following raw agricultural commodity grown in soil fumigated with methyl bromide.

Commodity	Parts per million
Ginger, roots (Pre- and Post-H)	100

3. In § 180.199, by adding new paragraph (c), to read as follows:

§ 180.199 Inorganic bromides resulting from soil treatment with combinations of chloropicrin and methyl bromide, or propargyl bromide; tolerances for residues.

* * * * *

(c) A tolerance with regional registration, as defined in § 180.1(n), is established for residues of inorganic bromides (calculated as Br) in or on the following raw agricultural commodity grown in soil fumigated with combinations of methyl bromide and chloropicrin. No tolerance is established for chloropicrin since it has been established that no residue of this substance remains in the raw agricultural commodity when formulations containing chloropicrin at 2 percent or less are used.

Commodity	Parts per million
Ginger, roots (Pre- and Post-H)	100

[FR Doc. 91-10998 Filed 4-30-91; 8:45 am]
BILLING CODE 6560-50-F

40 CFR PART 261

[FRL-3951-1]

Hazardous Waste Management Systems: Identification and Listing of Hazardous Waste

AGENCY: Environmental Protection Agency.

ACTION: Administrative stay.

SUMMARY: The Environmental Protection Agency is today announcing an administrative stay of a portion of the hazardous waste listing K069 so that the listing does not apply to slurries generated from air pollution control devices that are intended to capture acid gases and are not dedicated chiefly to control of particulate air emissions.

EFFECTIVE DATE: May 1, 1991.

ADDRESSES: The RCRA regulatory docket for this administrative stay is located at the U.S. Environmental Protection Agency, 401 M Street, SW., (room M2427), Washington, DC 20460, and is available for viewing from 9 a.m. to 4 p.m., Monday through Friday, excluding Federal holidays. Call (202) 475-9327 for appointments. The reference number for this docket is "F-91-K69S-FFFFF". The public may copy material from any regulatory docket at a cost of $0.15 per page.

FOR FURTHER INFORMATION CONTACT: For general information contact the RCRA Hotline, toll free at (800) 424-9346, or at (202) 382-3000. For technical information concerning this notice, contact Narendra Chaudhari, Office of Solid Waste (OS-333), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460, (202) 382-4787.

SUPPLEMENTARY INFORMATION: In the initial hazardous waste regulations implementing section 3001 of RCRA, the Agency listed as hazardous "emission control dust/sludge from secondary lead smelting" (EPA Hazardous Waste No. K069). This listing was intended to apply to the lead-rich particulate captured by secondary lead smelting air pollution control devices utilized for control of particulate matter. See Background Document for Listing of Hazardous Wastes, November 14, 1980, pp. 835-37; 840-42. The literal language of the listing regulation, however, encompasses not only this lead-rich residue, but sludges captured by other types of air emission control equipment, which sludges are unlike the waste EPA intended to list in terms of physical form, volume generated, and toxicity.

One secondary lead smelter, Exide/General Battery Corporation, located in Reading, Pennsylvania, operates air pollution control devices that capture particulate matter and a second control device utilized for acid gas control. This acid gas scrubber generates a slurry containing some lead and other toxic metals, although at levels that do not exhibit any characteristic of hazardous waste as measured by the Toxicity Characteristic Leaching Procedure (TCLP), and previously measured by Extraction Procedure (EP); see docket to today's rule for historical and recent analytical data. To the Agency's knowledge, Exide is the only secondary lead smelter that generates this type of slurry.

However, the language of the K069 listing regulation captures the slurry since it is a type of "sludge", i.e. a residue of a pollution control process (see § 260.10)). The slurry is not the waste the Agency meant to list. It is not generated by an air emission control device used chiefly to control lead emissions and other particulate, it is not amenable to recovery in the secondary lead process, it is not a dust, it is generated in lower volumes then the typical K069 waste, and it contains significantly lower concentrations of lead and other toxic metals than the typical K069 waste. Exide provided data showing that the levels of lead (910 ppm) and cadmium (12.7 ppm) in its sludge are far below the level given in the Agency's Background Document for listing K069 (53,000 to 120,000 ppm lead, and 340 to 900 ppm cadmium).

Leachable concentrations of lead and other toxic metals in the slurry are also significantly less than in the usual K069 waste. Exide provided extensive analytical data collected from 1989 to 1991 clearly demonstrating that leachable levels of toxic metals are low. Specifically, approximately 100 EP measurements of leachable metals taken in 1989 show that cadmium, lead, and chromium are usually far below the toxicity characteristic levels; the mean EP value (at the 95th percentile upper confidence limits) for these metals are less than one tenth (i.e., 10-fold less than) the characteristic levels. The levels of leachment metals for typical K069 wastes given in the Background Document exceeded the characteristic levels by factors of 5 to 230 for cadmium, 50 to 480 for lead, and 1 to 240 for chromium. Exide also provided more recent TCLP measurements of its waste obtained in 1990 and 1991 that show even longer levels of leachable cadmium and lead. Of nineteen TCLP samples, all were less than one tenth of the characteristic levels. See the docket to today's rule for further details of this analysis.

EPA intends in the near future to propose to amend the language of the K069 listing to clarify the scope of the listing to excluded sludges generated by air pollution devices that are not a plant's chief means of controlling lead emissions. In the interim, however, the Agency has determined to grant a limited administrative stay of the K069 listing pursuant to 5 U.S.C. 705,[1] in order that the listing not apply to the slurry waste generated by the Exide acid gas scrubber or to any other similar waste (if such a waste should exist). The Agency is taking this action not only because it appears that the listing was not intended to apply to this waste and that the waste does not exhibit any characteristic of hazardous waste and

[1] Exide has raised this issue in its petition for review challenging and land disposal restrictions regulations promulgated on June 1, 1990 (55 FR 22520).

would not be listed if the Agency were approaching the issue *de novo*, but also because Exide is presently incurring significant treatment and disposal costs for this slurry (particularly as a result of recently-promulgated treatment standards issued as part of the Land Disposal Restriction Third regulation, at (55 FR 22568) (June 1, 1990)) which potentially jeopardize the company's continued ability to operate. Given that the listing appears to also apply inappropriately to the waste, and other lead-bearing materials, and that Exide's recovery process specifically aids in meeting the Land Disposal Restriction treatment standards for lead acid batteries, EPA finds that justice requires issuance of a limited administrative stay. See 5 U.S.C. 705. For the same reasons, EPA finds that grant of a stay is necessary to prevent irreparable harm to Exide, will not impede EPA's administration of the subtitle C program (which will continue to apply to all K069 wastes that EPA intended to list), and is in the public interest.

Accordingly, the Agency is issuing this administrative stay of the K069 listing so that it does not apply to the slurry generated by acid gas air pollution control devices at Exide/General Battery Reading, Pennsylvania facility. The listing continues to apply to Exide's (and all other secondary lead smelters') dusts generated by particulate matter air pollution control devices. The administrative stay will remain in effect until 30 days after completing of rulemaking dealing with the scope of the K069 listing. If EPA takes further action effecting this stay, EPA will publish a notice of the action in the Federal Register.

List of Subjects in 40 CFR Part 261

Hazardous waste, Recycling and Reporting and Recordkeeping Requirements.

Dated: April 18, 1991.

F. Henry Habicht II,

Deputy Administrator.

For the reasons set at in the preamble, title 40, chapter I, part 261 of the Code of Federal Regulations is amended as follows:

PART 261—IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

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

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

2. Section 261.32 is amended by revising the K069 listing to read as follows:

§ 261.32 Hazardous wastes from specific sources

* * * * *

Industry and EPA hazardous waste no.	Hazardous waste	Hazard code
* * * * *		
Secondary lead		
K069	Emission control dust/sludge from secondary lead smelting. (NOTE: This listing is stayed administratively for sludge generated from secondary acid scrubber systems. The stay will remain in effect until further administrative action is taken. If EPA takes further action effecting this stay, EPA will publish a notice of the action in the Federal Register.)	(T)
* * * * *		

[FR Doc. 91-9902 Filed 4-30-91; 8:45 am]

BILLING CODE 6560-50-M

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

43 CFR Public Land Order 6855

[NM-940-4214-10; NMNM 055653]

Partial Revocation of Public Land Order No. 2051; New Mexico

AGENCY: Bureau of Land Management, Interior.

ACTION: Public land order.

SUMMARY: This order revokes a public land order insofar as it affects 566.30 acres of public land withdrawn for research programs in connection with Federal programs. The land is no longer needed for this purpose, and the revocation is needed to permit disposal of the land through land exchange as directed by Public Law 100-559.

EFFECTIVE DATE: May 1, 1991.

FOR FURTHER INFORMATION CONTACT: Clarence F. Hougland, BLM, New Mexico State Office, P.O. Box 1449, Santa Fe, New Mexico 87504-1449, 505-988-6071.

By virtue of the authority vested in the Secretary of the Interior by Section 204(a) of the Federal Land Policy and Management Act of 1976, 90 Stat. 2751; 43 U.S.C. 1714, and as directed by Public Law 100-559, it is ordered as follows:

1. Public Land Order No. 2051, which withdrew public land and reserved it under the jurisdiction of the Secretary of the Interior for use by the New Mexico College of Agriculture and Mechanic Arts, now New Mexico State University, for research programs in connection with Federal programs, is hereby revoked insofar as it affects the following described land:

New Mexico Principal Meridian

T. 23 S., R. 2 E.,
sec. 22, lots 5 and 6;
sec. 23, lots 1 and 2, and 5 to 16, inclusive.

The area contains 566.30 acres in Dona Ana County.

2. The land described above is hereby opened to the land exchange as authorized and directed by Section 502 of Public Law 100-559.

Dated: April 26, 1991.

Dave O'Neal

Assistant Secretary of the Interior.

[FR Doc. 91-10339 Filed 4-30-91; 8:45 am]

BILLING CODE 4310-FB-M

FEDERAL MARITIME COMMISSION

46 CFR Parts 580, 581 and 583

[Docket No. 91-1]

Bonding of Non-Vessel-Operating Common Carriers

AGENCY: Federal Maritime Commission.

ACTION: Notice of extension of time.

SUMMARY: The Federal Maritime Commission is extending until May 24, 1991, the time by which non-vessel-operating common carriers ("NVOCCs") may file new tariffs to become effective on one day's notice. The granting of this authority does not constitute an exemption from the penalty provisions of the Shipping Act of 1984 for those NVOCCs that may be operating without a tariff on file as required by section 8 of the 1984 Act.

EFFECTIVE DATE: April 24, 1991.

FOR FURTHER INFORMATION CONTACT: Bryant L. VanBrakle, Deputy Director, Bureau of Domestic Regulation, Federal Maritime Commission, 1100 L Street, NW., Washington, DC 20573, (202) 523-5796.

SUPPLEMENTARY INFORMATION: On January 15, 1991, the Commission published in the Federal Register, 56 FR

LISTING BACKGROUND DOCUMENT

SECONDARY LEAD SMELTING

Emission control dust/sludge from secondary lead smelting (T)

Waste leaching solution from acid leaching of emission control dust from secondary lead smelting (T)

I. Summary of Basis for Listing

The emission control dust/sludge from reverberatory furnace smelting of secondary lead products is generated when lead, cadmium, and chromium contaminants found in the source materials are entrained in the furnace fumes during the smelting process and subsequently collected by air pollution control equipment. Dry collection methods generate a dust as a solid residue; wet collection methods generate a sludge as a solid residue. The sludge is usually land disposed as a waste. The dust is usually recycled for further lead smelting; before recycling, however, the dust may be leached with acid for zinc recovery, and the resulting waste acid leaching solution containing cadmium, chromium and lead is land disposed. The Administrator has determined that these dusts/sludges and the waste acid leaching solutions from acid leaching of these dusts/sludges are solid wastes which may pose a substantial present or potential hazard to human health or the environment when improperly transported, treated, stored, disposed of or otherwise managed, and therefore should be subject to appropriate management requirements under Subtitle C of RCRA. This conclusion is based on the following considerations:

(1) The emission control dusts/sludges contain significant

concentrations of the toxic heavy metals lead, cadmium and chromium.

(5) Waste leaching solutions from acid leaching of the emission control dusts/sludges likewise contain significant concentrations of lead, cadmium, and chromium, since the acid leaching medium solubilizes these heavy metals.

(6) The hazardous constituents of these waste streams may migrate from the waste in harmful concentrations, free distilled water extraction procedures performed on samples of the emission control dust and sludge leached significant concentrations of cadmium and lead from the sludge and significant concentrations of lead, cadmium, and chromium from the dust.

(7) The emission control sludge and the waste leaching solutions are typically disposed of in unlined lagoons, thus posing a realistic possibility of migration of lead, cadmium and chromium to underground drinking water sources. Further, these elemental metals persist in the environment, thereby posing a real danger of long-term contamination.

(8) Very large quantities of these emission control dust/sludges are generated annually (7,151,600 metric tons of sludge and 127,158,700 metric tons of dust in 1977) and are available for disposal as solid waste. There is thus greater likelihood of large scale contamination of the environment if these wastes are not managed properly.

I. Industry Profile and Manufacturing Process

Eighty-two plants located in 27 states manufacture secondary lead products. The major production centers are located in the Great Lake States, in Texas and in Louisiana (1,5). Plant locations by state are shown in Table 1.

Plant capacities range from 25,000 to 40,000 metric tons of lead per year (1, 5). The total quantity of lead produced by the secondary lead industry was 769,000 metric tons in 1978 and the estimate for 1979 is 760,000 metric tons (4).

Table 1 (1)

Distribution of Secondary Lead Smelters by State

State	No. of Plants
Alabama	2
California	8
Colorado	2
Delaware	1
Florida	3
Georgia	3
Illinois	7
Indiana	4
Kentucky	1
Louisiana	2
Maryland	1
Massachusettes	2
Michigan	4
Minnesota	1
Mississippi	1
Missouri	2
Nebraska	2
New Jersey	3
New York	4
North Carolina	2
Ohio	6
Pennsylvania	7
Texas	9
Tennessee	2
Virginia	1
Washington	1
Wisconsin	1
	82

1
1
3
4
6
7
1
23

28% of plants in PA or states bordering PA.

7 of 27 smelters (PA or bordering PA) (26%)

Four products are manufactured in the secondary lead industry: refined lead, lead oxide, antimonal lead and lead alloy. Individual plants may produce any or all of the products. As shown in Figure 1, the source materials will vary for each. Discarded batteries comprise the major source material. Other source materials are lead residues, lead slags and scrap iron.

II. Generation and Management of Listed Waste Streams

1. Emission Control Dust/Sludge

Emission control dust/sludge is generated from the manufacture of refined lead, lead oxide, and lead alloy in reverberatory furnaces. In the production process, "soft lead" (low antimony lead) is smelted in a reverberatory furnace from lead residues, scrap lead, and in the case of lead alloy, recycled secondary lead emission control dust is a source material. The soft lead is then further processed to either refined lead or lead oxide. In the scrubbing of reverberatory furnace emissions, cadmium, chromium and lead entrained in the fumes are collected by either wet scrubbing or by baghouse, resulting in a sludge or dust that may be discarded. The Agency attributes the presence of lead, cadmium and chromium in the waste stream to their presence in the source materials. (See p. 10 below confirming the presence of these heavy metals in the waste stream in significant concentrations.)

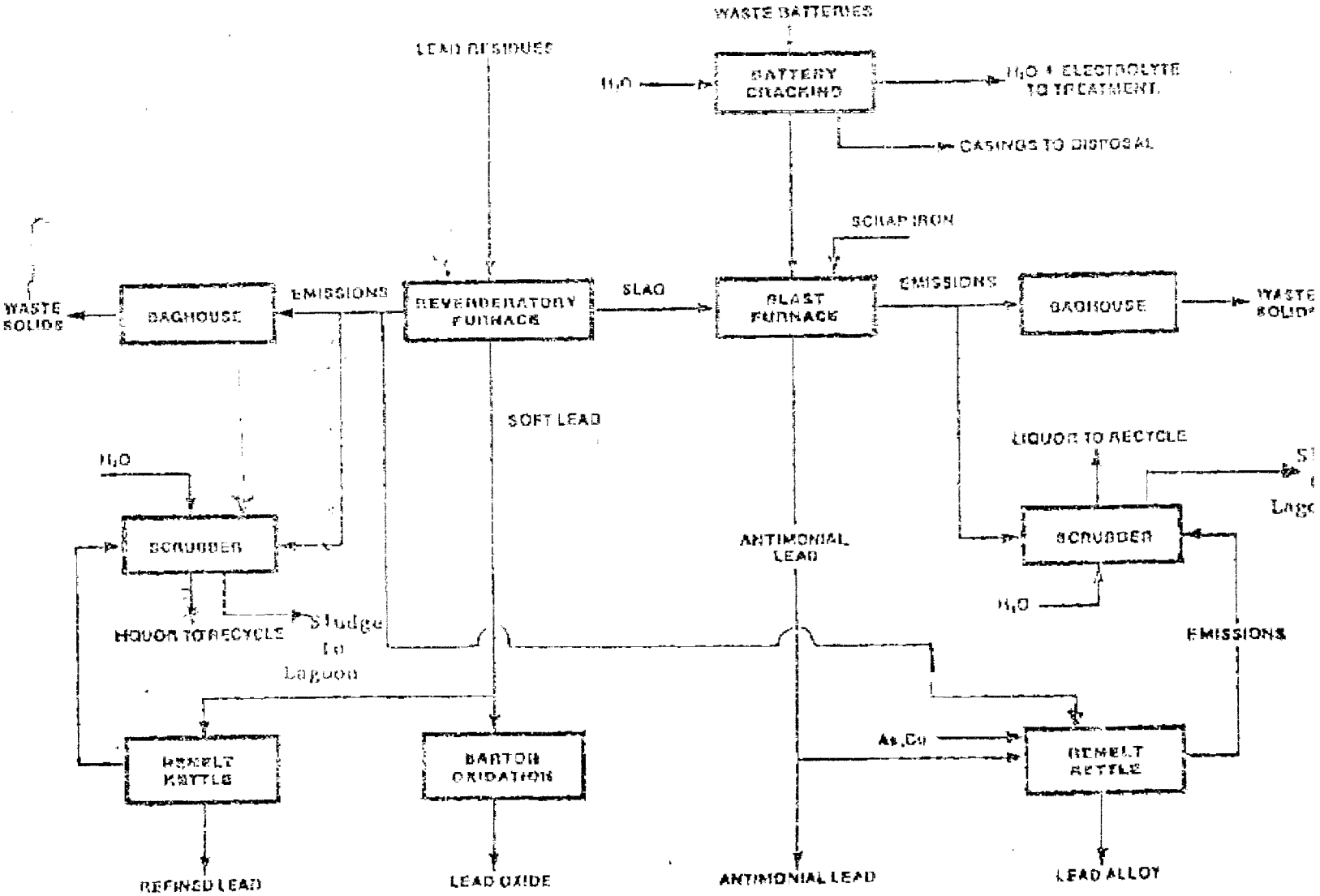

FIGURE 1. SECONDARY LEAD/ANTIMONY SMELTING PROCESS

Three plants in the industry use wet scrubbing which generates a sludge. The sludge is typically disposed in unlined lagoons (1,5).

Dry collection methods (i.e., baghouses) are used by all other plants, generating a dust as a solid residue. This dust is available for disposal or for recycling.

2. Waste Leaching Solution

Emission control dusts are often recycled for use as input material for lead alloy ("white metal") production. The recycling process, however, generates a separate waste stream which is listed along with emission control dust/sludge. Before the dust is recycled to the remelt kettle for lead alloy production, it is leached with dilute sulfuric acid to remove zinc. The waste leaching solution contains chromium, cadmium, and lead leached from the emission control dust.

With regard to the management of the waste leaching solution, EPA is presently aware that a plant in New Jersey receives secondary lead emission dusts for recycling. The dusts are leached, and the waste acid solution is disposed of on-site in unlined lagoons (3). EPA presently lacks information on other waste leaching solution generating locations and management practices.

~~The Agency wishes to make clear that it is not regulating those wastes which are recycled directly to the process as a hazardous waste. However, if the dusts are stored prior to~~

recycling, they are defined as solid wastes and are subject to subtitle C jurisdiction.*

3. Secondary Lead Smelting Industry Waste Generation Levels and Trends

Generation of emission control dust/sludges from reverberatory furnaces is already very substantial and is expected to increase in the future. Table 2 shows the historic sludge/dust generation from wet and dry scrubbing of reverberatory furnaces (5). Historic quantities are given for 1967 and 1977 as well as minimum and maximum generation projections predictions for 1980, 1984, and 1987. The total dust/sludge generation for 1977 (dry weight basis) was 127,158,700 metric tons. While not all of these materials are disposed (i.e. no dust recycling), it is nevertheless clear that substantial quantities of wastes are generated annually.**

These quantities can be expected to increase--particularly dust generation. First, New Source Performance Standards

*At this time, requirements of Parts 262 through 265 and 122 will apply to the accumulation, storage, and transportation of hazardous wastes that are used, reused, recycled or reclaimed. The Agency believes this regulatory coverage is appropriate to the subject waste. These dusts/sludges are defined as hazardous only if they are being accumulated and stored in piles prior to recycling. These dusts may not pose a substantial hazard during their recycling and, even though listed as a hazardous waste, this aspect of their management is not now being regulated.

**The Agency presently lacks data to estimate the percentage of secondary lead smelting emission control dust which is recycled, although a major percentage of dusts generated may be recycled. In light of the large quantities of dust generated, the Agency believes large amounts of these dusts are managed as wastes, and not recycled.

State	SCC Code	Process	Total Sludge/Dust Generation (10^3 metric tons/year)							
			Historic		Minimum Scenario			Maximum Scenario		
			1967	1977	1980	1984	1987	1980	1984	1987
		Wet Controls								
Illinois	3-04-004-02	Reverberatory furnace	4505.5	6490.8	6924.3	7718.4	8314.0	7755.2	8644.6	9311
Kansas	3-04-004-02	Reverberatory furnace	27.5	39.6	42.2	47.0	50.6	47.3	52.6	56
Pennsylvania	3-04-004-02	Reverberatory furnace	431.2	621.2	662.7	738.7	795.7	742.2	827.1	891
		Total sludge from wet controls	4964.2	7151.6	7629.2	8504.1	9160.3	8544.7	9524.5	10259
		Dry Controls								
Alabama	3-04-004-02	Reverberatory furnace	660.0	950.8	1014.3	1130.6	1217.8	1136.0	1266.3	1363
Arizona	3-04-004-02	Reverberatory furnace	8.3	11.9	12.7	14.2	15.3	14.2	15.9	17
California	3-04-004-02	Reverberatory furnace	560.5	519.3	554.0	617.5	665.1	620.5	691.6	744
Indiana	3-04-004-02	Reverberatory furnace	1849.6	2664.6	2842.6	3168.6	3413.1	3183.7	3548.8	3882
Louisiana	3-04-004-02	Reverberatory furnace	2481.2	3574.5	3813.2	4250.5	4578.5	4270.8	4760.5	5127
Minnesota	3-04-004-02	Reverberatory furnace	1327.3	1912.1	2039.8	2273.7	2449.2	2284.6	2546.5	2743
Mississippi	3-04-004-03	Reverberatory furnace	541.6	780.2	832.3	927.8	999.4	932.2	1039.1	1119
Missouri	3-04-004-03	Reverberatory furnace	2173.5	3131.2	3340.3	3723.4	4010.7	3741.1	4170.2	4492
Nebraska	3-04-004-02	Reverberatory furnace	7380.8	10633.1	11343.3	12644.2	13619.9	12704.5	14161.5	15254
N. Jersey	3-04-004-02	Reverberatory furnace	1856.2	2674.1	2852.7	3179.9	3425.3	3195.0	3561.5	3836
Ohio	3-04-004-02	Reverberatory furnace	550.0	792.3	845.2	942.1	1014.8	946.6	1055.2	1136
Tennessee	3-04-004-02	Reverberatory furnace	5403.0	778.4	830.4	925.6	997.0	930.0	1036.7	1116
Texas	3-04-004-02	Reverberatory furnace	62043.2	89382.4	95352.4	106288.1	114489.9	106794.7	119042.7	128228
Virginia	3-04-004-02	Reverberatory furnace	1187.9	1711.4	1825.7	2035.1	2192.1	2044.8	2279.3	2455
Washington	3-04-004-02	Reverberatory furnace	340.7	490.8	523.6	583.7	628.7	586.4	653.7	704
		Total dust from dry controls	88163.8	120007.1	128022.5	142705.	53716.8	143385.1	159829.5	172162
		Total sludge/dust from wet/dry controls	93128.	127158.7	135651.7	151209.1	145319.8	151929.8	169354.	274758

will limit particulate emissions from new reverberatory furnaces, resulting in increased collection of particulate wastes. Since baghouses are the most cost-effective means of meeting NSPS, it is expected that dry collection of emissions will continue to be used in the industry and lead to increased generation of emission control dusts (5).

Production of secondary lead is also increasing, again with the likely result of increasing emission control dust/sludge generation. Secondary lead production in fact increased by 20% between 1969 and 1979 (5). Projected dust/sludge generation levels (estimated on a minimum/maximum basis) are 145,319,800 - 274,475,700 metric tons (dry weight) by 1987 (Table 2).*

III. Hazardous Properties of the Wastes

1. Concentrations of Lead, Cadmium and Chromium in the Waste Streams.

Agency data indicates that significant levels of the toxic metals lead, cadmium and chromium are found in the emission control dust/sludge. As indicated in Table 3, lead may comprise as much as 5 - 10% of the entire waste stream. Chromium and lead concentrations are also high (although nowhere near so elevated):

*The Agency does not presently have data showing quantities of waste leaching solution generated. Increased rate of emission control dust recycling may, however, lead to increased generation of waste leaching solution.

Table 3

	Waste Analysis (ppm)		
	Cd	Pb	Cr
Emission Control Sludge From Soft Lead Smelting	340	53,000	30
Emission Control Dust From Lead Alloy Smelting	900	120,000	150

The Agency does not have heavy metal concentration data for the waste leaching solution. Concentrations of these heavy metals in the waste leaching solution, however, can be expected to be significant since the acid leaching medium will solubilize heavy metals fairly aggressively -- indeed, it is intended to perform this function. Some concrete idea of concentrations in the waste leaching solution can be gained from comparision of a distilled water extract of emission control dust presented in Table 4 below. Since lead, cadmium, and chromium are more soluble in acid than in distilled water (7,8), the concentrations of these constituents in the dilute sulfuric acid leaching solution can be expected to be at least as great as, and more likely higher than concentrations in the distilled water extract.

2. Propensity of Lead, Cadmium, and Chromium to Migrate From the Wastes in Dangerous Concentrations and Possible Pathways of Exposure of Improperly Managed Wastes.

The presence of such high concentrations of toxic metals in a waste stream may pose a serious threat to human health and the environment should these toxic metals be released. Furthermore, distilled water extraction test data indicate that these toxic constituents may leach from the waste in harmful concentrations unless the wastes are properly managed. Thus, a distilled water extract from samples of the secondary lead emission control dust and emission control sludge presented in Table 3 indicates that lead, cadmium, and (in the case of the emission dust) chromium may solubilize from the waste in concentrations several orders of magnitude greater than Interim Primary Drinking Water Standards. See Table 4 (1).

Table 4

	Distilled Water Extract Analysis (ppm)		
	Cd	Pb	Cr
Emission Control Sludge From Soft Lead Smelting	5	7.5	.05
Emission Control Dust From Lead Alloy Smelting	230	24.0	12.0
Interim Primary Drinking Water Standard	.01	.05	.05

While the Agency has not performed any analyses of the waste acid leaching solution, as noted above, the Agency believes lead, chromium and cadmium concentrations in waste acid leaching solution will probably be higher than in the distilled water extract of the emission control dust. Furthermore, since the waste leaching solution may be disposed of in liquid form, i.e., with harmful constituents already solubilized and available for migration into the environment, there is a corresponding danger of exposure to harmful concentrations of these metals if the waste is improperly managed.

Thus, these wastes may leach harmful concentrations of lead, cadmium, and chromium even under relatively mild environmental conditions. If these wastes are exposed to more acidic disposal environments, for example disposal environments subject to acid rainfall, these metals would most likely be solubilized to a greater degree than in the distilled water since lead, cadmium and chromium (and their oxides) are more soluble in acid than in distilled water (6,7,8). (See Table 1 indicating that a number of secondary lead plants are located in states known to experience acid rainfall including New Jersey, Ohio, Illinois, and Indiana.)

A further indication of the migratory potential of the waste constituents is the physical form of the waste itself. These waste dust/sludges are of a fine particulate composition, thereby exposing a large surface area to any percolating medium,

and increasing the probability for leaching of hazardous constituents from the waste to groundwater. Waste acid leaching solution, as noted above, is disposed of in liquid form with harmful constituents directly available for migration.

The Agency thus believes that emission control sludge/dust, and waste acid leaching solution may pose a threat of serious contamination to groundwater unless proper waste management is assured. These wastes do not appear to be properly managed at the present time. Thus, present industry practices of disposing of these wastes in unlined lagoons (see pp. 5 and 7 above) may well not be environmentally sound. For example, location of disposal sites in areas with permeable soils could permit contaminant-bearing leachate from the waste to migrate to the groundwater in harmful concentrations. This is a particular concern for lagoon-disposed wastes because a large quantity of liquid is available to percolate through the solids and soil beneath the fill, increasing heavy metal solubilization and migration.

The Agency is also concerned that the lagooned wastes could contaminate surface waters if not managed to prevent flooding or dike washout. While the Agency is not aware whether disposal lagoons presently have diking or other control mechanisms to prevent washout, it is certainly possible, given the number of sites, that in some cases, present flood-control measures are inadequate. Nor can proper flood management (or leachate control, for that matter) be assured without regulation.

Another pathway of concern is through airborne exposure to lead, chromium, or cadmium particulates escaping from emission control dust. These particulates could escape if waste dusts are piled in the open, or placed in uncontrolled landfills. Although the Agency is not aware whether waste dusts are managed in this manner, this type of improper management situation appears plausible in light of the large quantities of emission control dust generated annually.

Should lead, cadmium, or chromium escape from the disposal site, they will persist in the environment and therefore may contaminate drinking water sources for extremely long periods of time. ~~Cadmium is bioaccumulated at all trophic levels~~ (9, 10). ~~Lead can be bioaccumulated and passed along the food chain but not biomagnified.~~ (Although bioaccumulation of chromium occurs, the process does not play a major role in determining the fate of chromium.)

~~c. The Large Quantities of Waste Dust/Sludge Generated Are A Further Factor Supporting a "T" Listing of These Wastes~~

The Agency has determined to list secondary lead emission control sludge/dust as a "T" hazardous waste, on the basis of lead, chromium, and cadmium constituents, although these constituents are also measurable by the EP toxicity characteristic. ~~Moreover, concentrations of these constituents in an EP extract from waste streams from individual sites might be less than 100 times interim primary drinking water~~

standards (although the Agency's own extraction data suggests that extract concentrations may exceed the 100 x benchmark for some generators). Nevertheless, the Agency believes that there are factors in addition to metal concentrations in leachate which justify the "T" listing. Some of these factors already have been identified, namely the high concentrations of cadmium and chromium, and especially lead in actual waste streams, the mobilizability of these substances, and indications of lack of proper management of the wastes in actual practice.

The quantity of these wastes generated is an additional supporting factor.

As indicated above, secondary lead emission control sludge/dust is generated in very substantial quantities, and contains very high lead concentrations, as well as elevated concentrations of cadmium and chromium. (See p. 10 above.) Large amounts of each of these metals are thus available for potential environmental release. The large quantities of these contaminants pose the danger of polluting large areas of ground or surface waters. Contamination could also occur for long periods of time, since large amounts of pollutants are available for environmental loading. All of these considerations increase the possibility of exposure to the harmful constituents in the wastes, and in the Agency's view, support a "T" listing.

f9. Hazards Associated With Lead, Chromium and Cadmium

Lead is poisonous in all forms, and is one of the most hazardous of the toxic metals because it accumulates in many

organisms. Its deleterious effects are numerous and severe. Lead may enter the human system through inhalation, ingestion or skin contact.

Chromium is toxic and poses a hazard if contaminated drinking water is ingested by humans. It is also toxic to lower forms of aquatic life. Cadmium is toxic to practically all systems and functions of human and animal organism (9). Acute poisoning may result from the inhalation of cadmium dusts and fumes (usually cadmium oxide) and from ingestion of cadmium salts (10). Additional information on the adverse health effects of cadmium, chromium, and lead can be found in Appendix A.

Lead, cadmium, and chromium historically have been regarded as toxic. Thus, EPA has established maximum concentration limits for lead, cadmium and chromium in effluent limitations guidelines adopted pursuant to Section 304 of the Clean Water Act, and under National Interim Primary Drinking Water Standards adopted pursuant to the Safe Drinking Water Act. Lead also is regulated under the New Source Performance Standards of the Clean Air Act.

The Occupational Safety and Health Administration (OSHA) has set a work place standard for exposure to lead.

In addition, several states that are currently operating hazardous waste management programs specifically regulate cadmium, chromium, and lead containing compounds as hazardous

wastes or components thereof. These states include Maryland, Minnesota, New Mexico, Oklahoma and California (final regulations), and Maine, Massachusetts, Vermont, and Louisiana (proposed regulation).

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