	0	0	0	0	0	0	0	0	0	9	1	1,637
Solvent Recovery (M021-M029)	8	8	77	1	1	20	0	0	0	5	3	3,880	14	10	3,977
Other Recovery (M031-M039)	93	5	603	132	4	2,049	0	0	0	1	1	29	226	6	2,681
Incineration - Liquids and Gases (M041, M044)	440	10	3,520	183	10	1,040	39	8	598	151	8	6,729	758	13	11,888
Incineration - Sludges and Solids (M042, M043)	545	15	2,265	410	13	2,912	149	7	628	587	13	12,369	1,674	18	18,174
Incineration Unknown (M049)	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0
Energy Recovery - Liquids (M051)	8	6	5,244	19	6	8,037	1	1	7,416	20	5	151,982	47	12	172,679
Energy Recovery - Sludges and Solids (M052, M053)	74	4	45,775	214	4	9,418	0	0	0	9	4	3,224	292	5	58,417
Energy Recovery - Unknown (M059)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fuel Blending (M061)	121	26	27,234	83	24	12,132	7	6	1,198	193	15	30,698	398	39	71,262
Aqueous Treatment (M071-M079; M081-M089; M091-M099)	154	34	14,228	109	24	29,876	22	7	199	105	16	192,865	378	40	237,168
Sludge Treatment (M101-M109)	0	0	0	2	2	83	0	0	0	0	0	0	2	2	83
Stabilization (M111-M119)	311	20	7,706	156	17	14,163	33	10	1,211	170	18	115,095	632	24	138,174
Other Treatment (M121-M129)	115	22	561	69	15	1,706	56	9	533	734	15	450,588	963	28	453,388
Land Disposal (M131-M134)	1,338	21	67,947	1,468	14	75,340	150	11	7,567	306	22	240,292	3,226	27	391,146
Discharge to POTW (M135)	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1
Discharge via NPDES (M136)	0	0	0	0	0	0	0	0	0	1	1	894,787	1	1	894,787
Transfer (M141)	1,929	90	1,984	741	57	1,776	225	30	294	498	46	6,182	3,360	105	10,236
Other Disposal	312	6	866	17	3	196	5	2	4	1	1	0	335	6	1,066
Other (including M999 and blank)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	5,494	N/A	179,889	3,592	N/A	158,929	687	N/A	19,647	2,818	N/A	2,340,580	12,397	N/A	2,699,046

Source: 1991 Biennial Report. Commercial facility data obtained from WR and GM forms for commercial facilities.

Exhibit 2K: Quantities of Hazardous Waste Containing Lead Managed at Commercial Facilities

Current Management	Only Pb			With As			With Hg			With (As and Hg)			Total		
	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac	Tons
HTMR (M011)	55	8	21,510	0	0	0	0	0	0	36	2	231,677	88	9	253,187
Retorting (M012)	0	0	0	0	0	0	1	1	0	0	0	0	1	1	0
Secondary Smelting (M013)	79	12	165,322	0	0	0	0	0	0	0	0	0	79	12	165,322
Other Metals Recovery (M014)	546	23	69,932	8	4	181	0	0	0	1	1	184	554	23	70,297
Unknown (M019)	30	5	34,446	0	0	0	0	0	0	0	0	0	30	5	34,446
Solvent Recovery (M021-M029)	1,431	37	16,993	1	1	20	8	4	151	5	3	3,880	1,444	38	21,044
Other Recovery (M031-M039)	957	17	7,722	132	4	2,049	5	2	88	1	1	29	1,095	17	9,888
Incineration - Liquids and Gases (M041, M044)	1,431	21	13,438	163	10	1,040	91	11	847	151	8	6,729	1,798	21	22,055
Incineration - Sludges and Solids (M042, M043)	2,657	24	28,314	410	13	2,912	311	13	2,887	587	13	12,369	3,922	24	46,482
Incineration Unknown (M049)	20	4	3,400	0	0	0	2	1	4	0	0	0	22	4	3,404
Energy Recovery - Liquids (M051)	441	15	91,444	19	6	8,037	5	4	3,219	20	5	151,982	482	15	254,682
Energy Recovery - Sludges and Solids (M052, M053)	640	11	43,507	214	4	9,418	6	5	3,071	9	4	3,224	865	11	59,220
Energy Recovery - Unknown (M059)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fuel Blending (M061)	3,375	73	153,991	83	24	12,132	138	23	10,097	193	15	30,698	3,766	73	206,917
Aqueous Treatment (M071-M079; M081-M089; M091-M099)	3,023	63	56,099,116	109	24	29,876	116	20	3,320	105	16	192,865	3,323	66	56,325,177
Sludge Treatment (M101-M109)	87	8	5,983	2	2	83	0	0	0	0	0	0	89	9	6,066
Stabilization (M111-M119)	4,075	33	426,566	156	17	14,163	148	18	52,777	170	18	115,095	4,452	33	608,600
Other Treatment (M121-M129)	1,593	48	199,997	69	15	1,706	202	18	650	734	15	450,588	2,576	52	652,941
Land Disposal (M131-M134)	1,920	33	972,890	1,468	14	75,340	281	11	4,849	306	22	240,292	3,931	36	1,293,371
Discharge to POTW (M135)	3	2	12,088	0	0	0	0	0	0	0	0	0	3	2	12,088
Discharge via NPDES (M136)	0	0	0	0	0	0	0	0	0	1	1	894,787	1	1	894,787
Transfer (M141)	28,755	297	87,862	741	57	1,776	674	60	1,022	498	46	6,182	30,559	304	96,842
Other Disposal	1,304	14	18,532	17	3	196	48	4	276	1	1	0	1,370	14	19,004
Other (including M999 and blank)	10	1	41,362	0	0	0	0	0	0	0	0	0	10	1	41,362
TOTAL	52,432	N/A	58,514,415	3,592	N/A	158,929	2,036	N/A	83,257	2,818	N/A	2,340,580	60,460	N/A	61,097,182

Source 1991 Biennial Report Commercial facility data obtained from WR and GM forms for commercial facilities.

Exhibit 2L: Quantities of Hazardous Waste Containing Mercury Managed at Commercial Facilities

Current Management	Only Hg			With As			With Pb			With (As and Pb)			Total		
	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac.	Tons	# Streams	# Fac	Tons
HTMR (M011)	3	1	21	0	0	0	0	0	0	36	2	231,677	39	3	231,698
Retorting (M012)	88	2	100	0	0	0	1	1	0	0	0	0	88	2	100
Secondary Smelting (M013)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Metals Recovery (M014)	1	1	1	0	0	0	0	0	0	1	1	184	2	2	185
Unknown (M019)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Solvent Recovery (M021-M029)	11	3	27	0	0	0	8	4	151	5	3	3,880	24	6	4,058
Other Recovery (M031-M039)	11	2	18	0	0	0	5	2	88	1	1	29	17	3	134
Incineration - Liquids and Gases (M041, M044)	328	10	461	39	8	598	91	11	847	151	8	6,729	604	13	8,635
Incineration - Sludges and Solids (M042, M043)	588	16	874	149	7	628	311	13	2,887	587	13	12,369	1,626	17	16,758
Incineration Unknown (M049)	1	1	65	0	0	0	2	1	4	0	0	0	3	2	68
Energy Recovery - Liquids (M051)	4	2	33	1	1	7,416	5	4	3,219	20	5	151,982	30	7	162,650
Energy Recovery - Sludges and Solids (M052, M053)	2	1	1	0	0	0	6	5	3,071	9	4	3,224	16	6	6,296
Energy Recovery - Unknown (M059)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fuel Blending (M061)	153	25	794	7	6	1,198	138	23	10,097	193	15	30,698	489	35	42,787
Aqueous Treatment (M071-M079; M081-M089; M091-M099)	334	22	1,470	22	7	199	116	20	3,320	105	16	192,865	559	27	197,854
Sludge Treatment (M101-M109)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Stabilization (M111-M119)	350	21	3,602	33	10	1,211	148	18	52,777	170	18	115,095	689	25	172,684
Other Treatment (M121-M129)	518	20	553	56	9	533	202	18	650	734	15	450,588	1,491	27	452,323
Land Disposal (M131-M134)	1,255	17	50,383	150	11	7,567	281	11	4,849	306	22	240,292	1,975	25	303,091
Discharge to POTW (M135)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Discharge via NPDES (M136)	0	0	0	0	0	0	0	0	0	1	1	894,787	1	1	894,787
Transfer (M141)	4,043	101	4,493	225	30	294	674	60	1,022	498	46	6,182	5,377	121	11,992
Other Disposal	404	8	493	5	2	4	48	4	276	1	1	0	458	8	773
Other (including M999 and blank)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	8,094	N/A	63,390	687	N/A	19 647	2,036	N/A	83,257	2,818	N/A	2,340,580	13,488	N/A	2,506,875

Source 1991 Biennial Report. Commercial facility data obtained from WR and GM forms for commercial facilities.