ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 421

[OW-FRL 2289-1]

Nonferrous Metals Manufacturing Point Source Category; Effluent Limitations Guidelines, Pretreatment Standards, and New Source Performance Standards

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: This regulation establishes effluent limitations guidelines and standards limiting the discharge of pollutants into navigable waters and into publicly owned treatment works (POTW) by existing and new sources that conduct particular nonferrous metals manufacturing operations. The Clean Water Act and a consent decree require EPA to issue this regulation.

This regulation establishes effluent limitations guidelines based on "best practicable technology" (BPT) and "best available technology" (BAT), new source performance standards (NSPS) based on "best demonstrated technology", and pretreatment standards for existing and new indirect dischargers (PSES and PSNS, respectively).

DATES: In accordance with 40 CFR 100.01 (45 FR 26048), this regulation shall be considered issued for purposes of judicial review at 1:00 p.m. Eastern time on March 22, 1984. This regulation shall become effective April 23, 1984.

The compliance date for the BAT regulations is as soon as possible, but in any event, no later than July 1, 1984. The compliance date for new source performance standards (NSPS) and pretreatment standards for new sources (PSNS) is the date the new source begins operations. The compliance date for pretreatment standards for existing sources (PSES) is March 9, 1987.

Under section 509(b)(1) of the Clean Water Act, judicial review of this regulation can be made only by filing a petition for review in the United States Court of Appeals within 90 days after the regulation is considered issued for purposes of judicial review. Under section 509(b)(2) of the Clean Water Act, the requirements in this regulation may not be challenged later in civil or criminal proceedings brought by EPA to enforce these requirements.

ADDRESSES: Address questions on the final rule to Mr. James R. Berlow, Effluent Guidelines Division (WH-552), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, D.C. 20460, Attention Nonferrous Metals Manufacturing Rules (WH-552). The basis for this regulation is detailed in four major documents. See Supplementary Information (under "XIV. Availability of Technical Information") for a description of each document. Copies of the technical and economic documents may be obtained from the National Technical Information Service, Springfield, Virginia 22161 (703/487-4600). Technical information may be obtained by writing Mr. James R. Berlow, Effluent Guidelines Division (WH-552), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, D.C. 20460 or by calling (202) 382-7126. Additional economic information may be obtained by writing Ms. Debra Maness, Economic Analysis Staff (WH-586), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, D.C. 20460 or by calling (202) 382-5397.

The Record for the final rule will be available for public review not later than May 14, 1984, in EPA's Public Information Reference Unit, Room 2904 (Rear) (EPA Library), 401 M Street, SW., Washington, D.C. The EPA public information regulation (40 CFR Part 2) provides that a reasonable fee may be charged for copying.

FOR FURTHER INFORMATION CONTACT: Ernst P. Hall (202) 382-7126.

SUPPLEMENTARY INFORMATION:

Organization of This Notice

I. Legal Authority

This regulation is being promulgated under the authority of sections 301, 304, 306, 307, 308, and 501 of the Clean Water Act (the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1251 *et seq.*, as amended by the Clean Water Act of 1977, Pub. L. 95-217), also called "the Act". It is also being promulgated in response to the Settlement Agreement in *Natural Resources Defense Council, Inc.* v. *Train*, 8 ERC 2120 (D.D.C. 1976), *modified*, 12 ERC 1833 (D.D.C. 1979), modified by Orders dated October 26, 1982, August 2, 1983, and January 6, 1984.

II. Scope of This Rulemaking

This final regulation, which was proposed on February 17, 1983 (48 FR 7032), establishes effluent limitations guidelines and standards for existing and new nonferrous metals manufacturing facilities. The nonferrous metals manufacturing category is comprised of plants that process ore concentrates and scrap metals to recover and increase the metal purity contained in these materials. Depending on the metal and the desired purity, hydrometallurgical, pyrometallurgical, or liquid-liquid ion exchange operations may be used to purify and upgrade metal values. Many of the production operations characterizing the nonferrous metals manufacturing category follow mining and milling operations. The ore mining and dressing category includes the extraction of the ore from the ground and the subsequent beneficiation of the ore including gravity concentration, magnetic separation, electrostatic separation, froth flotation, and leaching to produce ore concentrates. The ore concentrates and scrap materials form the raw materials in the nonferrous metals manufacturing subcategories.

Following smelting, refining, or extraction of metal values in the nonferrous metals manufacturing category, the metal or metal salt products are used as raw materials for such operations as forming, alloying, and the manufacture of inorganic chemicals. Operations such as these, where the metal purity is not increased, are covered by other point source categories. In many of the nonferrous metals manufacturing subcategories, the production operations cease with the casting of the smelted or refined metal. Recasting of the metal without refining for use in subsequent forming or alloying operations is covered by the point source category in which the metal is being used as a raw material.

Because of the diversity of the nonferrous metals category, EPA has divided it into separate segments (nonferrous metals manufacturing phase I, nonferrous metals manufacturing phase II, and nonferrous metals forming) in order to devote immediate resources to regulation of the phase I plants, which generate the largest quantities of toxic pollutants.

The regulatory strategy for phase I nonferrous metals manufacturing addresses 12 subcategories: primary aluminum, copper smelting, copper electrolytic refining, lead, zinc, columbium-tantalum, and tungsten; secondary aluminum, silver, copper, lead; and metallurgical acid plants. Nonferrous metals manufacturing phase II, containing an additional 19 primary metals and metal groups, 10 secondary metals and metal groups and bauxite refining, will be considered separately and will be proposed shortly. A group of metals—including six primary metals and five secondary metals—were excluded from regulation in a Paragraph 8 affidavit executed pursuant to the Settlement Agreement on May 10, 1979 (see Section VIII of this preamble). These metals were excluded from regulation either because the manufacturing processes do not use water or because they are regulated by toxic pollutant limitations and standards in other categories (ferroalloys and inorganic chemicals). Other portions of the nonferrous metals industry are addressed by separate effluent limitations and standards. Interim final and final rules for aluminum forming were promulgated on October 24, 1983 (48 FR 49126). Final rules for copper forming were promulgated on August 15, 1983 (48 FR 36942). Proposed regulations for metal molding and casting were issued on November 15, 1982 (47 FR 51512). The forming of metals other than aluminum and copper is addressed in a proposed regulation for nonferrous metals forming recently published in the Federal Register.

III. Summary of Legal Background

The Federal Water Pollution Control Act Amendments of 1972 established a comprehensive program to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters" [Section 101(a)]. To implement the Act, EPA was to issue effluent limitations guidelines, pretreatment standards, and new source performance standards for industrial dischargers.

The Act included a timetable for issuing these standards. However, EPA was unable to meet many of the deadlines and, as a result, in 1976, it was sued by several environmental groups. In settling this lawsuit, EPA and the plaintiffs executed a "Settlement Agreement" which was approved by the court. This Agreement required EPA to develop a program and adhere to a schedule in promulgating effluent limitations guidelines, new source performance standards, and pretreatment standards for 65 "priority" pollutants and classes of pollutants for 21 major industries. See *Natural Resources Defense Council, Inc.* v. *Train,* 8 ERC 2120 (D.D.C. 1976), *modified* 12 ERC 1833 (D.D.C. 1979), modified by Orders dated August 25, 1982, October 26, 1982, August 2, 1983, and January 6, 1984.

Many of the basic elements of the Settlement Agreement were incorporated into the Clean Water Act of 1977. Like the Agreement, the Act stressed control of toxic pollutants, including the 65 "priority" pollutants. In addition, to strengthen the toxic control program, Section 304(e) of the Act authorizes the Administrator to prescribe "best management practices" (BMPs) to prevent the release of toxic and hazardous pollutants from plant site runoff, spillage or leaks, sludge or waste disposal, and drainage from raw material storage associated with, or ancillary to, the manufacturing or treatment process.

Under the Act, the EPA is to set a number of different kinds of effluent limitations. These are discussed in detail in the preamble to the proposed regulation and in the Development Document. They are summarized briefly below:

1. Best Practicable Control Technology (BPT)

BPT Limitations are generally based on the average of the best existing performance by plants of various sizes, ages, and unit processes within the category or subcategory.

In establishing BPT limitations, EPA considers the total cost in relation to the age of equipment and facilities involved, the processes employed, process changes required, engineering aspects of the control technologies, and nonwater quality environmental impacts (including energy requirements). We balance the total cost of applying the technology against the effluent reduction.

2. Best Available Technology (BAT)

BAT limitations, in general, represent the best existing performance in the industrial subcategory or category. The Act establishes BAT as the principal national means of controlling the direct discharge of toxic and nonconventional pollutants to navigable waters.

In arriving at BAT, the Agency considers the age of the equipment and facilities involved, the process employed, the engineering aspects of the control technologies, process changes, the cost of achieving such effluent reduction, and nonwater quality environmental impacts. The Agency retains considerable discretion in assigning the weight to be accorded these factors.

3. Best Conventional Pollutant Control Technology (BCT)

The 1977 Amendments to the Clean Water Act added Section 301(b)(2)(E), establishing "best conventional pollutant control technology" (BCT) for discharge of conventional pollutants from existing industrial point sources. Section 304(a)(4) designated the following as conventional pollutants: BOD, TSS, fecal coliform, pH, and any additional pollutants defined by the Administrator as conventional. The Administrator designated oil and grease an additional conventional pollutant on July 30, 1979 (44 FR 44501).

BCT is not an additional limitation but replaces BAT for control of conventional pollutants. In addition to other factors specified in section 304(b)(4)(B), the Act requires the BCT limitations be established in light of a two part "cost-reasonableness" test. *American Paper Institute* v. *EPA,* 660 f. 2d 954 (4th Cir., 1981). The first test compares the cost for private industry to reduce its conventional pollutants with the costs to publicly owned treatment works to achieve similar reduction of these pollutants. The second test examines the cost-effectiveness of additional industrial treatment beyond BPT. EPA must find that limitations are "reasonable" under both tests before establishing them as BCT. In no case may BCT be less stringent than BPT.

EPA published its methodology for carrying out the BCT analysis on August 29, 1979 (44 FR 50732). In the case mentioned above, the Court of Appeals ordered EPA to correct data errors underlying EPA's calculation of the first test, and to apply the second cost test. (EPA argued that a second cost test was not required.)

A revised methodology for the general development of BCT limitations was proposed on October 29, 1982 (47 FR 49176), but has not been promulgated as a final rule. We accordingly are not promulgating BCT limits for plants in the nonferrous phase I category at this time. We will await establishing nationally applicable BCT limits for this industry until promulgation of the final methodology for BCT.

4. New Source Performance Standards (NSPS)

NSPS are based on the best available demonstrated technology (BDT). New plants have the opportunity to install the best and most efficient production processes and wastewater treatment technologies.

5. Pretreatment Standards for Existing Sources (PSES)

PSES are designed to prevent discharge of pollutants that pass through, interfere with, or are otherwise incompatible with the operation of publicly owned treatment works (POTW). They must be achieved within three years of promulgation. The Clean Water Act of 1977 requires pretreatment for toxic pollutants that pass through the POTW in amounts that would violate direct discharger effluent limitations or interfere with the POTW's treatment process or chosen sludge disposal method. The legislative history of the 1977 Act indicates that pretreatment standards are to be technology-based, analogous to the best available technology for removal of toxic pollutants. EPA has generally determined that pollutants pass through a POTW if the nationwide average percentage of pollutants removed by a well operated POTW achieving secondary treatment is less than the percent removed by the BAT model treatment system. The General Pretreatment Regulations, which serve as the framework for the pretreatment regulations, are found at 40 CFR Part 403. These regulations were recently upheld substantially in *NAMF et al.* v. *EPA*, Nos. 79–2256 et al. (3rd Cir., September 20, 1983).

6. Pretreatment Standards for New Sources (PSNS)

Like PSES, PSNS are designed to prevent the discharge of pollutants which pass through, interfere with, or are otherwise incompatible with the operation of a POTW. PSNS are to be issued at the same time as NSPS. New indirect dischargers, like new direct dischargers, have the opportunity to incorporate in their plant the best available demonstrated technologies. The Agency considers the same factors in promulgating PSNS as it considers in promulgating PSES.

IV. Methodology and Data Gathering Efforts

The methodology and data gethering efforts used in developing the proposed regulation were summarized in the "Preamble to the Proposed Nonferrous Metals Manufacturing Point Source Category Effluent Limitations Guidelines, Pretreatment Standards, and New Source Performance Standards" (48 FR 7032, February 17, 1983), and described in detail in the Development Document for Effluent Limitations Guidelines and Standards for the Nonferrous Metals Manufacturing Point Source Category.

After proposal, the Agency gathered additional data to clarify comments and to provide further support for the regulation. The Agency performed additional analysis of new and existing data. These additional data and activities are described in two "Notices of Data Availability and Request for Comment" (48 FR 50906, November 4, 1983 and 48 FR 52604, November 21, 1983) and are discussed briefly below. The data are also described in substantial detail in the appropriate sections of the General Development Document and the supplements. The supporting information and additional data are in the public record supporting this final rule.

We did add DMR data from an integrated secondary lead and battery manufacturing plant to the existing data base to evaluate whether the proposed attainable concentrations for lead by lime and settle treatment are achievable by nonferrous industry plants. The expanded data set now consists of 204 effluent lead data points. Statistical analysis of the data confirmed that the proposed long-term mean for lead, computed using the Combined Metals Data Base (CMDB), is achieved by this plant, and so can be achieved by these plants throughout the category. At the same time, the data illustrated that the proposed variability factors from the CMDB used to determine the one-day maximum and monthly averages for lead were too low. Accordingly, as discussed in section VII of the Development Document, we are establishing different one- and 10-day treatment performance values for lead, reflecting these different variabilities.

In addition to collecting data from industry, the Agency also developed additional information by conducting its own bench-scale and pilot tests. To fully respond to comments, the Agency performed bench-scale and pilot work primary aluminum, wastewaters. The treatment technologies tested were cyanide precipitation and lime, settle and filter treatment on toxic organic pollutants. The Agency's pilot scale treatability study of primary aluminum wastewaters indicates that the proposed nickel, antimony, fluoride, and TSS treatment performances are not achievable when certain heavily polluted waste streams associated with cathode reprocessing operations are treated apart from more dilute streams (a configuration that occurs at certain primary plants). Data obtained from the study have been incorporated into the technical record, compliance costs, and the promulgated regulation.

In addition, since proposal, the Agency made engineering visits to five nonferrous metals manufacturing plants. Analytical data gathered at these plants were used to further characterize wastewaters generated in the primary zinc, metallurgical acid plant, secondary lead, and primary tungsten subcategories. We also used the analytical data to revise compliance costs and pollutant removal estimates. The Agency also gathered data collection portfolios (dcp's) from plants not in the Agency's data base at the time we issued the proposed regulation. In a few instances where the Agency was aware of major modifications since receiving the 1977 dcp, plants were asked to resubmit the dcp so that the Agency could update its data base.

New data obtained by the Agency since proposal have been carefully analyzed and, where appropriate, changes have been made to the regulation. Flow allowances for a number of waste streams have been revised as discussed in Section V. Mass limitations have also been provided for several waste streams not receiving allowances at proposal. The lime and settle treatment effectiveness values for the pollutant lead and the treatment affectiveness value for regulated pollutant parameters for certain plants in the primary aluminum subcategory have also been revised.

The Agency has revised the compliance costs for the nonferrous metals manufacturing category by computing plant-by-plant costs. In addition, pollutant removal estimates were recalculated for each subcategory. We carefully reviewed comments before making revisions and changes in data. The costing methodology used to cost these plants is discussed in Section VIII of the General Development Document. The economic impact analysis was also revised to respond to comments on the methodology, to reflect current financial conditions in the industry, and to include the revised compliance costs.

Under the authority of Section 308 of the Clean Water Act, the Agency requested specific additional information and data from 44 commenters to clarify and support their individual comments. The Agency's request for information asked each commenter to provide specific information supporting their particular comments. The additional data and information received related primarily to wastewater sources not specifically considered by the proposed regulation; to costs of compliance; and to the classification and disposal costs of solid wastes generated by wastewater treatment. We received flow and production data for additional waste streams as well as information on treatment and characteristics of these streams. A brief description of the data solicited for each subcategory is presented below.

Primary Aluminum

We requested additional information through Section 308 information request in the primary aluminum subcategory concerning the use of potline scrubbing and its impact on product quality; alternate in-line fluxing methods and their impact on product quality; anode bake plant air pollution control; cathode manufacturing; cathode reprocessing; supporting documentation for comments questioning compliance costs; and additional waste streams not considered at proposal.

Secondary Aluminum

Additional data and information collected in the secondary aluminum subcategory pertained to water use practices for shot, ingot conveyor, and stationary casting; and attainable concentrations for ammonia steam stripping treatment.

Primary Copper

We requested additional information through Section 308 information requests in the primary copper subcategories to clarify comments concerning by-product recovery; water use for air pollution control; 100 percent reuse of spent electrolyte; water use for occupational health requirements; and operating characteristics of existing wastewater treatment systems.

Primary Zinc

We requested additional information through Section 308 information requests to clarify comments concerning additional waste streams; stormwater; and operating characteristics of existing wastewater treatment systems. We also requested information to determine how compliance with the Clean Air Act, OSHA standards, and RCRA have affected water usage in the subcategory.

Primary Lead

We requested additional information through Section 308 information requests to clarify comments concerning additional waste streams; stormwater; and operating characteristics of existing wastewater treatment systems. We also requested information to determine how compliance with the Clean Air Act, OSHA standards, and RCRA have affected water usage in the subcategory.

Primary Tungsten

In the primary tungsten subcategory, Section 308 information requests were made for performance data to evaluate ammonia steam stripping technology.

Primary Columbium-Tantalum

We requested additional information through Section 308 information requests to clarify comments concerning solid waste disposal existing regulatory flows; performance of ammonia steam stripping; and supporting documentation for comments regarding compliance costs.

Secondary Lead

Additional data collected in the secondry lead subcategory through section 308 information requests consisted to treatment performance data; water use for occupational health requirements; solid waste disposal; supporting documentation for comments about compliance costs; and furnace SO_2 control.

Secondary Silver

We made one section 308 information request in the secondary silver subcategory to gather information on the use of photographic papers as a raw material.

Secondary Copper

We requested additional information through Section 308 information requests in the secondary copper subcategory concerning recycle of casting contact cooling water.

V. Control Treatment Options and Technology Basis for Final Regulations

A. Summary of Category

The nonferrous metals manufacturing category includes plants producing primary metals from ore concentrates and plants recovering secondary metals from recycled metallic wastes (aluminum cans, lead batteries, etc.). There are 307 plants in the phase I subcategories which EPA estimates employ 61,000 people and annually generate raw wastes containing approximately 11 million pounds of toxic pollutants. There are 80 (26 percent) direct dischargers that currently discharge 225,000 kg/yr of toxic pollutants and there are 85 (28 percent) indirect dischargers that currently discharge an additional 59,400 kg/yr of toxics. There are 142 plants in this category (46 percent) that do not discharge process wastewater.

In developing this regulation, it was necessary to determine whether different effluent limitations and standards were appropriate for different segments (subcategories) of the category. The major factors considered in assessing the need for subcategorization and in identifying subcategories included: waste characteristics, raw materials, manufacturing processes, products manufactured, water use, water pollution control technology, treatment costs, solid waste generation, size of plant, age of plant, number of employees, total energy requirements, nonwater quality characteristics, and unique plant characteristics. Section IV of the Development Document and its supplements contain a detailed discussion of these factors and the rationale for subcategorization.

A brief description of each of the subcategories is provided below, with particular emphasis on the sources of wastewater and the types of pollutants present. Section V of the subcategory supplemental Development Documents provides specific characterization data on each of the wastewater sources.

We are promulgating discharge limitations for each of the wastewater sources identified below. The limitation for an individual plant would then be the sum of all limitations for those wastewater sources actually present at the plant. (See discussion of building blocks in Section VIII below.)

Primary Aluminum

There are 31 primary aluminum reduction plants in the United States. The majority of plants are located near sources of abundant and inexpensive hydroelectric power (the east, southeast and northwest regions), since considerable amounts of electrical energy are required to produce aluminum. Twenty-four plants are direct dischargers and the remaining seven do not discharge wastewater; none are indirect dischargers.

Industry data indicate that 27 of the 31 plants (85 percent) produce less than 200,000 tons per year each. Median production is in the 100,000 to 150,000 tons per year range. All primary aluminum produced in the United States is manufactured by the electrolytic reduction of alumina via the Hall-Heroult Process.

The sources of process wastewater receiving an allowance in the primary aluminum plants are listed below, along with the pollutants typically found in each:

(1) *Anode and cathode paste plant wet air pollution control* wastewater results from wet scrubbers used to control process emissions from the paste plant; it contains toxic organic pollutants and suspended solids.

(2) *Anode bake plant wet air pollution control* wastewater results from wet scrubbers used to control process emissions from the bake plant; it contains toxic organics, oil and grease, and suspended solids.

(3) *Anode contact cooling and briquette quenching* water is used to quench the anodes after they are formed; the wastewater contains toxic organics and suspended solids.

(4) *Cathode reprocessing* wastewater results from the recovery of cryolite from spent potliners. Cathode reprocessing also serves as a hazardous waste treating operation by treatment spent potliners to remove cyanide, and to reduce the volume of hazardous waste. This wastewater contains toxic metals, cyanide, toxic organics, and suspended solids.

(5) *Pot soaking* wastewater results from soaking or repair of the electrolytic cells to remove the carbon liners; the wastewater contains fluorides, cyanide, toxic organics, and suspended solids.

(6) *Potline wet air pollution control* wastewater results from wet scrubbers used to control process emissions immediately above the electrolytic cells; the wastewater contains fluoride, toxic metals, and suspended solids. It may contain toxic organics in plants using Soderberg electrolytic cells.

(7) *Potline SO_2 wet air pollution control* wastewater results from wet scrubbers used to control SO_2 emissions from the electrolytic cells; the wastewater may contain fluoride and toxic metals at all plants and organics at Soderberg plants.

(8) *Potroom wet air pollution control* wastewater results from wet scrubbers used to control process emissions in the buildings housing the electrolytic cells; the wastewater contains fluoride and suspended solids.

(9) *Degassing wet air pollution control* wastewater results from wet scrubbers used to control emissions from degassing; the wastewater contains suspended solids.

(10) *Direct chill, stationary, shot and continuous rod casting contact cooling* water is used to cool the aluminum as it is cast. Wastewater from plants using direct chill casting may contain oil and grease when lubricants are used.

Secondary Aluminum

Of the 47 secondary aluminum plants operating in the United States, the majority are located in the eastern region, and most are in urban areas near raw materials and markets. Most of the facilities are less than 25 years old, reflecting the relatively recent development of this industry. Industry data indicate that the majority of facilities produce between 5,000 and 20,000 tons of aluminum per year. Most plants use a demagging process and almost all cast molten aluminum. Twenty-three of these facilities achieve zero discharge through evaporation and recycle. Ten plants are direct dischargers and 14 are indirect dischargers.

Refining scrap into aluminum involves a two-step process: scrap pretreatment and smelting/refining. Secondary aluminum raw materials include: old sheet and castings, new clippings and forgings, borings and turnings, residues, aluminum cans, and high run.

The sources of wastewater receiving an allowance in the secondary aluminum plants are listed below, along with the pollutants typically found in each:

(1) *Scrap drying wet air pollution control* wastewater results from the drying of aluminum scrap to remove cutting oils and water. This wastewater contains total suspended solids and aluminum.

(2) *Scrap screening/milling* wastewater results from washing contaminants from scrap aluminum and contains total suspended solids, aluminum and toxic metals.

(3) *Dross washing* wastewater is generated from the leaching or residues with water to remove contaminants. This wastewater contains toxic metals, aluminum, ammonia and suspended solids.

(4) *Demagging wet air pollution control* wastewater is the scrubber liquor resulting from the removal of magnesium from molten aluminum. Toxic metals, fluroide and suspended solids characterize the wastewater.

(5) *Direct chill, ingot conveyor, and stationary casting contact cooling* water results from casting the molten aluminum into ingot, bars, or shot. This wastewater contains oil and grease, and suspended solids.

(6) *Delacquering wet air pollution control* wastewater results from the removal of paint and lacquer from the surface of aluminum scrap. This wastewater contains oil and grease phenols, and suspended solids.

Primary Copper Smelting

Primary copper smelting occurs at 19 smelting operations located primarily in the southwest. Of these 20 facilities, four were built in the past 20 years, while seven of them were built at least 80 years ago. On an average, the plant production from these facilities is 200,000 tons of smelter copper. There is one direct discharger, no indirect dischargers, and 18 zero dischargers. Smelting of copper ore concentrates involves a four-step process: roasting, smelting, converting, and casting of fire-refined copper.

The principal sources of wastewater in the primary copper smelting plants are listed below, along with the pollutants typically found in each:

(1) *Slag granulation* wastewater results from conditioning slag tapped from the furnaces. Wastewater from this operation contains inpurities found within the slag, toxic metals, and suspended solids.

(2) *Casting wet air pollution control* wastewater results from the control of particulate matter produced in the casting furnace and contains dissolved toxic metals and suspended solids.

Wastewater discharges from roaster, converter and smelting furnace wet air pollution control are included as a part of the metallurgical acid plant.

Primary Electrolytic Copper Refining

Primary electrolytic copper refining occurs at 14 refining and electrowinning facilities located along maritime centers and in the southwest near smelters. Three of these facilities are direct dischargers while 11 achieve zero discharge. The average age of these facilities is approximately 30 years, and the average production is approximately 115,000 tons per year of cathode copper.

Further refining of copper is necessary if it is to be used in electrical applications. By using electrolysis, the copper can be refined to a purity of 99.98 percent or greater, and the precious metals contained as impurities in the copper can be recovered. Fire refined blister copper from the smelting operation, sulfuric acid, and copper sulfate are the principle raw materials used in electrolytic refining.

The sources of wastewater receiving an allowance in primary electrolytic copper refining are listed below, along with the pollutants typically found in each:

(1) *Anode-cathode rinse water* results from rinsing anodes and cathodes when they are removed from the electrolytic cells. Characteristics of the rinse water include a lo pH due to the sulfuric acid rinsed from the anodes or cathodes. The rinse water also contains dissolved toxic metals.

(2) *Spent electrolyte* after electrowinning and nickel sulfate removal may be discharged, although in most cases it is recycled back to the electrolytic tank house. This waste stream contains dissolved toxic metals and is characterized by a low pH due to electrolyte medium.

(3) *Casting contact cooling* wastewater results from the contact cooling of metal castings and contains dissolved toxic metals and suspended solids.

(4) *Casting wet air pollution* wastewater results from the control of particulate matter produced in the casting furnace and contains dissolved toxic metals and suspended solids.

Secondary Copper

Of the 31 secondary copper processing plants in the United States, the majority are located in or near major industrial cities in the Great Lakes and New England states, where most of the raw materials are generated and collected. The industry is fairly well established; the average plant age falls between 30 and 40 years, somewhat older than the average for plants in the primary copper industry. The average production of secondary copper plants is only about one-tenth of the average of primary copper plants. Only five plants of the 31 plants listed in this subcategory are direct dischargers while six of these plants are indirect dischargers. Zero discharge of process wastewater is achieved by 20 plants.

Depending on the type of raw materials and the desired end product, the manufacturing process consists of three distinct operations: pretreatment of scrap, smelting and refining. Most plants, however, do not go beyond the smelting process.

The principal sources of wastewater generated by secondary copper plants are listed below, along with the pollutants typically found in each:

(1) *Slag milling and classification* wastewater results from milling and classifying slag (when used as a raw material) prior to smelting, and is characterized by the presence of suspended solids, copper, lead and zinc.

(2) *Smelting wet air pollution control* wastewater is typically acidic and contains copper; it may also contain varying concentrations of other metals, due in part to differences in the metallic contents of the raw material and the fluxes used.

(3) *Casting contact cooling* wastewater results when the water used in ingots or anode cooling is discharged without recycle. This stream is characterized by the presence of suspended solids and toxic metals.

(4) *Spent electrolyte*, a solution of sulfuric acid and copper sulfate, is usually recycled or sold; when discharged, however, the strongly acidic wastewater contains copper.

(5) *Slag granulation* wastewater results when molten slag is impacted with a high pressure water jet. This stream contains toxic metals.

Primary Lead

Four of the six plants in the Primary Lead Subcategory are direct discharges. Two are indirect discharges. Three of these plants are located near the rich lead ore deposits in Missouri, while the rest are spread throughout the west. Four plants were built before World War I, another in 1920, and the final two in 1968 in Missouri. EPA data show that plant production ranges from 100,000 to 250,000 tons per year while average annual plant production is about 150,000 tons.

The process used in lead production has changed very little in the last 75 years. Primary lead production can be divided into six distinct steps: sintering, reduction (blast furnace), dross removal, softening and refining, and casting.

The principal sources of wastewater in the primary lead industry are listed below, along with the pollutants typically found in each:

(1) *Slag granulation* wastewater results when molten blast furnace slag is impacted with a high pressure water jet. Toxic metals, especially lead, are present in this waste stream.

(2) *Zinc fuming furnace scrubber water* is generated by wet scrubbers used to contain particulates and volatilized metals (especially zinc) produced by fuming the blast furnace slag.

(3) *Dross reverberatory furnace scrubber water* is a potential discharge associated with the wet scrubbers which are used to contain particulates and fumes from the reverberatory furnaces. Toxic metals and suspended solids are present in this wastewater.

(4) *Dross reverberatory furnace granulation* wastewater is used to prepare speiss and matte from the dross reverberatory furnace for resale. Metals and suspended solids characterize this stream.

(5) *Hard lead refining wet air pollution control* wastewater results from air pollution control equipment on furnaces used to refine antimonial, or "hard," lead from the softening step. Metals, particularly lead and antimony, and suspended solids are present.

(6) *Hard lead refining slag granulation* wastewater is used to granulate slag from the hard lead refining blast furnace. Toxic metals and suspended solids characterize this stream.

(7) *Materials handling wet air pollution control* wastewater results from the scrubbing of particulate matter from transfer points, conveyors, and crushing operations.

(8) *Handwash* wastewater is generated to reduce occupational lead exposures. Wastewater from handwashing contains treatable concentrations of lead and other toxic metals.

(9) *Respirator wash* wastewater is generated during washing of the respirators used to reduce occupational lead exposures. Wastewater from respirator wash contains toxic metals, most notably lead.

(10) *Laundry* wastewater is generated during laundering of uniforms to reduce occupational lead exposures. Wastewater from laundries contain lead and other toxic metals.

(11) *Facility washdown* wastewater results from floor and equipment washing to control fugitive lead emissions. This wastewater source is characterized by presence of lead and suspended solids.

Wastewater discharges associated with sintering wet air pollution control are included as a part of the metallurgical acid plant.

Primary Zinc

There are six primary zinc plants in the United States. The primary zinc industry is well established; the average plant age is about 50 years. Zinc production is not confined to any particular geographic location. Four plants are located east of the Mississippi river and two plants are located in the southwest (Texas and Oklahoma). The average plant has a production of 100,000 to 200,000 tons per year. Three of the plants are direct dischargers, one is an indirect discharger, and the remaining two are classified as zero dischargers.

There are two zinc production processes; pyrolytic and electrolytic. The first step in each process is roasting. Roasting converts the sulfur present in the zinc concentrates to sulfur dioxide. The sulfur dioxide is then converted to sulfuric acid at an acid plant located on-site with the zinc plants.

The principal sources of wastewater in the primary zinc industry are listed below, along with the pollutants typically found in each:

(1) *Zinc reduction furnace wet air pollution control* wastewater results from conditioning off-gases from the reduction furnaces, and contains zinc, cadmium, and several other toxic metals at treatable concentrations.

(2) *Preleach* wastewater results from leaching of zinc concentrates to reduce the amount of magnesium present in the electrolytic circuit. The leachate contains zinc and other toxic metals.

(3) *Electrolyte bleed* watewater results from blowdown of electrolyte to reduce the amount of magnesium present in the electrolytic circuit. The leachate contains zinc and other toxic metals.

(4) *Leaching wet air pollution control* wastewater results from the use of contact scrubbers to control acidic leaching emissions. The scrubbing liquor contains various toxic metals.

(5) *Cathode and anode washing* wastewater results from periodic washing of the cathodes and anodes used in the electrolytic zinc process. Cathode and anode washing wastewater contains toxic metals and suspended solids.

(6) *Casting wet air pollution control* wastewater results from cleaning the gaseous emissions associated with the casting melting furnace, and contains toxic metals and suspended solids.

(7) *Casting contact cooling* wastewater results from the contact cooling of metal castings and contains toxic metals.

(8) *Cadmium plant* wastewater results from byproduct cadmium recovery and contains toxic metals.

Wastewater discharges associated with roasting wet air pollution control and sintering wet air pollution control are included as a part of the metallurgical acid plant.

Metallurgical Acid Plants

Metallurgical acid plants produce sulfuric acid from sulfur dioxide air emissions at primary copper, lead, or zinc facilities. There are 19 metallurgical sulfuric acid plants in the United States. Of these, eight are direct dischargers, two are indirect dischargers and 9 achieve zero discharge. Ten metallurgical acid plants are located on-site with primary copper smelting plants, three are on-site at primary lead plants, and six are on-site at primary zinc plants. All but one of the plants associated with copper smelting are located in Texas or west of Texas, and all except one of these are zero dischargers. Two of the acid plants associated with lead are located in Missouri and are both direct discharge acid plants. The other acid plant is located in Montana and achieves zero discharge. The six zinc-related acid plants, four direct dischargers and two indirect dischargers, are located between Texas and Pennsylvania. There are insufficient data to ascertain the age of acid plants independently of the base metal plants associated with them. Acid plants have been added as a result of air pollution abatement measures at some of the existing primary metal production facilities. The average production capacity for metallurgical acid plants is 100,000 to 300,000 tons per year of 100 percent sulfuric acid. The production capacities range from 50,000 to 850,000 tons per year.

Metallurgical acid plants produce sulfuric acid from the air emissions of pyrometallurgical operations. By producing acid, the acid plants not only clean the smelter emission of many tons per day of sulfur oxides, but they also produce a marketable sulfuric acid product.

The principal wastewater sources in metallurgical acid plants are as follows:

—Sintering wet air pollution control,
—Roasting wet air pollution control,
—Conversion wet air pollution control,
—Acid plant wet air pollution control,
—Mist precipitator,
—Box cooler, and
—Mist eliminator.

These wastewater sources are usually combined into a single wastewater stream—acid plant blowdown—which is treated and then recycled or discharged.

The acid plant blowdown stream contains the toxic metals antimony, arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc, and total suspended solids.

Primary Tungsten

Of the 16 primary tungsten plants in the United State, four are direct dischargers, six are indirect dischargers, and six are zero dischargers. Only two primary tungsten plants have been built in the last 30 years; most were built around the time of World War II. EPA data show that plant production ranges from 100 to 4,000 tons per year while the average yearly production is approximately 1,000 tons.

The processes used at a primary tungsten production facility depend largely on the raw material used and the final product desired. The three basic primary tungsten processing steps which an individual plant may utilize are chemical separation of impurities, purification, and oxide and metal recovery.

The principal sources of wastewater in the primary tungsten industry are listed below, along with the pollutants typically found in each:

(1) *Tungstic acid* rinsewater is generated when water is used to wash the insoluble tungstic acid product of leaching. This stream is characterized by high acidity as well as the presence of toxic metals and suspended solids.

(2) *Acid leach wet air pollution control* wastewater results from air pollution controls used to control HC1 fumes from acid leaching, and is characterized by low pH (2 to 5) and contains toxic metals and suspended solids.

(3) *Alkali leach* wash water results from the filtering and washing of alkaline leaching products (i.e., Na_2WO_4). This stream contains toxic metals and suspended solids.

(4) *Ion-exchange raffinate* is a waste stream from the liquid ion-exchange process used to convert Na_2WO_4 to ammonium paratungstate (APT). Organics are present in this stream due to the use of organic compounds as an ion-exchange medium. This stream is also characterized by the presence of toxic metals and suspended solids.

(5) *Calcium tungstate precipitation* wash water results from the precipitation of calcium tungstate from a sodium tungstate solution to which calcium chloride has been added. The resulting waste stream is characterized by the presence of toxic metals.

(6) *The crystallization and drying of APT* may generate water as the APT crystals are precipitated from the mother liquor. Additionally, wet air pollution control methods may be applied to control ammonia fumes. The wastewater associated with this stream is characterized by the presence of ammonia.

(7) *APT conversion to oxides wet air pollution control* wastewater results from air pollution control devices on the

rotary furnaces used to convert APT to tungsten oxides and contains ammonia and toxic metals.

(8) *APT conversion to oxides water of formation* wastewater results from the water formed when APT is reduced to oxides. The wastewater source is characterized by the presence of ammonia.

(9) *Reduction to tungsten wet air pollution control* wastewater results from wet scrubbers on the reduction furnace. Toxic metals and suspended solids are found in this waste stream.

(10) *Reduction to tungsten water of formation* is produced in the reduction furnace when the reduction of oxides to metal frees oxygen to combine with the hydrogen in the furnace. The characteristics of this stream are similar to those of the reduction scrubber waters.

(11) *Tungsten powder leach and wash* wastewater results from the acid leaching and washing of tungsten powders. This wastewater source is characterized by a low pH.

Primary Columbium-Tantalum

All five of the columbium-tantalum plants were built in the 20-year period just after World War II. The plants are scattered geographically, with half the plants located in New England and the rest in the West and Midwest. EPA data show that average plant production is approximately 450 tons per year, and that all plants discharge wastewater. There are three direct dischargers and two indirect dischargers.

The processes used at a columbium and tantalum production facility depend largely upon the raw material used and the plant's final product. Five basic operations from ore or slag to metal must be performed. These include pulverizing and leaching, separation of columbium and tantalum, purification, precipitation of salts, and reduction of salts to metal.

The principal sources of wastewater in the primary columbium-tantalum subcategory are listed below, along with the pollutants typically found in each:

(1) *Concentrate digestion wet air pollution control* wastewater results from digesting ore concentrates and slags with hydrofluoric acid, and contains suspended solids, fluorides and toxic metals.

(2) *Solvent extraction raffinate* is a product of the two-step extraction process, resulting in the extraction and separation of columbium and tantalum. The raffinate contains impurities from digestion and contains toxic organics, fluorides, toxic metals and suspended solids.

(3) *Precipitation and filtration* wastewater results from precipitation of pure metal salts from the aqueous phase by ammonia addition to form columbium and tantalum oxides, or by hydrofluoric acid and potassium fluoride addition to recover tantalum. These precipitates are filtered and washed, producing effluent streams containing ammonia, fluoride, toxic metals and total suspended solids, potassium fluorides, and chlorides, for the respective processes.

(4) *Precipitation and filtration wet air pollution control* wastewater is produced from scrubbing air emissions during precipitation. The scrubber liquor contains ammonia, fluoride, toxic metals, and total suspended solids.

(5) *Tantalum salt drying* wastewater is produced during the drying of potassium fluoride salts and contains fluorides and total suspended solids.

(6) *Metal oxide calcining wet air pollution control* wastewater are produced as the columbium and tantalum oxide precipitates are dried and calcined to yield purified oxides. The solvents produced reflect the precipitation process employed.

(7) *Reduction of tantalum salt to metal* wastewater is produced from sodium reduction, or extensive washing of the product metal with water and/or acid. The resulting waste streams typically contain dissolved solids and fluoride, sodium chloride and sulfate, and potassium chloride and sulfate. Another reduction process, aluminothermic reduction, is used in plants in the United States; however, the process generates no wastewater.

(8) *Reduction of tantalum salt to metal wet air pollution* control wastewater results from wet scrubbers which control the reduction process emissions; this discharge is similar in pollutant content to the reduction washing stream.

(9) *Consolidation and casting contact cooling* produces no wastewater discharge. One plant surveyed practiced direct contact cooling of metal castings; however, it recycles 100 percent of the water used in this process.

(10) *Tantalum powder wash* wastewater results from the acid leaching of tantalum powders to give the powder certain physical characteristics. This waste is characterized by a low pH and suspended solids.

Secondary Silver

There are 61 plants in the United States that recover silver from photographic and nonphotographic sources. The plants are grouped in three major areas of the country: the Gulf Coast, the Rocky Mountains-Pacific Coast, and the Great Lakes-New England area. EPA data show that a small minority (seven) of secondary silver plants are direct dischargers. Of the remainder, 26 are indirect dischargers and 28 are zero dischargers. Of those plants that discharge wastewater, five plants process only photographic materials, 26 process only nonphotographic materials, and two process both types. The average plant age is between 15 and 24 years.

Over half of the secondary silver plants that reported data produce in excess of 100,000 troy ounces of silver per year; three of these plants produce over 1,000,000 troy ounces of silver per year. Twenty-one plants reported production of less than 50,000 troy ounces per year.

The processes used at a secondary silver production facility depend largely upon the raw materials used and the plant's final product. Secondary silver production processes can be discussed in the context of two sources of raw materials: photographic and nonphotographic materials. The principal raw materials used by plants recovering silver from photographic materials are discarded photographic film and silver-rich sludges and solutions from photographic processing. Waste plating solutions, sterling ware scrap, and electrical component strap are the principal raw materials used in the nonphotographic category.

The principal sources of wastewater in the secondary silver subcategory are listed below, along with pollutants typically found in each:

(1) *Film stripping* wastewater consists of wash water from the screening and rinsing of emulsions which have been stripped from photographic film. This effluent contains toxic organics and metals, as well as cyanide, suspended solids, and oil and grease.

(2) *Film stripping and precipitation of film stripping solutions wet air pollution control* wastewater is a result of air emissions from film stripping operations. Pollutants found in this wastewater include toxic organics and metals, cyanide, and suspended solids.

(3) *Precipitation and filtration of film stripping solution* wastewater consists of discharged silver-free solution from the silver preciptiation-filtration process, and contains toxic organics, toxic metals, and suspended solids.

(4) *Precipitation and filtration of photographic solutions* wastewater results from the precipitation of silver from photographic hypo solutions. The presence of toxic organics, toxic metals, ammonia, chloride, suspended solids and oil and grease characterize this wastewater.

(5) *Precipitation and filtration of photographic solutions wet air pollution control* wastewater consists of scrubber liquor from the precipitation and filtration of photographic solutions, and contains toxic organics and toxic metals. Suspended solids and ammonia may also be present.

(6) *Electrolytic refining* wastewater is a product of silver refining, after the metal has been roasted and cast into electrodes. This effluent consists of spent electrolyte solution and contains toxic organics, toxic metals, ammonia, phenols, fluoride, cyanide, suspended solids and oil and grease.

(7) *Furnace wet air pollution control* wastewater results from the scrubbing of roasting and melting furnace off-gases. Suspended solids may be present in this wastewater, along with toxic organics and toxic metals.

(8) *Leaching* wastewater is a product of the leaching of nonphotographic silver sludges and copper matte associated with he melting of electrical component parts. This stream contains toxic organics and metals, ammonia, fluoride, phenols, cyanide, suspended solids, and oil and grease.

(9) *Leaching and precipitation of nonphotographic solutions wet air pollution control* wastewater is the effluent from scrubbers employed to reduce air emissions from leaching operations. The scrubber liquor is characterized by toxic organics and metals, phenols, cyanide, suspended solids, and oil and grease.

(10) *Precipitation and filtration of nonphotographic solutions* wastewater consists of the spent solutions left after silver is precipitated from leachates, waste plating solutions and melted silver scrap. Wash water from filtration may also be included in this effluent which contains toxic organics and metals, ammonia, cyanide, chloride, fluroide, phenols, suspended solids, and oil and grease.

(11) *Floor and equipment washdown* wastewater results from the washing of floors and equipment. This wastewater source has many of the same characteristics as the precipitation and filtration of nonphotographic solutions wastewater source.

Secondary Lead

Forty-nine secondary lead plants presently operate in the United States, and are located predominantly in or near major urban centers where most of the raw materials are readily available. Thirty-four plants (68 percent) are located west of the Mississippi River, and the remaining 32 percent are located in two bands east of the Mississippi, around the Great Lakes and in the South. Twenty-six plants discharging to a POTW and 15 plants achieving zero discharge are found in all areas, while eight plants discharging directly to receiving waters are found in the East and South. An additional 19 plants remelt and alloy secondary lead, but do not smelt.

The median age of secondary lead plants is within a span of 25 to 44 years. Data gathered from the industry show that for the plants providing sufficient production data, only nine produced over 20,000 tons of lead in 1976. Most secondary lead plants are relatively small operations; two-thirds of the plants produced under 15,000 tons of lead in 1976.

There are three major phases involved in the secondary lead industry: scrap pretreatment, smelting, and refining/casting. However, not all secondary lead plants perform all of these processes.

The principal waste streams that are produced in the secondary lead industry are described below, together with the major pollutants found in each:

(1) *Battery cracking* produces a wastewater stream containing dissolved toxic metals, suspended solids, and oil and grease. It is generated when batteries are broken or shredded and the electrolyte is drained from the battery cese and commingled with water to cool the saws used to cut batteries.

(2) *Battery case classification* wastewater results from the classification of lead and battery cases after battery cracking using water as a flotation medium. This wastewater source is characterized by the presence of lead and total suspended solids.

(3) *Lead paste desulfurization* wastewater is generated when the sulfur content of lead paste is reduced using ammonia. Wastewater from this source is expected to contain lead and total suspended solids.

(4) *Smelting furnace wet air pollution control* systems are used to control emissions from this operation, especially particulate matter. The scrubber liquor is characterized by the presence of total suspended solids and lead.

(5) *Kettle wet air pollution control* systems are used to control particulate matter in the off-gases from refining. This waste stream contains total suspended solids and toxic dissolved metals.

(6) *Casting contact cooling* water is frequently recycled and may be totally evaporated. However, a small stream is often blown down to limit the buildup of dissolved solids. This waste stream is characterized by the presence of toxic metals such as antimony, arsenic, thallium, and zinc.

(7) *Truck washing* wastewater results from washing trucks that are used to haul scrap batteries. Wastewater from truck wash contains suspended solids, lead, and other toxic metals.

(8) *Hand wash* wastewater results from washing employee hands to reduce occupational lead exposures. This wastewater contains lead and other toxic metals.

(9) *Respirator wash* wastewater results from washing respirators to reduce occupational lead exposures. This wastewater source is characterized by the presence of lead and other toxic metals.

(10) *Laundry* wastewater results from the laundering of employee uniforms to reduce occupational lead exposures. Laundry wastewater contains lead and other toxic metals.

(11) *Facility washdown* wastewater results from washdown of floors and equipment to control fugitive lead emissions. This wastewater source principally contains lead and suspended solids.

(12) *Laboratory* wastewater results from the quality assurance testing of refined lead. Laboratory wastewater contains lead and other toxic metals.

B. Control and Treatment Technologies and Treatment Effectiveness

1. Control and Treatment Technologies

Before proposing the nonferrous metals manufacturing regulation, EPA considered a wide range of control and treatment options including both in-process changes and end-of-pipe treatment. These options are discussed in detail in the preamble to the proposed nonferrous metals manufacturing regulation (48 FR 7032). For the most part, the end-of-pipe model treatment technology proposed for each subcategory has been selected as the basis for the final rule. This technology is hydroxide precipitation (with additions of iron or polyelectrolyte coagulant aids as necessary) and sedimentation ("lime and settle") followed by multimedia filtration as a polishing step, with flow reductions where appropriate. In three subcategories (primary copper, secondary lead, and secondary silver), we proposed alternative limitations and standards—one alternative based on lime and settle technology and the other on lime, settle, and filter—due to concerns as to economic achievability of the added filtration step. After revising the compliance costs and economic analysis for these subcategories, the Agency has determined that the requirement of multimedia filtration is economically achievable, and is basing the final regulation on this technology. The control and treatment technologies used as the basis for the final limitations and standards are described below.

As a result of public comment and solicitation of additional information, we are adding sulfide precipitation as a part of the model technology in four subcategories, adding activated carbon as a part of the model technology in another subcategory, but removing activated carbon from one subcategory where we had previously proposed it. In-process controls and preliminary treatment in the final rule thus are based on flow reduction techniques and preliminary treatment of specific waste streams for the control of cyanide, oil and grease, and ammonia. Preliminary treatment for the removal of polynuclear aromatic hydrocarbons has been eliminated from the proposed technology basis in the primary aluminum subcategory. Through pilot-scale work, the Agency has determined these toxic organic pollutants are effectively controlled by lime, settle, and multimedia filtration technology. Preliminary treatment for the removal of total phenols using activated carbon was added to the secondary aluminum subcategory.

End-of-pipe treatment thus includes: chemical precipitation of metal ions using hydroxides or carbonates, removal of precipitated metals by settling, pH control, and filtration. Sulfide precipitation has also been included as an end-of-pipe treatment technology for four subcategories. These treatment technologies are described in detail in Section VII of the General Development Document.

2. Treatment Effectiveness

The treatment effectiveness of these technologies has been evaluated by observing their performance on nonferrous metals manufacturing and other similar wastewaters. Each technology is discussed below.

a. Lime and Settle Technology.

1. *The Combined Metal Data Base.* The data base for the performance and variability of hydroxide precipitation-sedimentation technology is a composite of data drawn from EPA protocol sampling and analysis of aluminum forming, copper forming, battery manufacturing, porcelain enameling, and coil coating wastewaters. These data, collectively called the combined metals data base ("CMDB"), include influent and effluent concentrations for nine pollutants. The wastewaters from each subcategory have been found to be statistically similar in all material respects. A separate study of statistical homogeneity of these wastewaters is part of the record for this rulemaking.

With the exception of the primary aluminum (under certain conditions), primary lead, primary zinc, primary copper, and metallurgical acid plant subcategories, we regard the combined metals data base as the best available measure for establishing the concentrations of pollutants attainable with hydroxide precipitation and sedimentation. Our determination is based on an analysis which found that the untreated pollutant concentrations are generally homogeneous across subcategories within the nonferrous category and that the nonferrous untreated pollutant concentrations pooled across subcategories are generally homogeneous with the CMDB untreated pollutant concentrations pooled across categories. A report of this homogeneity analysis is also a part of the record for this rulemaking.

We view the use of the combined metals data base as appropriate for setting effluent limitations for the following six pollutants in nonferrous metals manufacturing plants: cadmium, copper, lead, nickel, zinc, and TSS. There are several reasons for this conclusion:

(1) Process Chemistry: We believe that properly operated hydroxide precipitation and sedimentation will result in effluent concentrations that are directly related to pollutant solubilities. Since the nonferrous metals manufacturing raw wastewater matrix contains the same toxic pollutants in the same order of magnitude (for the most part) as the combined metals data base raw wastewater and the technology is solubility-based, we believe the mean treatment process effluent and variability will be identical.

(2) Homogeneity: EPA examined the homogeneity among nonferrous subcategories, as well as between the pooled nonferrous subcategories and the combined metals data base. Homogeneity is the absence of statistically discernible differences among mean pollutant concentrations observed in a set of data. The purpose of these analyses was to check the Agency's engineering judgment that the untreated wastewater characteristics observed in the nonferrous category were similar to those observed in the combined metals data base. Establishment of similarity of raw wastes through a statistical assessment provides further support to EPA's assumption that lime and settle treatment reduces the toxic metal pollutant concentrations in untreated nonferrous wastewater to concentrations achieved by the same technology applied to the wastewater from the categories in the combined metals data base. In general, the results of the analysis showed that the nonferrous subcategories are homogeneous with respect to mean pollutant concentrations across subcategories. Comparison of the untreated nonferrous metals manufacturing data combined across subcategories and the combined metals data also showed good agreement.

(3) Nonferrous Metals Manufacturing Data Base: EPA sampled nine nonferrous plants with lime precipitation and sedimentation. For the six plants with well-operated systems, we combined the EPA short-term sampling data with any available plant self-monitoring data and compared their long-term mean performance with the long-term mean performance calculated from the combined metals data base performance.

These nonferrous metals manufacturing plants are achieving a long-term mean performance that equals or betters the combined metals data base for five of six metals and TSS. These nonferrous metals plants exceed the 0.12 mg/l mean for lead by only 0.01 mg/l. (Additional discussion regarding revised variabilities for lead is found later in this section.)

(4) Commenters from most subcategories failed to present any data showing that they were unable to achieve limits based on the CMDB. In those subcategories where the commenters submitted data, the Agency studied the data carefully and, where appropriate, developed alternative limitations or made modifications to the CMDB limitations and variabilities.

Although we are continuing to use the CMDB treatment effectiveness values and variabilities for most of the nonferrous subcategories, we have reevaluated and changed certain values within the CMDB. In particular, the Agency revised the variability of lime and settle technology for the pollutant lead. After proposal, the Agency collected an additional two useable effluent samples from an integrated secondary lead and battery manufacturing plant which the Agency judges to have a state-of-the-art lime and settle treatment system. These data verified plant supplied data containing 199 days of daily lead concentrations measured in the raw and treated wastewater for their lime and settle treatment system. When the 201 data points were combined with the three data points previously used in the CMDB and analyzed statistically, the long-term mean 0.12 mg/l as proposed was verified, but the one-day maximum and monthly average increased.

Commenters from the primary lead, primary zinc, primary copper, and metallurgical acid plant subcategories submitted extensive self-monitoring. In addition, we solicited design and operating parameters for the treatment systems from which the data were collected. Of the seven plants submitting data, the Agency has determined that data from three of the plants should not be used to establish treatment effectiveness because of design or operational deficiencies. Another plant submitting data is from the primary copper subcategory and was found to be operating its treatment system at pH 12 to optimize arsenic removal. At pH 12, metals removal for pollutants other than arsenic decreases due to the increased solubility of metals at higher pH levels. Therefore, the Agency believes effluent data from this plant are not appropriate to determine treatment performance for other plants in the category without this problem. After examining the arsenic values of the raw materials used by plants in the copper smelting subcategory, the Agency believes this one plant is the only discharger experiencing arsenic concentrations frequently over 100 mg/l in the raw wastewater. However, three of the remaining plants may be properly designed and, of these, the two primary zinc plants appear to have problems complying with the proposed zinc limitations (possibly due to extremely high influent zinc concentrations or to ammonia interferences) while another plant, from the primary lead subcategory, appears to have difficulty meeting the proposed limit for cadmium and lead. Although there were indications that these plants might not be operating optimally—the coefficient of variation for treated effluent was higher than for influent, the Agency, as a conservative measure, assumed that additional treatment with sulfide precipitation would be necessary for plants in these subcategories to meet the limitations.

The data from the three acceptable plants have been summarized and are presented in a memorandum that is included in the administrative record for this regulation.

Therefore, sulfide precipitation has been added to the technology basis for BAT in these four subcategories (primary copper refining, lead, zinc and metallurgical acid plants). The Agency believes that the combination of lime and settle plus sulfide precipitation will achieve the performance values originally proposed for lime and settle treatment. We believe that sulfide precipitation will enhance the metals removal by providing two stage precipitation and by using sulfide to form a metal sulfide that is more insoluble than the metal hydroxide formed by hydroxide precipitation (see Section VII of the General Development Document). We also have data from one U.S., one Swedish, and one Japanese nonferrous metals plant that we believe support this conclusion. Sulfide precipitation is used to remove arsenic, cadmium, lead, zinc, and other toxic metals at these plants. There are several laboratory studies that have supported the use of sulfide to remove toxic metals. The technology also is demonstrated in wastewater and process applications in the nonferrous metals industry.

The Agency also received extensive effluent monitoring data from the secondary lead subcategory. However, the effluent data were not usable because there is inadequate influent data and, for the most part, did not include effluent total suspended solids measurements. Without extensive influent data, it is not possible for the Agency to examine the raw matrix and check for aberrations from the raw wastewater matrix of the combined metals data base. In addition, one of the plants submitting effluent data discharges wastewater to a percolation pond and may not have the incentive to achieve the same effluent quality as a direct discharger. Without effluent TSS measurements we cannot determine if there is acceptable design and operation of the treatment system. As stated above, the Agency has verified the proposed long-term mean for lead and increased the variability factors for lead based on adding 201 data points from an integrated secondary lead and battery manufacturing plant.

In addition, the Agency has revised the nickel performance for the primary aluminum subcategory. The pilot-scale study conducted by the Agency has demonstrated the proposed nickel performance (as well as antimony, fluoride and aluminum performance that is not directly developed from the CMDB) value from the CMDB is unachievable in primary aluminum wastewaters when cathode reprocessing is operated at the plant. Therefore, the Agency has promulgated two sets of performance standards for the subcategory as explained more fully in the primary aluminum BAT technology basis discussion.

2. Aluminum. We have revised the treatment effectiveness of lime and settle technology for the pollutant aluminum (which was not based on the CMDB) based on analysis of the effluent concentrations of aluminum at three aluminum forming plants and one aluminum coil coating plant with lime and settle wastewater treatment. These plants are from categories included in the combined metals data set, and so the matrices are comparable to the raw wastewater matrices for the nonferrous subcategories (primary and secondary aluminum) where these values are used. A total of 11 data points were available which were used to establish the treatment effectiveness value for aluminum. This aluminum value reflects the aluminum removals achievable when treatment is optimized for removal of toxic metals such as chromium and zinc.

3. Fluoride. The Agency has reevaluated lime and settle technology performance for fluoride removal. The proposed treatment performance for fluoride was transferred from the electrical and electronic component manufacturing (phase I) lime and settle mean performance. Commentors urged the Agency to transfer treatability performance values from the inorganic chemical industry instead. We disagree. The Agency believes the electronics data base more closely reflects the treatability of fluoride in nonferrous metals manufacturing wastewaters because of the type of fluoride present. The fluoride present in inorganic chemicals manufacturing (hydrofluoric acid production) exists as a complex fluoride mineral containing silicates and other compounds that complicate removal by lime precipitation. In nonferrous metals manufacturing and electronics, the fluoride disassociates in water to fluoride ion, which can be readily removed from solution by lime as calcium fluoride.

However, examination of the elecrtronics data has led the Agency to conclude that the raw concentrations of fluoride in nonferrous metals manufacturing wastewaters more closely resemble the higher concentrations found in electrical and electronics phase II rather than phase I (49 FR 55690, December 14, 1983.). Therefore, the Agency believes it is appropriate to use the mean performance and daily maximum variability developed for electronics phase II to establish treatment effectiveness for fluoride removal by line and settle treatment.

b. Filtration. EPA established the pollutant concentrations achievable with lime precipitation, sedimentation, and polishing filtration with data from three plants with the technology in-place: one nonferrous metals manufacturing plant and two porcelain enameling plants whose wastewater is similar (as determined by statistical analysis for homogeneity) to wastewater generated by nonferrous metals manufacturing plants. In generating long-term average standards, EPA applied variability factors from the combined metals data base because the combined data base provided a better statistical basis for computing variability than the data from the three plants sampled. The use of lime and settle combined data base variability factors is probably a conservative assumption because filtration is a less variable technology than lime and settle, since it is less operator-dependent. (In fact, no commenter questioned this use of CMDB variability factors.)

For pollutants for which there were no data relating to filtration effectiveness from these three plants, long-term concentrations were developed assuming that removal by filtration would remove 33 percent more pollutants than lime precipitation and sedimentation. This assumption was based upon a comparison of removals of several pollutants by lime precipitation, sedimentation, and filtration which showed 33 percent incremental removal attributable to filtration.

EPA selected this approach because of the extensive long-term data available from these three plants. We believe that the use of polishing filtration data from porcelain enameling plants is justified because porcelain enameling was included in the combined metals data base. Since we have determined that lime precipitation and sedimentation will produce identical results on both nonferrous metals manufacturing and porcelain enameling wastewater, it is reasonable for the Agency to assume that polishing filters treating these identical intermediate waste streams will produce an identical final effluent. (In those nonferrous subcategories where sulfide precipitation is the technology basis as well as lime and settle treatment, the influent being filtered would have the same level of pollutants as CMDB influent being filtered. This is because sulfide precipitation following lime and settle treatment is projected to achieve the CMDB treatability levels for these subcategories.)

The proposed treatment performance for fluoride was transferred from the electrical and electronic component manufacturing (phase I) lime and settle mean performance plus a one-third incremental removal by filtration. However, review of the electronics data has convinced the Agency that no substantial additional removal of fluoride will occur from polishing filtration. This is consistent with the fact that the long-term lime and settle performance being used closely approaches the solubility of calcium fluoride in water. The final regulation thus assumes no incremental removal of fluoride from filtration.

c. Ammonia Steam Stripping. This technology is used routinely to reduce ammonia levels. To evaluate treatment effectiveness, EPA (through its contractor) collected chemical analysis data of raw waste (treatment influent) and treated waste (treatment effluent) from one plant in the iron and steel category. These data are the data base for determining the effectiveness of ammonia steam stripping technology in this category and are contained within the administrative record supporting this regulation. We believe this treatment performance can be transferred to nonferrous subcategories because the technology is solubility related and these nonferrous subcategories do not contain interfering agents that would reduce ammonia removals.

An arithmetic mean of the treatment effluent data produced an ammonia long-term mean value of 32.2 mg/l. The one-day maximum, 10-day, and 30-day average concentrations attainable by ammonia steam stripping were calculated using the long-term mean of the 32.2 mg/l and the variability factors that express an overall pooled variance estimate developed from the combined metals data base. This produced ammonia concentrations of 133.3, 58.6, and 52.1 mg/l ammonia for the one-day maximum, 10-day, and 30-day averages, respectively.

The Agency has verified the proposed steam stripping performance values using steam stripping data collected at a zirconium-hafnium plant, a plant in the nonferrous category (phase II), which has raw ammonia levels as high as any in the nonferrous phase I subcategories. Data collected by the plant represent almost two years of daily operations, and support the long-term mean used to establish treatment effectiveness.

Several comments were received stating that ammonia steam stripping performance data transferred from the iron and steel category are not appropriate for the nonferrous metals manufacturing category. Many of the commenters believe plugging of the column due to precipitates will adversely affect their ability to achieve the promulgated steam stripping performance values. In developing compliance costs, the Agency designed the steam stripping module to allow for a weekly acid cleaning to reduce plugging problems. Through Section 303 information requests, the Agency attempted to gather data at plants which stated they could not achieve the proposed limits. However, very little data were submitted to support their claims or document column performance. Therefore, the Agency has retained the proposed performance, which has been validated with steam stripping data from a zirconium-hafnium facility.

Commenters in the secondary aluminum subcategory claim stripped ammonia will have to be disposed of as corrosive hazardous waste. The Agency does not agree with the commenters because ammonia has an intrinsic value. The ammonia can be either sold or given away to be used as a process chemical. In the columbiumtantalum and tungsten subcategories, where ammonia also would be steam stripped, it does not even need to be given away, because ammonia is a process chemical and may be reused as a precipitating agent.

d. Flow Reduction. Flow reduction is a significant part of the overall pollutant reduction technology. Because of this, the Agency is promulgating mass-based limitations and standards which take into account the significant pollutant removal achieved by flow reduction model technology. Mass-based limits ensure reduction of the total quantity of pollutant discharge. The mass-based limitations and standards established for this category are derived as the product of the regulatory flow and the overall treatment effectiveness. The regulatory flows are based on flow data, normalized to production, supplied by the industry.

Certain other limitations—notably those for cyanide in the primary aluminum subcategory and total phenols in the secondary aluminum subcategory—are based on additional technologies, namely cyanide precipitation and activated carbon absorbtion. These technologies are discussed in sections dealing with these specific subcategories.

C. Technology Basis for Final Regulations

A brief summary of the technology basis for the regulation is presented below. The proposed technology basis is presented in the "Preamble to the Proposed Nonferrous Metals Manufacturing Point Source Category Effluent Limitations Guidelines, Pretreatment Standards, and New Source Performance Standards" (48 FR 7032 (February 17, 1983)) and the

Development Document for Effluent Limitations Guidelines and Standards for the Nonferrous Metals Manufacturing Point Source Category.

BPT: BPT limitations already are promulgated for the primary aluminum, secondary aluminum, primary copper smelting, primary electrolytic copper refining, secondary copper, primary zinc, and metallurgical acid plant subcategories. With the exception of the primary lead subcategory, we did not propose to alter these existing limitations. (See 48 FR at 7053.) (We are making a small technical change to these regulations, by rewriting those sections referring to fundmentally different factors variances, to cross-reference applicable regulations instead of having an extended discussion. These changes do not reopen promulgated BPT regulations for purposes of review.) We did propose BPT in those subcategories not previously addressed, namely primary columbium-tantalum, primary tungsten, secondary silver, and secondary lead. We also proposed that lead and zinc metallurgical acid plants be subject to existing limits already applicable to copper acid plants (see 48 FR at 7053). We are now promulgating these BPT limitations as final regulations. These BPT mass limitations are based on end-of-pipe treatment consisting of lime precipitation and settling, and, where necessary, preliminary treatment consisting of ammonia steam stripping. For each subcategory, it is our judgment that the benefits of effluent reduction justify the associated costs. The promulgated BPT limitations and technology basis for each subcategory are discussed in detail below.

Primary Lead

EPA proposed BPT mass limitations for the primary lead subcategory to allow a discharge to prevent dissolved solids from accumulating in slag granulation water circuits. The technology basis for the promulgated BPT limitations is lime and settle; this is the same as the technology basis for the proposed limitations. This technology is demonstrated at two plants in the subcategory.

The Agency has revised one regulatory flow allowance used to develop the proposed BPT mass limitations for the primary lead subcategory. New flow and production data for dross reverberatory slag granulation wastewater were submitted by one plant. The data, which showed the plant had reduced its reported dcp flow, were used to revise the proposed discharge allowance. The Agency has also considered four additional waste streams identified in comments to the proposal. Data solicited by the Agency after proposal were used to determine a BPT flow allowance for materials handling wet air pollution control. This wastewater source is due to compliance with OSHA standards which limit fugitive lead emissions. An additional four building blocks were added for the wastewater sources generated due to industrial hygiene requirements. Based on information and data gathered at two integrated secondary lead and battery manufacturing plants (which have lead concentrations similar to what one would realistically expect to find in the analogous primary lead waste waters), the Agency has determined that floor washing, employee hand wash, respirator wash, and employee uniform laundering generate wastewaters sufficiently contaminated with lead to warrant treatment. We are not providing a discharge allowance for one of these wastewater sources (floor washing) because this operation can use recycled treatment plant effluent. The basis of these flow allowances is presented in Section IX of the primary lead supplemental development document.

Commenters argued that the CMDB treatability values are inappropriate for primary lead plants, and submitted long-term treatment performance data from two primary lead plants operating BPT equivalent (i.e., lime and settle) treatment systems. The performance data submitted to the Agency demonstrated that primary lead wastewaters comprising the combined metals data base. The Agency conducted a statistical analysis on the performance data and studied the design and operating characteristics of the treatment systems from which the data were obtained. The Agency has determined that the performance data from one of the plants are representative of the treatment system and has used treatment effectiveness concentrations obtained from the data to calculate the primary lead BPT mass limitations. Treatment performance from the other plant was not used due to the lack of equalization before lime and settle treatment.

We are eliminating the allowance for net precipitation and catastrophic storms as we did in primary electrolytic copper refining when it was revised in 1980. As explained previously we do not believe this allowance is necessary because of the relatively small surface area impoundments that would be used to comply with these limitations. We do not believe any costs will result from this change. Plants using impoundments for other purposes, such as stormwater collection, may need to receive net precipitation allowances from permit authorities on a case-by-case basis.

The pollutants selected for specific BPT limitation are lead, zine, TSS, and pH. These pollutants were selected because they are present in the largest quantities in the raw wastewater.

Because the technology installed at several plants is more extensive than BPT, implementation of the promulgated BPT limitations will not remove any additional toxic metals or TSS over estimated current discharge on a total subcategory basis. However, there will be removals at individual plants. Removals from raw wastewater are an estimated 3,900 kg/yr of toxic metals and 261,000 kg/yr of TSS. We project a capital cost of $211,000 and an annual cost of $56,000 for achieving the proposed BPT limitations. One of the three direct discharges does not currently have installed BPT technology.

Primary Tungsten

We are promulgating BPT limitations for the primary tungsten subcategory based on lime precipitation and sedimentation technology to remove metals and solids and to control pH, and ammonia steam stripping to remove ammonia. The end-of-pipe treatment technology basis for BPT limitations being promulgated is the same as that for the proposed limitations. Ammonia steam stripping is practiced at three plants (one of four direct dischargers) and lime precipitation and sedimentation technology is in place at four of 10 plants (three of four direct dischargers).

In the proposed limitations, the toxic pollutants selected for control were lead, selenium, and zinc. Analytical data gathered since proposal at a primary tungsten plant have demonstrated that selenium is not a toxic pollutant found on a subcategory-wide basis. Therefore, we have eliminated selenium as a control parameter, and are selecting the following pollutants for limitation at BPT: lead, zinc, ammonia, TSS, and pH.

The Agency has chosen not to regulate toxic organic pollutant parameters on a subcategory-wide basis for the primary tungsten subcategory. Primary tungsten plants may use an organic solvent in a liquid-liquid ion exchange process to extract tungsten from digested concentrates. In the pollutant reduction removals calculated prior to proposal, it was estimated that the subcategory generates 70 kg/yr toxic organic pollutants. The Agency believes the toxic organic pollutants in the primary tungsten subcategory are present only in trace amounts and thus are not regulated on a subcategory-wide basis. However, it is possible that toxic organic pollutants may be present in larger concentrations at an individual plant than the Agency's sampling data indicate. Therefore, the permitting or control authority should check for the presence of toxic organic pollutants on a case-by-case basis and determine the need for treatment. Section VII of the General Development Document provides information of the treatability of these pollutants using activated carbon adsorption.

Additional data gathered by the Agency through engineering site visits, data collection portfolios, and Section 308 requests, were used to revise the flow allowances proposed for the primary tungsten subcategory. Besides recalculating the existing flow allowances, two additional wastewater sources were provided discharge allowances: APT coversion to oxides water of formation and tungsten powder acid leach and wash wasterwater.

Implementation of BPT limitations will not remove any toxic metals from current discharge rates; however, it will remove 141,000 kg/yr of ammonia and 6,260 kg/yr of TSS over estimated current discharge. Removals from raw wastewater are an estimated 4,800 kg/yr of toxic metals, 141,000 kg/yr of ammonia, and 50,300 kg/yr of TSS. Although we have developed BPT limitations and costs assuming that wastewater will be centrally treated with ammonia stripping followed by lime, settle, and filter treatment for metals, it is possible that several plants could achieve more stringent limits and save compliance costs by removing metals from tungsten acid rinse and acid leach wet air pollution control and then combining these waste streams with any other process streams for ammonia removal. By not assuming that waste streams will be mixed in a central treatment system until after metals are removed, individual permits may be able to eliminate allowances for metals in the six waste streams not containing metals and also eliminate the cost of lime, settle, and filter technology for those six processes. We project $642,000 in capital costs ands $637,000 in annual costs for achieving the promulgated BPT. These costs represent wastewater treatment equipment not in place.

Primary Columbium-Tantalum

We are promulgating BPT limitations for the primary columbium-tantalum subcategory based on lime precipitation and sedimentation to control toxic metals, TSS, pH and fluoride, and preliminary treatment with steam stripping to reduce ammonia concentrations. The end-of-pipe treatment technology bais for the BPT limitations being promulgated is the same as that for the proposed limitations. Lime and settle technology is currently demonstrated by all three primary columbium-tantalum direct dischargers. Ammonia steam stripping is practiced by two of the plants. The pollutants specifically regulated at BPT are lead, zinc, ammonia, fluoride, TSS, and pH.

The Agency has chosen not to regulate toxic organic pollutant parameters on a subcategory-wide basis for the primary columbium-tantalum subcategory. Primary columbium-tantalum plants may use an organic solvent in a liquid-liquid ion exchange process to extract columbium-tantalum from digested concentrates. In the pollutant reduction removals calculated prior to proposal, it was estimated that the subcategory generates 170 kg/yr toxic organic pollutants. The Agency believes the toxic organic pollutants in the primary columbium-tantalum subcategory are present only in trace amounts and thus are not regulated on a subcategory-wide basis. However, it is possible toxic organic pollutants may be present in larger concentrations at an individual plant than the Agency sampling data indicate. Therefore, the permitting or control authority should check for the presence of toxic organic pollutants on a case-by-case basis and determine if they require treatment.

In light of comments received, the Agency reexamined the regulatory flows proposed for the primary columbium-tantalum subcategory. The production normalizing parameter for concentrate digestion wet air pollution control, solvent extraction raffinate, solvent extraction raffinate wet air pollution control, and precipitation and filtration of metal salts has been changed from the product of each operation to the mass of concentrate produced at each plant. This change will account for the difference in columbium and tantalum metal values for the different raw materials processed. In addition, the Agency is providing new mass limitations for precipitation and filtration wet air pollution control, tantalum fluoride salt drying, and tantalum powder wash wastewater. Along with the addition of these waste streams, the Agency has also reevaluated the appropriate flow allowances for calcining of columbium-tantalum oxides wet air pollution control, reduction of tantalum salt to metal air pollution control, and reduction of tantalum salt wastewaters. Recalculation of regulatory flows for these waste streams was based on data obtained from the data collection portfolios and Section 308 information requests. A complete discussion of the flow allowances is presented in Section IX of the primary columbium-tantalum supplemental development document.

BPT will result in the removal of an estimated 17,900 kg/yr of toxic pollutants, 594,000 kg/yr of conventional pollutants, 226 kg/yr of flouride, and 88,000 kg/yr of ammonia from current discharge levels. The estimated capital investment cost of BPT is $680,000 and the estimated annual cost is $777,000. These costs represent wastewater treatment equipment not currently in place.

Secondary Silver

EPA is promulgating BPT limitations for the secondary silver subcategory based on lime precipitation and sedimentation to remove toxic metals, control pH, and remove TSS and preliminary treatment with steam stripping to reduce ammonia concentrations. The end-of-pipe treatment technology basis for the BPT limitations being promulgated is the same as that for the proposed limitations. Lime and settle treatment technology is currently in place at five direct discharging facilities. No comments were submitted pertaining to the achievability of the proposed ammonia limitation at secondary silver plants. The pollutants specifically regulated at BPT are copper, zinc, ammonia, TSS, and pH. Specific effluent mass limitations have been developed for each of these pollutants.

The Agency has collected data on secondary precious metals facilities through data collection portfolios (dcp) so that it may propose mass limitations for the secondary precious metals subcategory (in nonferrous metals manufacturing phase II). Many of the plants in the subcategory overlap with the secondary silver subcategory. Review of these dcp's, and the dcp's specifically collected for the secondary silver subcategory, has led the Agency to revise the regulatory flows. Accordingly, the wastewater streams from film stripping and precipitation and filtration of film stripping wet air pollution control have been combined into one building block. Leaching wet air pollution control and precipitation of nonphotographic solutions wet air pollution control wastewater sources have also been combined into one building block. In addition, the mass limitations proposed for casting contact cooling water and casting wet air pollution control have been eliminated.

Analytical data collected at a secondary precious metals plant demonstrate casting contact cooling water is not sufficiently contaminated to warrant treatment. Casting wet air pollution control limitations have been eliminated because the Agency believes this limitation is duplicated by the furnace wet air pollution control limitations (these operations are identical). A flow allowance is not provided for floor and equipment washdown based on reuse of recycled treatment effluent as facility washdown water. In developing compliance cost estimates, the Agency sized treatment equipment to allow for this flow.

Cyanide was not chosen as a regulated pollutant parameter on a subcategory-wide basis for the secondary silver mass limitations. However, secondary silver plants process plating solutions, which may contain cyanide, to recover silver contained in the solution. Cyanide is present due to its use as a process chemical in plating operations. The permitting authority should check for the presence of cyanide in this waste stream and develop discharge limitations if necessary. A discharge allowance can be developed by locating the flow allowance for precipitation and filtration of nonphotographic solutions at BPT and BAT in Sections IX and X, respectively, of the secondary silver supplemental development document. Treatment performance for cyanide precipitation is presented in Section VII of the General Development Document. The discharge allowance (or mass limitation) is the product of the flow allowance and the treatment performance.

The BPT effluent limitations should remove estimated 409 kg/yr of toxic pollutants, 664,000 kg/yr of ammonia, and 7,320 kg/yr of TSS from current discharge levels. The estimated capital investment cost of BPT is $110,000 and the estimated annual cost is $211,000. These costs represent wastewater treatment equipment not currently in place.

Secondary Lead

EPA is promulgating BPT limitations for the secondary lead subcategory based on lime precipitation and sedimentation to remove toxic metals and TSS, and to control pH. The end-of-pipe treatment technology basis for the BPT limitations being promulgated is the same as that for the proposed limitations. This treatment currently is in place at 24 of 50 plants. The pollutants and pollutant parameters controlled at BPT are antimony, arsenic, lead, zinc, TSS, and pH.

In light of the comments received on the proposed flow allowances, the Agency reviewed existing flow and production information from data collection portfolios and solicited additional information through Section 308 requests. The Agency also performed engineering site visits at two integrated secondary lead and battery manufacturing plants. These additional data have been used by the Agency to develop flow allowances for five waste streams not considered at proposal. Three of these waste streams—handwash, respirator wash, and laundries—result from occupational hygiene needs. Flow allowances have also been developed for truck washing and for laboratories. The Agency also considered whether to grant allowances to two other wastestreams, from facility washdown and battery case classification, but determined not to because treated effluent can be used as makeup water for these two operations. Compliance costs include the larger size equipment needed to accommodate these streams. Lastly, kettle wet air pollution control, a building block not allocated a discharge allowance at proposal, is now provided a discharge allowance based on data gathered through Section 308 requests indicating that a periodic discharge is needed. A complete discussion of the flow allowances provided for the secondary lead subcategory is presented in Section IX of the secondary lead supplemental development document.

BPT will result in the removal of an estimated 5,940 kg of toxic pollutants and 53,310 kg of conventional pollutants per year from current discharge levels. The estimated capital investment cost of BPT is $1.6 million and the estimated annual cost is $684.000. These costs represent wastewater treatment equipment not currently in place.

In the proposed limitations, ammonia was given a discharge allowance of zero to prevent the discharge of kettle scrubber liquor. Data gathered through Section 308 requests have shown that those plants previously thought to be recycling kettle scrubber liquor 100 percent do actually have a periodic discharge. Ammonia in secondary lead wastewaters is the result of its use as a wastewater treatment chemical. It is the Agency's understanding that ammonia is used because it reduces the amount of sludge generated and produces a sludge more amenable for reuse as a raw material than lime sludges. Effluent data from a secondary lead plant were found to have ammonia in its treated effluent at an average concentration of 6,500 mg/l showing that ammonia can be present in treatable concentrations. In developing plant-by-plant costs, the Agency has examined the costs of substituting neutralization with caustic for neutralization with ammonia. These costs are justified by the reduction in ammonia discharges. In addition, neutralization with caustic will still produce a sludge acceptable for recycling. Therefore, the zero discharge requirement for ammonia as proposed is included in the promulgated regulation.

BAT: The general end-of-pipe technology basis for the promulgated BAT mass limitations is based on the model BPT technology plus in-process flow reduction and multimedia filtration following lime and settle treatment. Sulfide precipitation is also included as the technology basis for the primary lead, primary zinc, and metallurgical acid plant subcategories, and for one primary copper plant. Preliminary treatment technology includes ammonia steam stripping and cyanide precipitation were required. In the secondary aluminum subcategory, activated carbon perliminary treatment was promulgated for the control of phenols resulting from delacquering operations. Catastrophic storm allowances for rainfall on surface impoundments are provided for two subcategories. As explained in Section VI below, we find that the costs of achieving limitations based on these model technologies are economically achievable for each subcategory.

The complexity and cost of analyses for toxic pollutants found in the nonferrous metals manufacturing category wastewaters has prompted EPA to develop an alternative method of controlling toxic pollutants. Instead of establishing specific effluent limitations for each of the toxic metals found in the category's raw wastewaters above treatable concentrations, the Agency is establishing effluent limitations for certain toxic metals as "indicator" pollutants. The data available to EPA show that control of the selected "indicator" pollutants will result in the substantial removal of other toxic pollutants found in the wastewaters but not specifically limited. By establishing specific limitations and standards for only the "indicator" pollutants, the Agency will reduce the difficulty, cost, and delays of pollutant monitoring and analyses that would result if pollutant limitations were established for each toxic pollutant. However, permit writers are free to write limits for indicated pollutants, in addition to the guideline limitations on indicator pollutants, in appropriate situations such as when indicated pollutants are present at a particular plant in higher concentrations than indicator pollutants. (Permit writers may consult the development documents for a list of all pollutants present in order to determine whether such additional limitations are necessary.)

The selected technology basis and regulated pollutant parameters are discussed below for each subcategory.

Primary Aluminum

a. Technology Basis. EPA is promulgating BAT mass limitations for the primary aluminum subcategory based on end-of-pipe lime precipitation, sedimentation, and multimedia filtration. Preliminary treatment of cyanide is based on cyanide precipitation. In-process flow reduction through recycle is also included. This technology basis differs from the technology basis we proposed in that effluent limitations based on at-the-source requirements for toxic organics using activated carbon have been eliminated. This is because we have determined that these organics are effectively removed by centralized lime, settle, and filter treatment.

b. *Flow Reduction.* In response to the proposed primary aluminum mass limitations, the Agency received numerous comments on the proposed flow allowances for the subcategory. The Agency evaluated these comments carefully and solicited additional information through section 308 information requests. With the exception of potline wet air pollution and continuous rod casting contact cooling water, the flow allowances were revised to reflect comments and new data. A complete discussion regarding the flow allowances used to calculate the promulgated mass limitations is presented in Section X of the primary aluminum supplemental development document. Based on the comments received, the Agency has expanded the definition of anode contact cooling water and anode paste wet air pollution control. Anode contact cooling water has been expanded to include the cooling of briquettes used as anodes in Soderberg plants. Anode paste plant wet air pollution control has been expanded to cover wet scrubbers used to control air pollution emissions during cathode paste mixing. Commenters demonstrated to the Agency that these operations, as expanded, are very similar to the processes for which the original flow allowances were provided.

The anode bake plant wet air pollution control flow allowance has been revised to account for the differences in furnace types and scrubber types, which were shown to affect water usage for this operation. Briefly, separate flow allowances have been promulgated for open and closed top anode bake furnaces, for tunnel kilns, and for the different scrubber types used for closed top furnaces. A complete discussion of the promulgated flow allowances for this operation is presented in Section X of the primary aluminum supplemental development document. The Agency also performed this type of analysis for potline scrubbing, but there was no apparent correlation between cell technology, scrubber type, and production normalized water usage. We thus are not providing separate flow allowances, varying by cell and scrubber types, for this unit operation.

The Agency is providing an additional flow allowance for potline SO_2 wet air pollution control. Wet scrubbers are needed to control potline sulfur emissions. The flow allowance is developed from flow and production information solicited from two plants that operate this type of scrubber. In addition, the Agency has revised the zero discharge requirement for degassing wet air pollution control. Product quality constraints and extensive retrofit costs of installing alternate in-line fluxing methods dictates a scrubber allowance so that furnace fluxing practices can continue.

Data gathered through Section 308 requests indicate that the Agency originally overstated the flow allowance required for cathode reprocessing wastewaters. Plants operating potline wet scrubbers and cathode reprocessing commingle the two streams together to recover the cryolite as fluoride. Discharge from cryolite recovery is then returned to the potline circuit and used as scrubber liquor. Thus, the bleed from cathode reprocessing is accomplished with the potline scrubber bleed. Since there is no independent discharge from cathode reprocessing, the flow allowance provided is for the potline scrubber bleed. (Plants with cathode reprocessing were included in determining the potline scrubber flow allowances.) A cathode reprocessing flow allowance is provided in the regulation, but it only applies to those plants operating dry potline scrubbers (and so not using wet scrubber bleed as makeup for cathode reprocessing). The Agency has also changed the production normalizing parameter for cathode reprocessing from aluminum produced to cryolite recovered. In this way, a plant may obtain spent potliners from another facility (a situation that sometimes occurs) and still be able to comply with the promulgated mass limitations.

c. *Toxic Pollutants to be Limited and Treatment Effectiveness.* The Agency received numerous comments requesting that antimony not be limited. Based on the analytical data gathered before proposal and during the pilot-scale treatment performance work, the Agency has identified antimony as a pollutant that occurs frequently above treatable concentrations in certain waste streams. Therefore, the mass discharge of antimony is limited in the promulgated guidelines.

Treatment performance data gathered during the pilot-scale study demonstrated the plants operating cathode reprocessing operations and using the wastewater as makeup for potline scrubber liquor cannot achieve the performance values proposed for antimony, nickel, and fluoride. The Agency believes this is due to the matrix differences resulting from cathode reprocessing. The cathode reprocessing wastewater, and subsequently the potline scrubber liquor, contain dissolved solids levels in the 5 to 6 percent range. Therefore, the Agency is promulgating separate mass limitations for those primary aluminum plants that operate cathode reprocessing and commingle resulting wastewater with potline scrubber liquor. However, to receive these alternate limitations for antimony, nickel, and fluoride (cyanide does not vary) the plant may not dilute potline scrubber liquor blowdown or cathode reprocessing wastewater with any process or nonprocess wastewater source. If the potline scrubber blowdown is diluted with other wastewaters, the Agency believes the complexity of the matrix decreases and thus the concentrations of the combined metals data base (as well as the transferred antimony and flouride concentrations) can be achieved. In fact, our statistical analysis of untreated wastewater data shows primary aluminum wastewater to be significantly less contaminated than wastewater from the plants in the combined metals data base.

The variability factors used to determine the mass limitations for the alternate potline scrubber blowdown and cathode reprocessing are transferred from the combined metals data base. The CMDB contains more data points than the pilot-scale study and thus is a better source for determining variability for lime and settle treatment. Commenters to the November 4, 1983 notice did not challenge this use of the CMDB variability factors.

The Agency's pilot-scale treatment performance studies revealed that the performance limits for cyanide precipitation are not transferable from coil coating to primary aluminum wastewater. We believe that the cathode reprocessing operations, the only primary aluminum unit operation to generate cyanide, discharge much higher concentrations of cyanide than observed in coil coating and impair treatment by also discharging extremely high dissolved solids concentrations (5 to 6 percent) that interfere with precipitation chemistry. We therefore are adopting the treatment effectiveness for cyanide achieved from the Agency's pilot study on these wastewaters. This mean also was shown, in data submitted by a primary aluminum facility, to be achievable by ion exchange technology applied to cyanide-contaminated groundwater. In developing variability factors for cyanide precipitation technology, we will continue to use the mean variability from the combined metals data base because only two data points were generated by the treatability study. Commenters to the November 4, 1983 notice did not question this use of the CMDB variability factors.

In the November notice the Agency indicated that it might promulgate a limit for cyanide which need to be monitored after preliminary treatment and before treatment in the lime, settle, filter, and discharge to receiving waters. (We refer to this type of requirement as an "at-the-source" limit.) An at-the-source limit would be appropriate if there were a risk that cyanide could be diluted to below levels detectable at the end of the pipe as a result of mixing with wastewaters that do not contain cyanide. We do not think this is very likely to occur because the waste streams containing cyanide-cathode reprocessing wastewater and potline scrubber wastewater—have very high flows. These streams would have to be diluted at roughly a 100 to 1 ratio for cyanide to the undetected, an unlikely result. Permit writers should investigate, however, whether this degree of dilution might occur at an individual plant (for example, if stormwater is being centrally treated), in which case they should require monitoring at the source to ensure treatment and removal of cyanide.

The final regulation thus is written so that only the potline wet scrubber and cathode reprocessing building blocks receive a cyanide mass limitation. This effectively precludes dilution because it does not make economic sense for a plant to treat its entire flow when it can pretreat these cyanide-containing streams. (The Agency thus developed compliance costs based on cyanide preliminary treatment.) In addition, as explained above, a mass allowance is provided for cathode reprocessing only if this operation is not conducted in conjunction with potline wet scrubbing. Where cathode reprocessing is operated along with wet potline scrubbing, an allowance is provided only for the potline scrubber because only a single flow is associated with both operations.

Many commenters questioned whether activated carbon technology was needed to control toxic organic pollutants, arguing that these pollutants are treatable with lime, settle, and filter technology. The Agency has performed pilot-scale work on potline scrubber blowdown and cathode reprocessing wastewater at a primary aluminum facility since proposal. Analytical data gathered during the study indicate that the toxic organic pollutants present in primary aluminum wastewaters are controllable through lime, settle, and multimedia filtration treatment technology. The toxic organics, present as polynuclear aromatic hydrocarbons, are only silghtly soluble in water, and thus are treatable using sedimentation and filtration techniques. Removals by this technology exceed 99 percent of all toxic organics presert. In addition, the most toxic of the polynuclear aromatic hydrocarbon—including the carcinogen benzo(a)pyrene—are removed to the limit of quantification by this technology. For these reasons, we do not believe it is warranted to establish more stringent effluent limitations based on activated carbon to remove the small amounts of these less toxic polynuclear aromatic hydrocarbons remaining after application of lime, settle, and filtration technology.

We also proposed at-the-source limitation for toxic organic pollutants. Such limitations are no longer appropriate because toxic organics would not be pretreated, but rather are removed by centralized lime, settle, and filter treatment.

d. *Compliance Costs and Pollutant Removal Estimates.* We estimate that implementation of the promulgated BAT limitations will result in the removal of 13,000 kg/yr of toxic metals, 60,000 kg/yr of cyanide, 1,605,000 kg/yr of fluoride, 75,700 kg/yr of toxic organics, and 667,000 kg/yr of aluminum over estimated current discharge. The final BAT effluent mass limitations will remove 6,300 kg/yr of toxic metals, 990 kg/yr of toxic organics, and 4,300 kg/yr of aluminum over the intermediate BAT option considered, which lacks filtration. Both options are economically achievable and filtration as an end-of-pipe treatment technology is demonstrated at one primary aluminum facility. We believe that the incremental removal justifies selection of filtration as part of BAT model technology. The estimated cost of compliance is $16 million for capital investments (1982 dollars) and annual costs of $7.1 million. These cost represent treatment not already in place.

Secondary Aluminum

EPA is promulgating BAT effluent limitations for the secondary aluminum subcategory based on end-of-pipe lime, sedimentation, and filtration technology. This is the same technology basis as that proposed. Flow reduction is also included in the technology basis through reuse and recycle of casting contact cooling water. One additional treatment step applies to plants discharging wet scrubber water from delacquering furnace operations (an operation that removes paint and other surface coating from aluminum scrap). The Agency received comments requesting a flow allowance for delacquering wet air pollution control operations, and a flow allowance is necessary. Data solicited by the Agency through Section 308 requests demonstrated the presence of 4-AAP phenols in this wastewater source at treatable concentrations. The Agency has examined the costs and pollutant removal associated with the activated carbon to reduce the mass of phenols currently discharged. The Agency has determined that this technology is economically achievable and demonstrated in the iron and steel (cokemaking) category as a phenols removal technology. The treatment performance used for activated carbon to develop mass limitations for phenol is based on the attainable quantification limit of 0.010 mg/l. (See Section VII of the General Development Document.) The Agency believes this value is achievable, when adequate quantities of carbon are used. For cost estimation purposes, we used a carbon loading rate of 1.46 pounds per thousand gallons. This rate is obtained from several sources including the Agency's pilot-scale study at a primary aluminum plant, experimental work performed by the Agency's Industrial Environmental Research Laboratory, and the technical literature. Although this is a rough estimate of the cost, it has allowed the Agency to evaluate the economic impacts, and determine that activated carbon pretreatment for delacquering scrubber blowdown is economically achievable.

The Agency is promulgating at-the-source requirements—i.e., requiring that compliance be demonstrated and monitoring conducted—for phenol because of the possibility of significant dilution. (See generally 48 FR at 7056, explaining the rationale for at-the-source requirements in more detail.) The plants known to currently operate delacquering scrubbers are principally primary aluminum and aluminum forming plants, which generate much larger volumes of process wastewater than the delacquering operations. The pollutants specifically regulated at BAT are those proposed—lead, zinc, aluminum, ammonia—plus phenol.

In response to comments and the lack of any demonstrated zero dischargers, the Agency is promulgating a flow allowance for ingot conveyor casting. However, this allowance is only intended for those plants that do not operate chlorine demagging operations. Those plants which have demagging will not receive an ingot conveyor casting allowance based on the demonstrated 100 percent reuse of the ingot conveyor casting water in demagging air scrubbing operations.

The flow allowances for direct chill casting and demagging wet air pollution control were evaluated and adjusted based on comments received questioning the accuracy of the calculated allowances at proposal. A complete discussion of the flow allowances is provided in Section X of the secondary aluminum supplemental development document.

Implementation of the promulgated BAT limitations will remove an estimated 615 kg/yr of toxic metals, 526 kg/yr of phenols, 90,000 kg/yr of aluminum over estimated current discharge estimates. The final BAT effluent mass limitations will remove 8.2 kg/yr of toxic metals and 36 kg/yr of aluminum over the intermediate BAT option considered, which lacks filtration. Both options are economically achievable. We believe that these incremental—justifies selection of filtration removals—which include removal of an estimated 1.5 kg/yr cadmium as part of BAT model technology. Filtration likewise serves as a safeguard if lime and settle treatment is not operated properly. We also believe that the selection of filters is an appropriate balance to our elimination of previously promulgated no discharge BAT requirements for ingot conveyor casting and dross washing. Providing this allowance for these operations is only justified when the Agency can assure that most of the pollutants contained in these discharges will be removed by treatment. Implementation of the promulgated BAT limitations is expected to result in a capital cost of $1.1 million and an annual cost of $382,000.

Primary Copper Smelting

The Agency is promulgating the proposed BAT in this subcategory to conform BAT to promulgated BPT. The promulgated BPT (a 1980 regulation) is zero discharge, subject to an unlimited discharge allowance for stormwater from a 10-year, 24-hour storm falling on a cooling impoundment. BAT limitations promulgated in 1975 included the same allowance for plants with cooling impoundments (except the storm event is the 25-year, 24-hour storm), and an additional allowance for discharge of net precipitation falling on the impoundment. We are promulgating limitations to eliminate this latter allowance, for the same reasons we eliminated it at BPT. See 45 FR 44926, July 2, 1980. There are no costs associated with this requirement since the discharge allowance already is eliminated at BPT and the change from 10-year to 25-year design storms was required by the 1975 regulation.

Primary Copper Electrolytic Refining

EPA is promulgating BAT effluent limitations based on in-process flow reduction and end-of-pipe treatment technology consisting of lime and settle treatment followed by multimedia filtration. Filtration is not demonstrated in this subcategory, but it is transferred from the primary aluminum, secondary copper, primary zinc, primary lead, secondary lead, and secondary silver subcategories. This was one of the alternatives initially proposed. Our reevaluation of compliance costs and economic achievability indicate that filters are economically achievable, allaying the concerns we expressed at the time of proposal.

The pollutant parameters proposed for limitation were copper, lead, and nickel. We are substituting arsenic for lead as a pollutant parameter. Arsenic is present in spent electrolyte, a building block for which a discharge allowance has been added since proposal. In fact, it is second to copper in mass generated and discharged by this subcategory. Therefore, the promulgated regulation limits three pollutants shown to be present in the largest quantities: copper, nickel, and arsenic.

We have also added arsenic limitations to the other unit operations to allow for central treatment with copper acid plant wastewaters without forcing plants to meet the mass limitations by reducing arsenic concentrations to a level lower than the treatment performance (see Section IX, *supra*).

The proposed flow allowance for spent electrolyte required zero discharge of wastewater pollutants based on 100 percent reuse following electrowinning and nickel sulfate removal. It was demonstrated to the Agency that differences in raw materials affect a plant's ability to operate a nickel sulfate recovery system and subsequently reuse the black acid as electrolyte. Low concentrations of nickel in anode copper dramatically affect nickel sulfate recovery systems and electrolytic refining. To operate a nickel sulfate recovery system at a plant that has low levels of nickel, blowdown of spent electrolyte would have to be decreased so that the nickel values increased. However, this would concentrate other impurities which are detrimental to the electrolytic process. Therefore, the Agency has provided a discharge allowance for spent electrolyte to control nickel concentrations and other contaminants in the electrolytic circuit.

Extensive effluent data submitted to the Agency by an integrated copper refiner and smelter have indicated that the proposed arsenic mass limitations based on lime and settle treatment, may not be achievable for this plant. The Agency believes that the larger arsenic values in the plant's ore contribute significant quantities of arsenic to the treatment system. Arsenic concentrations in excess of 100 mg/l are common at this plant, making the combined metals data base inappropriate. The Agency believes that the mass limitations as proposed for the primary electrolytic copper refining subcategory and metallurgical acid plant subcategory are achievable for this plant by adding sulfide precipitation to the model treatment technology. The Agency thus has determined that the combination of sulfide precipitation, lime and settle, and multimedia filtration will achieve the mass limitations promulgated and has included this technology in its compliance cost estimates for this one plant.

We estimate that the promulgated BAT will remove 17,900 kg/yr of toxic metals over current discharge estimates. The final BAT effluent mass limitations will remove 770 kg/yr of toxic metals over the intermediate option considered, which lacks filtration. Both options are economically achievable. We believe that the incremental removal justifies selection of filtration as part of BAT model technology. Implementation of the promulgated BAT limitations is expected to result in a capital cost of $275,000 and an annual cost of $111,000. We are not including any cost for elimination of the catastrophics form and net precipitation allowances based on its elimination from BPT in 1980.

Secondary Copper

EPA is amending the promulgated BAT in this subcategory to eliminate the discharge allowance for net precipitation on impoundments. We do not believe this change results in any costs because plants will not have a significant flow from the relatively small surface area ponds used in this subcategory. Alternatively, plants can eliminate the need for ponds by use of cooling towers. This alternative was included in 1975 when we promulgated BPT and BAT for this subcategory. Our proposal to eliminate the net precipitation allowance and assume no compliance costs did not result in any public comments.

Primary Lead

The Agency has amended the proposed BAT technology basis for primary lead plants operating acid plants to include sulfide precipitation. The technology basis thus consists of in-process flow reduction through recycle and end-of-pipe lime and settle, sulfide precipitation (followed by sedimentation), and multimedia filtration technology. Extensive treatment performance data submitted to the Agency from a plant in this subcategory suggest that the proposed BAT mass limitations may not be achievable. The principal reason for not being able to attain the filtration performance data is the inability to achieve the combined metals data lime and settle values. However, the Agency believes the addition of sulfide precipitation, in conjunction with multimedia filtration, will achieve the treatment performance values as proposed wastewaters. (Sulfide precipitation technology is discussed fully in Section VII of the General Development Document.) Sulfide precipitation is currently demonstrated at a primary molybdenum plant with a metallurgical acid plant, and at a cadmium plant in the primary zinc subcategory. For those plants only generating wastewater to meet industrial hygiene requirements, the technology basis does not include sulfide precipitation since these waste streams are not so contaminated as to require the additional treatment.

The pollutant parameters limited specifically are lead and zinc. These two pollutants were found in the greatest quantities in the raw wastewater.

In the final rule, we have moved the proposed flow allowances for the granulating system from blast furnace slag granulation to dross furnaced speiss granulation. The Agency made this change so that the plant achieving zero discharge of blast furnace slag granulation would not receive an allowance they do not need, and yet still provide an allowance for the plant that has demonstrated the need for a granulating allowance. The methodology and the basis for revisions of flow allowances discussed for BPT are also applicable for BAT.

We estimate that the promulgated BAT limitations will remove 387 kg/yr of toxic metals over current discharge estimates. The final BAT effluent mass limitations will remove 160 kg/yr of toxic metals over the intermediate BAT option considered, which lacks filtration. Both options are economically achievable. We believe that the incremental removal justifies selection of filtration as part of BAT model technology. In addition, filtration as an end-of-pipe treatment technology is demonstrated by one facility in the primary lead subcategory. Estimated capital cost for achieving the promulgated BAT is $215,000, and the annualized cost is $77,000.

Primary Zinc

The Agency has amended the proposed BAT technology basis for the primary zinc subcategory to include sulfide precipitation. The complete technology basis thus consists of in-process flow reduction through recycle and end-of-pipe lime and settle, sulfide precipitation (followed by sedimentation), and multimedia filtration technology. Extensive treatment performance data submitted to the Agency by a plant in the subcategory demonstrate that the proposed BAT mass limitations may not be achievable. The principal reason for not being able to attain the filtration performance data is the inability to achieve the combined metals data lime and settle values. However, the Agency believes for the reasons given in Section V.B above that the addition of sulfide precipitation, in conjunction with multimedia filtration, will achieve the treatment performance values as proposed. Sulfide precipitation is currently demonstrated at a primary molybdenum plant with a metallurgical acid plant, and at a cadmium plant in the primary zinc subcategory.

We used data and information submitted through comments and solicited through Section 308 requests, as well as information obtained in an engineering site visit to a primary zinc plant, to revise the flow allowances for this subcategory. In the proposed mass limitations, a flow allowance was provided for leaching of zinc concentrates. We have withdrawn this allowance and promulgated flow allowances for preleach and electrolyte bleed in its place. The Agency believes these revised flow allowances more accurately reflect operating practices at electrolytic zinc plants. The Agency has also revised the flow allowance for anode and cathode wash water based on an engineering site visit. The flow allowances are discussed in detail in Section X of the primary zinc supplemental development document.

The pollutants specifically limited under BAT are cadmium, copper, lead, and zinc. These toxic metals are present in the largest quantities in raw wastewaters.

We estimate that application of the BAT effluent mass limitations will result in the removal of an estimated 3,540 kg/yr of toxic pollutants above the estimated current discharge rate. The final BAT effluent mass limitations will remove 1,260 kg/yr of toxic metals over the intermediate BAT option considered, which lacks filtration. Both options are economically achievable. We believe that the incremental removal justifies selection of filtration as part of BAT model technology. In addition, filtration is demonstrated at one primary zinc facility. The estimated capital investment cost of the promulgated BAT is $457,000 and the estimated annualized cost is $154,000.

Metallurgical Acid Plants

The Agency has amended the proposed technology basis for one copper acid plant and for all acid plants associated with zinc and lead smelting to include sulfide precipitation. The complete technology basis for this subcategory thus consists of in-process flow reduction through recycle and end-of-pipe lime and settle, sulfide precipitation (followed by sedimentation), and multimedia filtration technology. Extensive treatment performance data submitted to the Agency by copper, lead, and zinc acid plants demonstrate that the proposed BAT mass limitations are not achievable largely due to inability to achieve the combined metals data lime and settle values. However, for the reasons already explained, the Agency believes that addition of sulfide precipitation, in conjunction with multimedia filtration, will achieve the treatment performance values as proposed. Sulfide precipitation is currently demonstrated at a primary molybdenum plant with a metallurgical acid plant, and at a cadmium plant in the primary zinc subcategory.

The flow allowance proposed for the metallurgical acid plants subcategory has remained unchanged. The pollutants specifically limited under BAT are arsenic, cadmium, copper, lead, and zinc, the toxic metals present in the largest quantities in acid plant raw wastewaters.

Application of the BAT mass limitations will result in the removal of 14,700 kg/yr of toxic pollutants above estimated current discharge rates. The final BAT effluent mass limitations will remove 7,590 kg/yr of toxic metals over the intermediate BAT option considered, which lacks filtration. Both options are economically achievable. We believe that incremental removal justifies selection of filtration as part of BAT model technology. In addition, filtration is demonstrated at two metallurgical acid plant facilities. The estimated capital investment cost of BAT is $2.9 million and the annualized cost is $1.0 million.

Primary Tungsten

We are promulgating BAT limitations for this subcategory based on ammonia steam stripping, lime precipitation and sedimentation, in-process flow reduction, and multimedia filtration. Flow reductions are based on 90 percent recycle of scrubber effluent. The end-of-pipe and pretreatment technology basis for BAT limitations being promulgated is the same as that for the proposed limitations. In addition, the treatment performance concentrations, upon which the mass limitations are based, are equal to values used to calculate the proposed mass limitations. Ammonia steam stripping is demonstrated at three primary tungsten facilities. Filtration is not demonstrated within the subcategory; however, it is demonstrated in six phase I subcategories at 23 plants.

Revision of the proposed flow allowances is consistent with the changes made for the promulgated BPT limitations. The difference between the promulgated BTP and BAT flow allowances are due to flow reduction of scrubber liquors at BAT. Sections IX and X of the primary tungsten supplemental development document present the methodology and data used to calcuate the BAT flow allowances.

The pollutants specifically limited under BAT are lead, zinc, and ammonia. These pollutants were selected because they were present in the largest quantities in the raw wastewater.

Implementation of the promulgated BAT limitations will remove annually an estimated 5,140 kg of toxic pollutants, which is 318 kg of toxic metals over the estimated BPT discharge. Ammonia steam stripping is estimated to remove 2,280 kg/yr of ammonia over estimated BPT discharges and 144,000 kg/yr of the ammonia generated. The Agency estimates there will be no additional removal of toxic metals at BAT over current discharge estimates as was discussed in the description of the BPT technology basis. Although we have developed BAT limitations and costs assuming that wastewater will be centrally treated with ammonia stripping followed by lime, settle, and filter treatment for metals, it is possible that several plants could achieve more stringent limits and save compliance costs by removing metals first from tungsten acid rinse and acid leach wet air pollution control and then combining these streams with any other process streams for ammonia removals. By not assuming that waste streams will be mixed in a central treatment system until after metals are removed, individual permits may be able to eliminate allowances for metals in the six waste streams not containing metals and also eliminate the cost of lime, settle, and filter technology for those six processes. Estimated capital cost for achieving BAT is $773,000, and annualized cost is $684,000.

Primary Columbium-Tantalum

For BAT, EPA is promulgating mass limitations based on lime precipitation and sedimentation with ammonia steam stripping with additional reduction in pollutant discharge achieved through in-process wastewater flow reduction and the use of filtration as an effluent polishing step. The end-of-pipe and pretreatment technology basis for BAT limitations being promulgated is the same as that for the proposed limitations. Ammonia steam stripping is currently demonstrated at two columbium-tantalum facilities. Filtration is not demonstrated within this subcategory, but is transferred from six nonferrous metals subcategories where it is demonstrated in 23 plants. With the exception of limits for fluoride, the treatment performance concentrations upon which the mass limitations are based are equal to the values used to calculate the proposed mass limitations. The mass limitations for fluoride have been revised for the same reasons as in the primary aluminum subcategory.

Revision of the proposed flow allowances is consistent with the changes made for the promulgated BPT limitations. The differences between the promulgated BPT and BAT flow allowances are due to flow reduction of scrubber liquors at BAT. Sections IX and X of the primary columbium-tantalum supplemental development document present the methodology and data used to calculate the BAT flow allowances.

The pollutants specifically limited under BAT are lead, zinc, ammonia, and fluoride. These pollutants were present in the largest quantities in columbium-tantalum raw wastewater.

We estimate that application of BAT will remove 61,400 kg of toxic metals and 1,920,000 kg of nonconventional pollutants annually over current discharge rates. BAT will result in the estimated removal of 283 kg/yr of toxic pollutants and 1,980 kg/yr of nonconventional pollutants over the estimated BPT discharge. The final BAT effluent mass limitations will remove 57 kg/yr of toxic metals over the intermediate BAT option considered, which lacks filtration. Both options are economically achievable. We believe that the incremental removal justifies selection of filtration as part of BAT model technology. The estimated capital investment cost of BAT is $830,000 and the estimated annual cost is $825,000.

Secondary Silver

EPA is promulgating BAT effluent mass limitations based on lime precipitation and sedimentation and ammonia steam stripping with additional reduction in pollutant discharge with the use of filtration as an effluent polishing step. The end-of-pipe and pretreatment technology basis for BAT limitations being promulgated is the same as one of the alternatives proposed. We expressed concerns at proposal about this option's economic achievability, but after revising the compliance costs and the economic analysis, we have determined that filtration as an end-of-pipe treatment technology is economically achievable. There also were no comments claiming this option was not economically achievable. The treatment performance concentrations upon which the mass limitations are based are equal to values used to calculate the proposed mass limitations. Filtration is currently demonstrated at 11 secondary silver plants.

Revision of the proposed flow allowances is consistent with the changes made for the promulgated BPT limitations. Sections IX and X of the secondary silver supplemental development document present the methodology and data used to calculate the BAT flow allowances.

The pollutants specifically limited under BAT are copper, zinc, and ammonia. We have selected copper, zinc, and ammonia because they are present in the largest quantities in secondary silver raw wastewater.

Cyanide was not chosen as a regulated pollutant parameter on a subcategory-wide basis in the secondary silver mass limitations. However, secondary silver plants process plating solutions, which may contain cyanide, to recover silver contained in the solution. Cyanide is present due to its use as a process chemical in plating operations. The permitting authority should check for the presence of cyanide in this waste stream and develop discharge limitations if necessary. A discharge allowance can be developed by locating the flow allowance for precipitation and filtration of nonphotographic solutions at BPT and BAT in Sections IX and X, respectively, of the secondary silver supplemental development document. Treatment performance for cyanide precipitation is presented in Section VII of the General Development Document. The discharge allowance (or mass limitation) is the product of the flow allowance and the treatment performance.

We estimate that application of the promulgated BAT would remove 31,000 kg of toxic metals and 664,154 kg of ammonia annually compared to current discharge rates. The BAT effluent mass limitations will remove 132 kg of toxic pollutants per year above the estimated BPT discharge. We believe that incremental removal justifies selection of filtration as part of BAT model technology. In addition, filtration is demonstrated at 11 secondary silver facilities. The estimated capital investment cost of BAT is $278,000 and the annualized cost is $276,000.

Secondary Lead

For BAT, EPA is promulgating effluent mass limitations based on lime precipitation and sedimentation with additional reduction in pollutant discharge achieved through in-process wastewater flow reduction and the use of filtration as an effluent polishing step. Wastewater flow reduction is based on recycle of smelter scrubber water, casting contact cooling water, facility washdown, kettle scrubber water, and battery case separation wastewater. The end-of-pipe treatment technology basis for BAT limitations being promulgated is the same as one of proposed limitations. We expressed concerns at proposal about this option's economic achievability, but after revising the compliance costs and the economic analysis, we have determined that filtration as an end-of-pipe technology is economically achievable. The Agency has revised the compliance costs and economic analysis. Results of the analysis indicate filtration as an end-of-pipe polishing step is economically achievable. The treatment performance concentrations upon which the mass limitations are based are equal to values used to calculate the proposed mass limitations.

Revision of the proposed flow allowances is consistent with the changes made for the promulgated BPT limitations. Sections IX and X of the secondary lead supplemental development document present the methodology and data used to calculate the BAT flow allowances.

The pollutants specifically limited under BAT are antimony, arsenic, lead, zinc, and ammonia. These pollutants were selected since they were present in the largest quantities in raw wastewater. Ammonia is not given a discharge allowance as discussed previously under BPT.

Implementation of the promulgated BAT would remove 25,700 kg/yr of the toxic metals present in the raw waste. The promulgated BAT effluent mass limitations will result in the estimated removal of 350 kg/yr of toxic pollutants above the estimated BPT discharge. No significant incremental removal occurs at the intermediate option. We believe that incremental removal over BPT justifies selection of filtration as part of BAT model technology. In addition, filtration is demonstrated at seven secondary lead plants. The estimated capital investment cost of BAT is $1.86 million and the estimated annual cost is $0.7 million.

NSPS: EPA is promulgating NSPS for the nonferrous metals manufacturing category based on flow reduction and end-of-pipe treatment which consists of lime precipitation, settling, and filtration. Also included in the technology basis, where necessary, is preliminary treatment consisting of oil skimming, ammonia steam stripping, cyanide precipitation, sulfide precipitation and activated carbon adsorption. For each subcategory, this model technology represents the best demonstrated technology. We have evaluated the costs associated with NSPS in each subcategory where NSPS is more stringent than BAT and find that these costs will not pose a barrier to entry by new sources in any of these subcategories.

In developing NSPS, the Agency considered the amount of water used per unit production for each wastewater stream. Many of the new source flow allowances promulgated are equivalent to the BAT allowances. However, in some instances new source performance standards are based on additional flow reduction based on the use of dry scrubbing and in-process changes that reduce water consumption requirements. The promulgated NSPS for each subcategory is discussed below.

Primary Aluminum

EPA proposed NSPS for the primary aluminum subcategory based on the proposed BAT plus additional flow reduction through dry potline scrubbing and elimination of potroom scrubbing. Although this technology is demonstrated, information submitted through comments and gathered by Section 308 requests indicates that two possible problems for new sources could be created by the proposed NSPS, one with respect to continued utilization of certain cell technologies, the other regarding ability to produce certain high purity alloys.

Dry potline scrubbing and elimination of potroom scrubbing for new sources would effectively require center-worked prebake or horizontal stud Soderberg cell technology. This is because the other major cell technologies, the side-worked prebake and vertical Soderberg cell, must use wet scrubbers to control fluoride emissions due to hooding constraints. EPA's NSPS for new "green field" primary aluminum sources are based on these facilities using center-worked prebake and horizontal stud Soderberg cells, or achieving the effluent limitations that are associated with the use of prebake cells. This is an environmentally more acceptable process (particularly in terms of net effluent reductions) because fluoride emissions can be fully contained without the use of wet scrubbers while capturing and returning the fluoride to the manufacturing process. See Senate Committee on Public Works, *A Legislative History of the Clean Water Act*, 93d Cong. 1st Sess., Vol. 1 at 172 (new source performance standards are to reflect "levels of pollution control which are available through the use of improved production processes").

An issue arises, however, as to whether major expansions of capacity at existing Soderberg plants are to be classified as new sources or as major modifications subject to BAT. Dry scrubbing on vertical Soderberg potline or potroom emissions may not be feasible, as a practical matter. However, use of horizontal stud Soderberg technology with dry potline and no potroom scrubbing is demonstrated. Therefore, construction of new sources or major expansions do not receive a discharge allowance for potline or potroom scrubbing.

Commenters raised an issue regarding application of proposed NSPS to all new sources. They argued that plants using dry scrubbing will need to use recycled alumina from dry scrubbing as raw material. Certain high purity alloys, however, cannot be made with recycled alumina (due primarily to iron contamination) but require virgin ore. The argument is that new prebake sources producing high purity alloys would thus be at a competitive disadvantage if they must install dry scrubbing technology because of a requirement to use more virgin alumina per ton of product.

The Agency believes this problem to be hypothetical and unlikely to occur in actuality. Prebake plants with dry scrubbing can avoid contamination of these alloys by segregating production of metal produced from virgin ore from metal produced from alumina recycled from dry scrubbers. Although this may allow only a relatively small (10 to 20) percentage of a plant's production to be dedicated to certain high purity alloys, we are unaware of any plant that devotes large percentages of its production capacity to these specific alloys. Thus, all existing plants that produce these high purity alloys and have dry scrubbers appear to be operating without competitive constraint. We therefore do not believe that new sources will suffer adverse competitive impact as a result of a dry scrubbing requirement. If a prospective new source is able to demonstrate that: (1) It will dedicate too much capacity to high purity alloys to utilize all of its recyclable alumina; (2) it is unable to market its excess recyclable alumina; and (3) the costs of purchasing excess virgin ore and reprocessing alumina through the Bayer process are so high as to pose a barrier to entry, the Agency will entertain rulemaking application to amend NSPS. Since no demonstration has been made, and the possibility appears very remote, we are not altering the proposed NSPS.

Our promulgated NSPS will eliminate discharge of toxic organic and metals associated with potline and potroom scrubber discharge, but will not require any significantly different cost of compliance for new or existing sources.

In the proposed limitations for BAT and NSPS, degassing wet air pollution control was not given a discharge allowance based on alternate in-line fluxing and filtering techniques, which reduce chlorine fuming and eliminate the need for wet scrubbers. Comments received stating that the retrofit costs of installing alternate in-line fluxing to replace furnace degassing were quite extensive. Commenters also stated that specifications cannot be met for certain alloys using in-line fluxing and filtering technology alone.

The Agency contacted each facility known to use alternate in-line fluxing and filtering methods was contacted through Section 308 authority to determine if any of the alloys mentioned in the comments are currently manufactured or capable of being manufactured with alternate in-line fluxing and filtering. Five plants reported they were either manufacturing or capable of manufacturing at least four of the 10 alloys identified. Collectively, it appears all 10 alloys can be manufactured using alternate in-line fluxing and filtering techniques without furnace fluxing. As described previously, a BAT discharge for this operation is provided because of the extensive retrofit costs required to install in-line fluxing and filtering. New sources, on the other hand, will not incur these costs. Therefore, degassing wet air pollution is not provided a discharge allowance for new sources. This technology is readily available to all facilities in the subcategory and will not pose a barrier to entry.

Secondary Aluminum

With the exception of dross washing, we are promulgating NSPS for the secondary aluminum subcategory equivalent to the BAT technology. Dross washing is not provided a discharge allowance in the NSPS due to the demonstration of dry milling in the subcategory. In the 1974 development document for secondary aluminum, it is stated that 17 of the 23 plants process residues (drosses) practice dry milling to eliminate wastewater. Impact mills, grinders, and screening operations are used to remove the metallic aluminum values from the nonmetallic values. Dry milling is not required for existing sources due to the extensive retrofits of installing mills, grinders, and screening operations. New sources, however, have the ability to install the best equipment without the costs of major retrofits. Therefore, dry milling is considered appropriate for new sources. For the remaining waste streams, the Agency believes that BAT, as promulgated, is the best demonstrated technology. Additional flow reduction and more stringent treatment technologies are not demonstrated or readily transferable to the secondary aluminum subcategory.

Primary Copper Smelting

EPA is promulgating NSPS for the primary copper smelting subcategory as zero discharge without a catastrophic storm discharge allowance. New smelting facilities can be constructed using cooling towers to cool and recirculate casting contact cooling water and slag granulation wastewater, so that large surface area cooling impoundments are unnecessary. Thus, the allowance for the catastrophic precipitation discharge allowed at BAT is eliminated based on the availability of demonstrated cooling tower technology. The costs associated with constructing and operating a cooling tower system are not significantly greater than those for cooling impoundments and as such, the Agency does not believe that the promulgated NSPS will constitute a barrier for entry of new facilities. As a result of this modification, the discharge of toxic metals during months of net precipitation will be eliminated.

Primary Electrolytic Copper Refining

EPA is promulgating NSPS for this subcategory equal to BAT. The Agency believes that BAT as promulgated is the best demonstrated technology. Additional flow reduction and more stringent treatment technologies are not demonstrated or readily transferable to the primary electrolytic copper refining subcategory.

Secondary Copper

EPA is promulgating NSPS for the secondary copper subcategory equal to zero discharge. We thus are eliminating the allowance for catastrophic stormwater discharge provided at BAT. New sources can be constructed using demonstrated cooling tower technology. The cost of constructing and operating a cooling tower system is not significantly greater than of a cooling impoundment, and as such, we believe that NSPS does not constitute a barrier to entry for new plants.

Primary Lead

We are promulgating NSPS that prohibits the discharge of all process wastewater from primary lead smelting, except for these industrial hygiene streams provided an allowance at BAT and for which an allowance remains necessary. Zero discharge of all other streams can be achieved by the demonstrated complete recycle and reuse of slag granulation wastewater or through slag dumping. In addition to the flow reductions included in BAT, we believe new plants can be designed to eliminate discharge from the dross reverberatory furnace slag granulation process at no significant additional cost by 100 percent recycle of this waste stream. Elimination of the materials handling wet air pollution control waste stream is based on dry scrubbing to control fugitive lead emissions during materials handling. Therefore, we believe NSPS does not present any barrier to entry for new plants, since no retrofit costs are associated with dry scrubbing.

Comments were received asking that NSPS for the primary lead subcategory be held in reserve because new sources would be built using hydrometallurgical processes instead of the conventional pyrometallurgical processes. The Agency believes that the effluent reductions achievable by pyrometallurgical sources represent Best Demonstrated Technology. New hydrometallurgical processes should therefore have to meet limitations associated with this technology. In fact, there are no existing hydrometallurgical plants and it is not at all clear if there will be any new sources using this process. If such a (hypothetical) facility could demonstrate that it could not achieve better effluent reductions than pyrometallurgical sources, the Agency will consider amending NSPS. However, no such demonstration has been made.

Primary Zinc

EPA is promulgating NSPS for the primary zinc subcategory equal to BAT. The Agency believes that BAT as promulgated is the best demonstrated technology. Additional flow reduction and more stringent treatment technologies are not demonstrated or readily transferable to the primary zinc subcategory.

Metallurgical Acid Plants

EPA is promulgating NSPS for the metallurgical acid plants subcategory equal to BAT. The Agency believes that BAT as promulgated is the best demonstrated technology. Additional flow reduction and more stringent treatment technologies are not demonstrated or readily transferable to the metallurgical acid plants subcategory.

Primary Columbium-Tantalum

EPA is promulgating that NSPS for the primary columbium-tantalum subcategory equal to BAT. The Agency believes that BAT as promulgated is the best demonstrated technology. Additional flow reduction and more stringent treatment technologies are not demonstrated or readily transferable to the columbium-tantalum subcategory.

Primary Tungsten

We are promulgating NSPS equal to BAT. The Agency believes that BAT as promulgated is the best demonstrated technology. Additional flow reduction and more stringent treatment technologies are not demonstrated or readily transferable to the primary tungsten subcategory.

Secondary Silver

EPA is promulgating NSPS for the secondary silver subcategory equal to BAT. The Agency believes that BAT as promulgated is the best demonstrated technology. Additional flow reduction and more stringent treatment technologies are not demonstrated or readily transferable to the secondary silver subcategory.

Secondary Lead

EPA is promulgating NSPS for the secondary lead subcategory equal to the technology basis of BAT, but we are requiring additional flow reduction over BAT levels by using dry scrubbing to control emissions from kettle refining. Existing wet scrubbers are used to control emissions and prevent baghouse fires caused by sparking when sawdust and phosphorus are applied to the surface of the metal while in the kettle. Dry scrubbers can be used for this purpose if spark arrestors and settling chambers are installed to trap sparks. According to the Secondary Lead Association, this is a demonstrated and viable technology option. Dry scrubbing is not required at BAT because of the extensive retrofit costs of switching from wet to dry scrubbing. This NSPS requirement will not present any barrier to entry of new plants. NSPS will reduce the discharge of toxic metals from new secondary lead plants.

PSES: Section 307(b) of the Act requires EPA to promulgate pretreatment standards for existing sources (PSES) to prevent the discharge of pollutants which pass through, interfere with, or are otherwise incompatible with the operation of POTW. These standards must be achieved within three years of promulgation. The legislative history of the 1977 Act indicates that pretreatment standards are to be technology based, generally analogous to BAT for direct dischargers. (Conference Report 95-830 at 87; *Reprinted in* Comm. on Environmental and Public Works, 95th Cong. 2d Sess., *A Legislative History of the Clean Water Act of 1977*, Vol. 3 at 272.)

Before promulgating pretreatment standards, the Agency examined whether the pollutants discharged by the industry pass through the POTW or interfere with the POTW operation or its chosen sludge disposal practices. In determining whether pollutants pass through a well-operated POTW, achieving secondary treatment, the Agency compares the percentage of a pollutant removed by POTW with the percentage removed by direct dischargers applying the best available technology economically achievable. A pollutant is deemed to pass through the POTW when the average percentage removed nationwide by well-operated POTW meeting secondary treatment requirements, is less than the percentage removed by direct dischargers complying with BAT effluent limitations guidelines for that pollutant. (See generally, 46 FR 9415-16 (January 28, 1981).)

EPA is promulgating PSES based on the application of technology equivalent to BAT, which consists of end-of-pipe treatment comprised of lime precipitation and settling followed by multi media filtration. Sulfide precipitation is also part of the model technology in two subcategories. Preliminary treatment for the control of cyanide, ammonia, and phenolics, where needed, is also a part of the model technology. In each case, we find that PSES is necessary to prevent pollutant pass-through. We find, in addition, that promulgated PSES is economically achievable for each subcategory.

The pass-through analysis performed by the Agency at proposal has been revised based on the revised pollutant removal estimates. In addition, the Agency has established removal rates of arsenic, antimony, and fluoride in well-operated POTW. At proposal, the Agency assumed that these pollutants were not effectively controlled by a POTW and that they would pass through. Data obtained from the 40-plant POTW study (the Agency's standard source for POTW removal efficiencies), show that arsenic and antimony will be reduced by a well-operated POTW by 65 and 60 percent, respectively. Limited data available to the Agency indicate complete pass through of fluoride occurs under most normal POTW operating conditions. For the remaining pollutants, the average percentage removed nationwide by well-operated POTW meeting secondary treatment requirements has remained unchanged since proposal. A discussion of pollutant pass-through for each subcategory is presented in subsequent paragraphs.

The PSES set forth in this final rule are expressed in terms of mass per unit of production rather than as concentration standards. Regulation on the basis of concentration is not appropriate for this category because flow reduction is a significant part of the model technology for pretreatment. Mass-based standards are necessary to assure that the effluent reduction benefits associated with this flow reduction are obtained. (See 48 FR at 7051 and the supplemental development documents for a fuller explanation.) Although we proposed alternative mass-based and concentration-based PSES for two subcategories, concentration-based PSES are no longer appropriate because, in each of these subcategories, we have revised the flow allowances since proposal and the flow reductions now specified justify mass-based PSES.

Primary Aluminum

We are not promulgating pretreatment standards for existing sources for the primary aluminum smelting subcategory since there are no existing indirect dischargers.

Secondary Aluminum

We are promulgating PSES equal to BAT for this subcategory. It is necessary to adopt PSES to prevent pass-through of lead, zinc, phenol, and ammonia. (We are not regulating aluminum at PSES because it does not pass through or interfere with POTW operation. See 48 FR at 7064.) The toxic pollutants are removed by well-operated POTW on an average of 53 percent (lead—49 percent, zinc—65 percent, phenol—96 percent, and ammonia—0 percent), while BAT technology removes approximately 98 percent of each pollutant. With respect to ammonia, most POTW in the United States are not designed for nitrification. Hence, aside from incidental removal, most if not all of the ammonia introduced into POTW from secondary aluminum operations will pass through into receiving waters without treatment.

The technology basis for PSES thus is lime precipitation and sedimentation, ammonia steam stripping, wastewater flow reduction and filtration, with phenols preliminary treatment by activated carbon where necessary. Monitoring and compliance for the phenols limitation is to be conducted and demonstrated at-the-source, for the same reasons as for direct dischargers. See also 46 FR at 9442 (January 28, 1981) (dilution by pretreaters prohibited as substitute for treatment). Flow reduction for the selected technology option over current discharge rates represents a 75 percent reduction in flow. The achievable concentrations used to develop the mass limitations for PSES are identical to those used to develop the BAT limitations.

Implementation of the promulgated PSES limitations would remove an estimated 11,300 kg/yr of toxic pollutants, 96 kg/yr of ammonia, and 212 kg/yr of phenol, over estimated current discharge. Removals over estimated raw discharge are approximately 11,300 kg/yr of toxic pollutants 212 kg/yr of phenol and 96 kg/yr of ammonia. The final PSES mass limitations will remove 12 kg/yr of toxic metals over the intermediate PSES option considered, which lacks filtration. Both options are economically achievable, and both prevent pass-through. We therefore are selecting PSES equal to BAT. The estimated capital cost for achieving PSES is $2.2 million, and the annual cost of $0.8 million.

The Agency proposed alternative concentration-based standards in this subcategory because flow reduction was not an integral part of the model treatment technology. However, with the addition of ingot conveyor casting based on 90 percent recycle for plants without demagging wet scrubbers and 100 percent casting water reuse for those plants operating demagging scrubbers, the Agency is promulgating mass-based standards to assure that the effluent reduction benefits associated with the flow reduction are achieved.

Primary Copper Smelting

We are not promulgating pretreatment standards for existing sources for the primary copper smelting subcategory since there are no existing indirect dischargers.

Primary Electrolytic Copper Refining

We are not promulgating pretreatment standards for existing sources for the primary copper electrolytic refining subcategory because there are no existing indirect dischargers.

Secondary Copper

EPA promulgated PSES for the secondary copper subcategory on December 15, 1976 (41 FR 48650). The 1976 PSES allow a continuous discharge of process wastewater subject to specific limitations based on treatment with lime precipitation and sedimentation. BPT and BAT for this subcategory, promulgated in 1975, are also based on lime precipitation and sedimentation; however, they also include cooling towers and holding tanks for the purpose of achieving no discharge of process wastewater. We therefore proposed that PSES be amended to be zero discharge so as to be equivalent to promulgated regulations for direct dischargers. PSES also is necessary to prevent pass-through of copper, lead, nickel, and zinc based on our comparison of BAT (100 percent removal) with well-operated POTW removals (copper—58 percent, lead—48 percent, nickel—19 percent, and zinc—65 percent).

Comments received by the Agency claimed that 100 percent recycle was not feasible because of product quality constraints. We know of no reason this should be true (especially since direct dischargers already are operating under this requirement). The Agency also solicited additional information on this point through a Section 308 request; however, no data were submitted to substantiate the commenters' claim. The data submitted by the commenter, however, indicate that the casting referred to in the original comments is continuous rod casting. Continuous copper rod casting is principally a copper forming or foundry operation because the copper is formed immediately after casting. Casting of products at copper forming facilities will be regulated under the Metal Molding and Casting (foundries) Point Source Category where continuous rod casting will receive a discharge allowance.

Implementation of the PSES would remove an estimated 9,400 kg/yr of toxic pollutants over estimated current discharge. Removals over estimated raw discharge are approximately 9,500 kg/yr of toxic pollutants. The estimated capital cost for achieving the promulgated PSES is $654,000, and the annual cost is $160,000. At proposal, the Agency did not anticipate any compliance costs because the 1976 PSES appeared to require technology that would enable facilities to achieve zero discharge (as well as achieve the 1976 promulgated PSES). However, this treatment equipment is not uniformly in place. Therefore, the costs shown above represent treatment not in place that is required to achieve zero discharge.

Primary Lead

We did not propose pretreatment standards for existing sources for the primary lead subcategory because there were no existing indirect dischargers at proposal. However, with the addition of flow allowances for wastewaters generated due to occupational hygiene needs, three plants previously considered as zero discharge operations now have discharges. Specifically, these wastewater sources are employee handwash, respirator wash, laundering of employee uniforms, and facility washdown. Therefore, the Agency is promulgating PSES standards for this subcategory equivalent to BAT technology to prevent the pass-through of arsenic, cadmium, lead, and zinc. It is feasible and less expensive for these three plants to segregate this wastewater and recycle it to slag or speiss granulation, which is currently zero discharge at these plants. These flows are a small percentage (less than 5 percent) of the process waters, and therefore, their addition will have a negligible effect on the water balance. Therefore, our compliance costs estimates are based on segregation and recycle (or evaporation) rather than treatment. The toxic pollutants are removed by well-operated POTW on an average of 52 percent (cadmium—38 percent, copper—58 percent, lead—48 percent, arsenic—65 percent), while we estimate PSES will remove 100 percent.

Implementation of the promulgated PSES limitations will remove an estimated 117 kg/yr of toxic pollutants over estimated current discharge. Removals over estimated raw discharge are approximately 117 kg/yr of toxic pollutants. Capital cost for achieving PSES is $38,000, and annual cost is $5,000. These costs represent the cost of segregating these waste streams.

Primary Zinc

We did not propose pretreatment standards for the primary zinc subcategory. We now are promulgating PSES equal to BAT because we have learned that one primary zinc plant previously thought to be a zero discharger is actually an indirect discharger. Promulgation of PSES for primary zinc will prevent the pass through of cadmium and zinc. Cadmium and zinc are removed by a well-operated POTW at an average rate of 52 percent (cadmium—38 percent, zinc—65 percent), while the BAT technology removes approximately 84 percent. The BAT limitations also limit copper and lead. However, as shown in the supplemental development document, the Agency has determined that these pollutants will not pass through, so they are not limited at PSES for this subcategory.

Implementation of the PSES limitations would remove an estimated 207 kg/yr of toxic pollutants over estimated current discharge. Removals over estimated raw discharge are approximately 685,000 kg/yr of toxic pollutants. The final PSES effluent mass limitations will remove 650 kg/yr of toxic metals over the intermediate PSES option considered, which lacks filtration. Both options are economically achievable and both prevent pass-through. We therefore are selecting the BAT-equivalent option. (Filtration as an end-of-pipe treatment technology also is currently demonstrated by one plant in the subcategory.) The estimated capital cost for achieving PSES is $122,000, and the annual cost is $38,000.

Metallurgical Acid Plants

We are promulgating PSES equal to BAT for this subcategory. Promulgation of PSES for the metallurgical acid plant subcategory will prevent pass-through of cadmium and zinc. These pollutants are removed by POTW on an average of 52 percent (cadmium—38 percent, zinc—65 percent), while the BAT technology removes an estimated 84 percent.

We estimate that the final PSES limitations will remove 330 kg/yr toxic pollutants over the intermediate option, which lacks filtration. Since both options are economically achievable and both prevent pass-through, we are promulgating PSES equal to BAT. Implementation of the promulgated PSES will result in an estimated capital cost of $161,000 and annual cost of $55,000.

We did not propose PSES for metallurgical acid plants even though there is one existing indirect discharging metallurgical acid plant. At proposal, it was estimated that this plant currently discharged less pollutants than would be allowed under PSES because its wastewater discharge rate was much less than that allowed. The revised removal estimates, however, indicate that the PSES technology will remove 367 kg/yr of toxic metals over current discharge estimates.

Primary Tungsten

We are promulgating PSES equal to BAT for this subcategory. It is necessary to promulgate PSES to prevent pass-through of lead, zinc, and ammonia. These toxic pollutants are removed by a well-operated POTW at an average of 40 percent (lead—48 percent, zinc—65 percent, and ammonia—0 percent), while BAT technology removes approximately 78 percent. The technology basis for PSES thus is lime precipitation and sedimentation, ammonia steam stripping, wastewater flow reduction and filtration. Flow reduction for the selected technology represents a 68 percent reduction in flow over current discharge rates.

Implementation of the promulgated PSES limitations would remove annually an estimated 339 kg of toxic pollutants over estimated current discharge, and an estimated 63,000 kg of ammonia. Removals over estimated raw discharge are approximately 3,400 kg of toxic pollutants and 63,320 kg of ammonia. The final PSES effluent mass limitations will remove 91 kg/yr of toxic metals over the intermediate PSES option considered, which lacks filtration. Both options are economically achievable, and pass-through occurs at both options. We believe the incremental removal justifies selection of filtration as part of PSES model technology as does the need to base PSES on BAT-equivalent technology. The estimated capital cost for achieving PSES is $568,000, and annual cost is $308,000.

Primary Columbium-Tantalum

We are promulgating PSES equal to BAT for this subcategory. It is necessary to promulgate PSES to prevent pass-through of lead, zinc, fluoride, and ammonia. These toxic pollutants are removed by well-operated POTW at an average of 28 percent (lead—48 percent, zinc—65 percent, fluoride—0 percent, and ammonia—0 percent), while BAT technology removes approximately 99.7 percent. The technology basis for PSES thus is lime precipitation and sedimentation, ammonia steam stripping, wastewater flow reduction and filtration. Flow reduction for the selected technology represents an 80 percent reduction in flow over current discharge rates.

Implementation of the promulgated PSES limitations would remove an estimated 18,330 kg/yr of toxic pollutants over estimated current discharge, an estimated 290,466 kg/yr of ammonia, and an estimated 111,200 kg/yr of fluoride. Removals over estimated raw discharge are approximately 18,590 kg/yr of toxic pollutants, 290,460 kg/yr of ammonia, and 400,175 kg/yr of fluoride. The final PSES effluent mass limitations will remove 57 kg/yr of toxic metals over the intermediate PSES option considered, which lacks filtration. Both options are economically achievable and both prevent pass-through. We thus are selecting PSES equal to BAT. The estimated capital cost for achieving PSES is $1.0 million, and annual cost is $0.5 million.

Secondary Silver

We are promulgating PSES equal to BAT for this subcategory to prevent pass-through of copper, zinc, and ammonia. These toxic pollutants are removed by 65 percent in a well-operated POTW on an average of 49 percent (copper—58 percent, zinc—65 percent, and ammonia—0 percent), while BAT technology removes approximately 97 percent. The technology basis for PSES is lime precipitation and sedimentation, ammonia steam stripping, wastewater flow reduction and filtration. Flow reduction for the selected technology represents a 23 percent reduction in flow over current discharge rates.

Cyanide has not been chosen as a regulated pollutant parameter on a subcategory-wide basis for secondary silver. However, these plants process plating solutions, which may contain cyanide, to recover silver contained in the solution. Cyanide is present due to its use as a process chemical in plating solutions. The control authority should check for the presence of cyanide in this waste stream and develop discharge limitations if necessary. This issue is discussed in greater detail in the BPT discussion for secondary silver.

Implementation of the promulgated PSES limitations would remove an estimated 1,971 kg/yr of toxic pollutants over estimated current discharge, and an estimated 42,900 kg/yr of ammonia. Removals over estimated raw discharge are approximately 4,259 kg of toxic pollutants and 42,900 kg of ammonia. The final PSES effluent mass limitations will remove 13 kg/yr of toxic metals over the intermediate PSES option considered, which does not include filtration. Both options are economically achievable; and both prevent pass-through. Filtration is currently demonstrated by eight indirect discharging secondary silver plants. We therefore are promulgating PSES equal to BAT. The estimated capital cost for achieving PSES is $630,000, and the annual cost is $317,000.

Secondary Lead

We are promulgating PSES equal to BAT for this subcategory. It is necessary to promulgate PSES to prevent pass-through of antimony, arsenic, lead, zinc, and ammonia. These pollutants are removed by well-operated POTW at an average of 48 percent (antimony—60 percent, arsenic—65 percent, lead—48 percent, zinc—65 percent, and ammonia—0 percent), while BAT technology removes approximately 80 percent. A zero discharge limitation for ammonia is being promulgated as discussed under BPT earlier. The technology basis for PSES thus is lime precipitation and sedimentation, wastewater flow reduction and filtration. Flow reduction for the selected technology represents a 38 percent reduction in flow over current discharge rates.

Implementation of the promulgated PSES limitations would remove annually an estimated 15,531 kg of toxic pollutants over estimated current discharge. Removals over estimated raw discharge are approximately 46,500 kg of toxic pollutants. The final PSES effluent mass limitations will remove 620 kg/yr of toxic metals over the intermediate PSES option considered, which lacks filtration. Both options are economically achieveable and both prevent pass-through. Filtration is currently demonstrated by five indirect discharging secondary lead plants. We therefore are adopting PSES equal to BAT. The estimated capital cost for achieving PSES is $4.3 million, and the annual cost is $1.5 million.

PSNS: EPA is promulgating PSNS based on end-of-pipe treatment and in-process controls equivalent to that used as the basis for PSNS. The flow allowances for NSPS are also the same as those for NSPS. As discussed under PSES, pass-through of the regulated pollutants will occur without adequate pretreatment and, therefore, pretreatment standards are required. We are promulgating mass-based PSNS for all subcategories to assure that the effluent reduction benefits associated with flow reduction technologies are obtained in new plant designs. For each subcategory, we find that the effluent reduction benefits achieved reflect those achievable with the best demonstrated technology, and that the costs of achieving these reductions will not pose a barrier to entry for new sources. The promulgated PSNS limitations for each subcategory are discussed below.

Primary Aluminum

The technology basis for promulgated PSNS is identical to NSPS. We are promulgating limitations for benzo(a)pyrene, cyanide, nickel, and fluoride to prevent pass-through. Nickel is removed by a well-operated POTW at a rate of 19 percent while the POTW removal of cyanide is 56 percent. Limitations for antimony have not been established because it was shown that a well-operated POTW removes 60 percent and the Agency estimates the model BAT treatment technology will remove 55 percent. Fluoride is limited for PSNS because it passes through POTW. Pass-through data are not available for benzo(a)pyrene; however, pass-through data for five other polynuclear aromatic hydrocarbons do not exceed 83 percent, while BAT technology removes approximately 99 percent.

Secondary Aluminum

The technology basis for the promulgated PSNS is identical to NSPS, PSES, and BAT. The same pollutants pass through as at PSES, for the same reasons. We know of no demonstrated technology that is better than PSES technology because the only other flow reduction technology available is neither demonstrated nor clearly transferable to this subcategory. Because PSNS does not increase costs compared to PSES or BAT, we do not believe PSNS will prevent entry of new plants.

Primary Copper Smelting

The technology basis for promulgated PSNS is identical to NSPS, which is zero discharge of all process wastewater, with no allowance for catastrophic stormwater discharge. We do not believe there are any incremental costs associated with PSNS. Consequently, we do not believe that PSNS will prevent entry of new plants. PSNS will prevent the pass-through of copper, arsenic, and nickel. A well-operated POTW will remove these pollutants on an average of 47 percent (copper—58 percent, arsenic—65 percent, and nickel—19 percent). PSNS technology in comparison will remove 100 percent of these toxic pollutants.

Primary Copper Electrolytic Refining

The technology basis for promulgated PSNS is identical to BAT and NSPS. We know of no economically feasible, demonstrated technology that is better than BAT. All process wastewater discharge is eliminated at BAT except casting contact cooling water and spent electrolyte. Casting contact cooling water blowdown is minimized through the use of 90 percent recycle in a cooling tower circuit. PSNS prevents the pass-through of copper, arsenic, and nickel, which are the regulated pollutants. A well-operated POTW will only remove these pollutants at an average of 47 percent (copper—58 percent, arsenic—65 percent, and nickel—19 percent). The model BAT technology was shown to remove 92 percent of these metals. Because PSNS does not increase costs compared to PSES or BAT, we do not believe PSNS will prevent the entry of new plants.

Secondary Copper

The technology basis for promulgated PSNS is identical to NSPS, PSES, and BAT, which is zero discharge of all process wastewater (including no allowance for catastrophic stormwater discharges). PSNS is necessary to prevent pass-through of copper, lead, nickel, and zinc based on our comparison of BAT (100 percent removal) with well-operated POTW removals (copper—59 percent, lead—48 percent, nickel—19 percent, and zinc—65 percent). Because PSNS does not increase costs compared to PSES or BAT, we do not believe that PSNS will prevent the entry of new plants.

Primary Lead

The technology basis for promulgated PSNS is identical to NSPS. We know of no demonstrated technology that provides better pollutant removal than PSNS technology. PSNS prevents the pass-through of lead and zinc. A well-operated POTW removes these pollutants on an average of 57 percent (lead—48 percent and zinc—65 percent).

NSPS technology will remove in excess of 80 percent of these two toxic metals. The Agency believes the elimination of the process wastewater sources can be accomplished without additional cost beyond BAT-equivalent costs. Therefore, we believe that PSNS will not prevent the entry of new plants.

Primary Zinc

The technology basis for PSNS is identical to NSPS, BAT, and PSES. The same pollutants pass through as at PSES, for the same reasons. We know of no demonstrated technology that provides better pollutant removal than NSPS and BAT technology. The NSPS and BAT flow allowances are based on minimization of process wastewater wherever possible through the use of cooling towers to recycle contact cooling water and sedimentation basins for wet scrubbing wastewater.

Metallurgical Acid Plants

The technology basis for PSNS is identical to NSPS, PSES, and BAT. PSNS prevents the pass-through of arsenic, cadmium, copper, lead, and zinc, which are the regulated pollutants. We know of no demonstrated technology that provides better pollutant removal than PSES technology. The acid plant blowdown allowance at PSES is based on 90 percent recycle. Because PSNS does not include any additional costs compared to NSPS and BAT, we do not believe it will prevent entry of new plants.

Primary Tungsten

The technology basis for promulgated PSNS is identical to NSPS, PSES, and BAT. The same pollutants pass through as at PSES, for the same reasons. We know of no economically feasible, demonstrated technology that is better than PSES technology. The PSES flow allowances are based on minimization of process wastewater wherever possible through the use of sedimentation basins for wet scrubbing wastewater. Because PSNS does not include any additional costs compared to NSPS and PSES, we do not believe it will prevent entry of new plants.

Primary Columbium-Tantalum

The technology basis for promulgated PSNS is identical to NSPS, PSES, and BAT. The same pollutants pass through as at PSES, for the same reasons. We know of no economically feasible, demonstrated technology that is better than PSES technology. The PSES flow allowances are based on minimization of process wastewater wherever possible through the use of lime precipitation and sedimentation to remove fluoride for wet scrubbing wastewater. Because PSNS does not include any additional costs compared to NSPS and PSES, we do not believe it will prevent entry of new plants.

Secondary Silver

The technology basis for promulgated PSNS is identical to NSPS, PSES, and BAT. The same pollutants pass through as at PSES, for the same reasons. We know of no demonstrated technology that is better than PSES technology. The PSES flow allowances are based on minimization of process wastewater wherever possible through the use of sedimentation basins for wet scrubbing wastewater. Because PSNS does not include any additional costs compared to NSPS and PSES, we do not believe it will prevent the entry of new plants.

Secondary Lead

The technology basis for promulgated PSNS is identical to NSPS. The same pollutants pass through as at PSES, for the same reasons. We know of no demonstrated technology that is better than NSPS technology. The PSNS flow allowances are based on minimization of process wastewater wherever possible through the use of cooling towers to recycle contact cooling water and sedimentation basins for wet scrubbing wastewater. Dry scrubbing is also included for kettle air pollution control for the reasons provided in NSPS. Because PSNS does not include any additional costs compared to NSPS, we do not believe it will prevent the entry of new plants.

VI. Economic Considerations

A. Compliance Costing Methodology

The Agency has, to some extent, revised its cost estimation methodology for the nonferrous metals manufacturing category between proposal and promulgation of this final rule. These revisions have reflected a more detailed engineering analysis of each plant so that estimated costs better represent the actual cost to each plant for compliance with the regulations contained herein. This means of estimating costs is very similar to that used at proposal, except that costs are evaluated for each individual plant so as to account for actual treatment in place and for regulatory flows. These changes respond to comments that the Agency had failed to account properly for compliance costs at individual plants.

First, we developed a computer model that, using production and flow data that are specific to each plant, performs material balances for the plant's wastewater treatment processes. These material balances form the basis for design of each process in the system. The resulting designs are then used as input to a cost estimation routine that calculates investment as well as operation and maintenance (O&M) costs for each component in the treatment system. The model then adds 37.5 percent system capital costs for engineering, contingency, and contractor's fees to arrive at the total investment cost. Annual costs for the plant to comply with this regulation are determined as the sum of the O&M costs, monitoring costs, taxes, and amortized investment cost. In response to comments, the design data base used in the model relies more heavily on actual practice in this category than did the data base used for proposal. Similarly, the cost data base is more up-to-date and relies more heavily on actual equipment vendor quotes than the data base used for proposal.

Other changes in methodology also affect the total compliance cost estimates for this category. First, at proposal, the Agency retained costs for equipment already installed by a plant (i.e., treatment-in-place). For promulgation, the Agency has revised this procedure to include capital costs for only those processes that a plant has not yet installed; the annual costs (without depreciation or interest) for each process are included regardless of whether or not this process has been installed. (The only exception is when equipment is in place and is required by the existing regulation. In this situation annual costs already were assessed when the existing regulation was promulgated.) This revision more properly accounts for the costs that would be incurred by the plant to achieve the limitations set forth in this rule.

Second, the procedure for calculating flows to the treatment system has been revised. For each regulatory option and waste water source, the Agency has established a flow allowance. At proposal, the actual flow reported by a plant for each of these sources was used as the basis for cost estimation, regardless of the relationship of each flow to the corresponding regulatory flow from that source. At promulgation, the actual wastewater flow each production operation is compared to the corresponding regulatory flow for that operation and the lower of the two is selected as the basis for cost estimation (i.e., treatment equipment size, amount of treatment chemicals needed, etc.). This procedure eliminates the overestimation of end-of-pipe treatment system costs for plants that do not currently achieve the regulatory flow allowances. (Costs for installation and operation of equipment necessary to achieve these flow reductions are, of course, included.)

Third, several cost and design assumptions differ between the two methodologies. Among the most significant of these, all made in response to comment, are the following: (1) the dollar base has changed from 4th quarter 1976 to March of 1982; (2) the amortization includes changes in interest rate and recovery period; and (3) no excess capacity was included at proposal while 20 percent excess is used for promulgation.

B. General Cost Assumptions for the Nonferrous Metals Manufacturing Phase I Category

The following general assumptions apply to cost estimation in all subcategories:

(1) Unless otherwise specified, all wastewater treatment sludges are considered to be nonhazardous.

(2) Costs for segregation of wastewaters not included in this regulation (e.g., noncontact cooling water) or for routing regulated waste streams not currently treated to the treatment system are estimated on the basis of purchase and installation of 500 feet of 4-inch piping (with valves, pipe racks, and elbows) for each stream. Where a common stormwater-process wastewater system appeared to be used at the plant the segreagation costs were estimated on the basis of 500 feet of 4-inch piping (with valves, pipe racks, and elbows). Stormwater is segregated by including costs for installation of 300 feet of 2-foot diameter underground concrete pipe to route stormwater around the treatment system.

(3) Monitoring costs are calculated using a frequency that is a function of flow for each plant and a sampling and analysis cost of $120 per sample.

(4) Where a plant has wastewater sources from two nonferrous phase I subcategories (e.g., metallurgical acid plant blowdown and primary zinc plant wastewater), the costs are normally apportioned between subcategories on a flow-weighted basis, since hydraulic flow is the primary determinant for equipment size and cost. At a specific plant, however, no incremental costs are incurred by a subcategory for flow reduction, if the waste streams associated with that subcategory do no undergo flow reduction. Thus is only the acid plant blowdown from a combined zinc and metallurgical acid plant undergoes flow reduction, all incremental costs are assigned to the metallurgical acid plant subcategory, and the compliance costs estimated for the primary zinc subcategory remain the same. Where waste streams from both subcategories undergo flow reduction, a new flow ratio is calculated to apportion costs. (This in essence is only a bookkeeping exercise of how to allot this cost; the total cost calculated remains the same.)

(5) In most cases, where a plant has wastewater sources from the nonferrous phase I category and a category other than nonferrous manufacturing (for example, aluminum forming) we calculated the costs of segregating these different wastewaters. (The only exception, described below, is for three secondary lead operations occurring at battery manufacturing plants where we estimated costs for combined treatment.) This means of cost estimation accounts for the possibility that respective regulations for each category are based on different technologies (and may control different pollutants). (We assumed the costs of segregation even if combined treatment, in practice, is a less costly means of compliance. This is one of a number of areas (described more fully below) where the Agency was knowingly conservative in estimating compliance costs.)

The cost estimation methodology for each subcategory is discussed in greater detail in the following paragraphs.

Primary Aluminium

Costs are estimated for three treatment options in the primary aluminuim subcategory: preliminary treatment consisting of cyanide precipitation and oil skimming, flow reduction, lime, and settle; preliminary treatment, flow reduction, lime, settle, and multimedia filtration; and preliminary treatment, flow reduction, lime, settle, multimedia filtration, and activated carbon adsorption. Six major assumptions were made in estimating plant compliance costs for each treatment option:

(1) Compliance costs for oil/water separation, flow reduction via cooling towers, and lime and settle are necessary to meet the previously promulgated BPT regulation for certain waste streams. These costs are not included in the current compliance costs if the treatment is in place and of sufficient capacity. If additional capacity is required to treat waste streams not considered in the promulgated BPT regulation, the cost for this capacity is included in the compliance cost estimate.

(2) In our consideration of activated carbon adsorption as an end-of-pipe technology, each plant is analyzed to determine whether separate or combined treatment of the organic-bearing and organic-free waste streams is economically justified. The least costly configuration is then used to estimate compliance costs.

(3) Sludge generated by lime and settle treatment is assumed to be a hazardous waste when polynuclear aromatics are removed.

(4) Cyanide precipitation is included as a preliminary treatment step on cyanide-bearing wastewaters only. These waters originate only in cathode reprocessing facilities used by four plants. We included hazardous waste disposal costs for the sludges generated by cyanide precipitation.

(5) Capital and annual costs for plants discharging in both the primary and secondary aluminum subcategories are based on a combined treatment system and were apportioned to each subcategory on a flow-weighted basis.

(6) Capital and annual costs for plants discharging in both the primary aluminum subcategory and the aluminum forming category are based on separate treatment systems since the respective regulations are based on different technologies and control different pollutants. Segregation costs are included to separate the wastewaters.

Secondary Aluminum

Costs are estimated for two treatment options in the secondary aluminum subcategory: preliminary treatment consisting of oil skimming, flow reduction, lime, and settle; and oil skimming, flow reduction, lime, settle, and multimedia filtration. Activated carbon adsorption is included as a preliminary treatment step for delacquering wet air pollution control. Six major assumptions were made in estimating the compliance costs for these options:

(1) Annual costs (except for amortized investment) for lime and settle treatment are incurred to comply with the promulgated BPT regulation. These costs are not included in the current regulation if lime and settle treatment is in place.

(2) Chemical precipitation costs are based on lime addition except for plants that currently utilize sodium hydroxide or soda ash. In these cases, sodium hydroxide addition is assumed for cost estimation.

(3) Activated carbon adsorption is included as a preliminary treatment step for delacquering scrubber blowdown to control phenolics. Analytical data supplied to the Agency indicate TSS concentrations are small enough not to

cause plugging, so pretreatment prior to entering the column is unncessary.

(4) Ammonia steam stripping is included as a preliminary treatment step for waste streams that contain ammonia. Since the stream requirements for such treatment may exceed the excess steam generation capacity of a given plant, a steam generation unit is included in the costs.

(5) The ingot conveyor casting contact cooling water is routed to the demagging scrubbing operation (if this operation was present), and the costs of this routing are included. When demagging is not practiced at the plant, compliance costs are based on 90 percent recycle through cooling towers.

(6) Capital and annual costs for plants discharging in both the secondary and primary aluminum subcategories are based on a combined treatment system and are apportioned to each subcategory on a flow-weighted basis.

Primary Copper Electrolytic Refining

Costs are estimated for two treatment options: flow reduction with lime and settle, and flow reduction with lime and settle and multimedia filtration. Costs for sulfide precipitation and filter treatment were also determined for one primary copper plant which discharges acid plant blowdown and copper refinery wastewater. However, the costs associated with sulfide precipitation on the total flow were attributed entirely to the metallurgical acid plant subcategory because the refinery wastewater contributes only a small fraction of the combined discharge. Three major assumptions made in estimating the costs of treatment options for plants in the primary copper subcategory are detailed below:

(1) Zero discharge of the anode and cathode rinse waste stream is accomplished via in-plant process modifications. As such, no compliance costs are attributable to this regulation.

(2) Because the compliance costs only represent incremental costs that primary copper refineries may be expected to incur in complying with this regulation, operation and maintenance costs for in-place treatment used to comply with the previously promulgated BPT regulation for this subcategory are not included in a plant's total cost of compliance for this regulation.

(3) Capital and annual costs for the plant discharging wastewater in both the primary copper and metallurgical acid plant subcategories are attributed to each subcategory on a flow-weighted basis.

(4) No cost is included for direct discharges to comply with elimination of net precipitation allowances for primary copper plants. This requirement was included in modified BPT limitations promulgated in 1980.

Secondary Copper

Costs for direct dischargers are estimated for two treatment options: lime and settle; and flow reduction with lime and settle to achieve 100 percent recycle of all treated water in the plant. Major assumptions made in estimating the costs of treatment options for plants in the secondary copper subcategory are detailed below:

(1) Monitoring costs are not included for 100 percent recycle since the option is zero discharge.

(2) Where equipment of sufficient treatment capacity is in place, annual costs are not included since these were incurred by the existing PSES regulation. However, costs for cooling towers, which were not included under promulgated PSES are included for this regulation.

(3) No cost is included for direct dischargers to comply with elimination of net precipitation allowances.

Primary Lead

Costs are estimated for two treatment options: flow reduction, lime and settle; and flow reduction, lime, settle, and multimedia filtration. Costs for sulfide precipitation and settle treatment are also estimated for those primary lead plants which reported a discharge of acid plant blowdown. However, the costs associated with sulfide precipitation are attributed to the metallurgical acid plant subcategory because the lead smelter contributes only a small portion of the total discharge. Four major assumptions made in estimating the costs of treatment options for plants in the primary lead subcategory are detailed below:

(1) Regulatory flow allowances were developed for three waste streams attributable to industrial hygiene requirements: handwash, respirator wash water, and laundering of uniforms. These discharges are routed to lime and settle treatment along with other process waste streams (and the treatment system size is increased to accommodate this increased flow) unless the data indicated that a plant does not discharge process wastewater. In the latter case, it is assumed the plant can combine industrial hygiene waste streams with process wastewaters and still achieve zero discharge. This assumption is based on the fact that industrial hygiene wastewaters are a small percentage of the overall plant water use. Regulatory flows of industrial hygiene and other waste streams were used for cost estimation if a plant's actual discharge flow was unknown.

(2) Recycle of treated water for use as plant washdown water is accomplished via a 1,000 gallon tank, recycle piping, and a pump.

(3) Because the compliance costs only represent incremental costs that primary lead plants may be expected to incur in complying with this regulation, operation and maintenance costs for in-place treatment used to comply with the promulgated BPT regulation for this subcategory are not included in a plant's total cost of compliance for this regulation. However, a flow-weighted fraction of the annual cost was retained to represent treatment of the industrial hygiene and washdown flows, which are not covered by the promulgated BPT regulation.

(4) Capital and annual costs for plants discharging wastewater in both the primary lead and matallurgical acid subcategories are attributed to each subcategory on a flow-weighted basis. The entire cost for washdown recycle is attributed to the primary lead subcategory.

(5) No cost is included for direct dischargers to comply with elimination of net precipitation allowances.

Primary Zinc

Costs are estimated for two treatment options: flow reduction, lime, and settle; and flow reduction, lime, settle, sulfide precipitation and settle, and multimedia filtration. Four major assumptions made in estimating the costs of treatment options for plants in the primary zinc subcategory are detailed below:

(1) Zero discharge of the leaching scrubber water is accomplished by 100 percent recycle through a holding tank.

(2) Sludge generated by the sulfide precipitation and settle process is considered hazardous waste for disposal purposes.

(3) Because the compliance costs need only represent incremental costs which primary zinc plants may be expected to incur in complying with this regulation, annual costs for in-place treatment used to comply with the promulgated BPT regulation for this subcategory are not included in a plant's total cost of compliance for this regulation.

(4) Capital and annual costs for plants discharging wastewater in both the primary zinc and metallrgical acid subcategories are attributed to each subcategory on a flow-weighted basis.

Metallurgical Acid Subcategory

Costs were estimated for two treatment options: flow reduction, lime, and settle; flow reduction, lime, and settle followed by sulfide precipitation, settle, and multimedia filtration. Sulfide and filter is used at one primary copper plant prior to lime, settle and filter treatment. Four major assumptions made in estimating the costs of treatment options for plants in the metallurgical acid subcategory are detailed below:

(1) Flow reduction of the acid plant blowdown is accomplished using cooling towers.

(2) Sludge generated by the sulfide precipitation and sedimentation (or filter) process is considered hazardous waste for disposal purposes.

(3) Because the compliance costs represent incremental costs an acid plant may be expected to incur in complying with this regulation, annual costs for in-place treatment used to comply with promulgated BPT regulations in the primary zinc and primary lead subcategories are also not included in this regulation.

(4) The cost of treating acid plant blowdown from acid plants in the primary copper, primary zinc, and primary lead subcategories is determined by flow-weighting appropriate costs. The entire cost of cooling towers for flow reduction of the acid plant blowdown is attributed to the metallurgical acid subcategory. Costs for sulfide precipitation and settle (or filter) are attributed to the metallurgical acid subcategory for primary lead plants. Sulfide precipitation costs are apportioned between the primary zinc or primary copper refining and metallurgical acid subcategories on a flow-weighted basis.

Primary Tungsten

Costs are estimated for three treatment options: lime and settle; flow reduction with lime and settle; and flow reduction with lime and settle and final effluent polishing with multimedia filtration. Ammonia steam stripping is included for preliminary treatment of ammonia-laden streams. Five major assumptions are made in cost estimation for this subcategory:

(1) For ammonia steam stripping, the design value for pH is 11.5 and the design effluent concentration of ammonia is 32.0 mg/l.

(2) Ammonia steam stripping steam requirements may exceed the excess steam generation capacity at any given plant. Therefore, a steam generation unit is included in the steam stripping costs.

(3) The lime dosage to the ammonia steam stripping process is based on the influent pH and the concentration of ammonia.

(4) Costs for plants discharging less than 50 gallons per week of total flow are based on contract hauling of the entire discharge.

(5) Costs for ammonia removal for streams of less than 50 liters per hour (none of which are air pollution control streams) are estimated based on aeration and agitation in the chemical precipitation batch tank. Cost included a ventilation hood.

Primary Columbium-Tantalum

Costs are estimated for three treatment options in the primary columbium-tantalum subcategory: lime, and settle; flow reduction, lime, and settle; and flow reduction, lime settle, and multimedia filtration. Ammonia steam stripping is included for preliminary treatment of ammonia-laden wastewater. Four major assumptions were made in estimating the compliance costs for these options and are presented below:

(1) Several plants utilized sodium hydroxide addition for wastewater treatment. This type of treatment is not considered to be equivalent to lime addition due to the need to remove fluoride in the wastewater as calcium fluoride. We therefore included compliance costs for treating with lime for these plants.

(2) Ammonia steam stripping steam requirements may exceed the excess steam generation capacity at any given plant. Therefore, a steam generation unit is included in the steam stripping costs.

(3) Due to the large volume of wastewater treatment sludge generated by some plants in this subcategory, the costs of developing and maintaining nonhazardous sludge disposal sites are used instead of the normal contract hauling.

(4) We included the cost of segregation and treatment for one plant that currently commingles its wastewater and gangue. These costs eliminate any conceivable need for sludge disposal as a radioactive waste.

Secondary Silver

Costs are estimated for three treatment options: lime and settle; flow reduction, lime, and settle; and flow reduction, lime, settle, and multimedia filtration. Preliminary treatment with steam stripping is included for ammonia-laden streams. Four major assumptions made in estimating the costs of treatment options for plants in the secondary silver subcategory are detailed below:

(1) Since 23 of the plants whose compliance costs are estimated overlap with other nonferrous manufacturing subcategories or categories, costs are apportioned to each subcategory on a flow-weighted basis.

(2) Although a discharge allowance for floor wash is not necessary, a flow of 1 liter of floor wash per troy ounce is used for cost estimation purposes for each plant on the basis of total production of all precious metals (including silver) that results in precipitation and filtration wastewater. Since acceptable floor wash water may be obtained from recycling treated wastewater, costs are estimated for a holding tank after chemical precipitation and settling to recycle water for floor wash use under all options.

(3) Sodium hydroxide addition was used throughout the secondary silver subcategory in estimating costs for chemical precipitation since it is likely that most plants will recycle treatment plant sludges for additional metal recovery.

(4) When a plant reported recycle of treatment plant sludges, capital and annual costs for sludge handling (vacuum filtration and contract hauling) are not included. Where the sludge disposal method is reported as contract hauling, or is unknown, contract hauling costs are included assuming nonhazardous disposal.

Secondary Lead

Costs are estimated for three treatment options: lime and settle; lime, settle, and flow reduction; and lime, settle, and flow reduction followed by multimedia filtration. Five major assumptions made in estimating the costs of treatment options for plants in the secondary lead subcategory are detailed below:

(1) For plants having existing treatment of insufficient capacity, the required capital costs are based on providing the incremental capacity needed and annual costs are based on operation of a single system at the expanded capacity.

(2) Information available to the Agency is not detailed enough to determine if all industrial hygiene waste streams, truck wash and floor wash, are present at each plant. Therefore, where we had no information on these wastewater sources, we assume all of these are present at the regulatory flow rate. Although a discharge allowance for floor wash is not necessary, we are including extra treatment capacity to accommodate this need. Acceptable floor wash water may be obtained from recycling treated wastewater. Therefore, costs are included for a holding tank after chemical precipitation and settling to recycle water for floor wash use under all options.

(3) Lime addition is used in most cases throughout the secondary lead

subcategory in estimating costs for chemical precipitation. However, if a plant currently uses ammonia, soda ash, or caustic as the chemical precipitant, the costs are based on caustic addition.

(4) Annual costs for contract hauling are not included when sludge from existing treatment is recycled either to a smelter or back to a process. If a plant has a lagoon for sedimentation and sludge storage, the investment costs for sedimentation and vacuum filtration are not included since these technologies would probably not be installed to comply with the effluent limitations. However, operation and maintenance costs for these technologies (and contract hauling) were included as an estimate of the cost likely to be incurred by the plant to ultimately dispose of the sludge. All sludges produced through wastewater treatment are considered to be nonhazardous in estimating costs. However, our cost for solid waste disposal is equivalent to hazardous waste disposal. In addition, we performed a sensitivity analysis in which sludge disposal costs were doubled without an increase in plant closures.

(5) Compliance costs for three plants that are integrated with battery manufacturing operations are estimated only for multimedia filtration of the amount of wastewater associated with secondary lead operations. The treatment configuration costed assumes filtration of an amount of wastewater equal to the secondary lead flow, following centralized lime and settle treatment of combined flows. We adopted this method of costing because the plants are battry manfacturing plants, and the wastewater from the manufacturing operations is very large in comparison to the secondary lead wastewater flow. Therefore, all other compliance costs will be attributed to the battery manufacturing regulation.

C. Specific Instance of Conservative Costing

In developing compliance costs, we made several assumptions that are conservative and may lead to some overestimation of compliance costs in certain subcategories. Each of these assumptions is discussed below.

(1) In the four subcategories where BPT or PSES have not been previously promulgated, the annual costs for each treatment step in each option were always retained even though a plant may be currently operating part or all of the treatment steps. We believe this assumption is conservative because a facility will continue to operate and incur annual costs of its treatment system regardless of this regulation because of NPDES permits or municipal pretreatment requirements.

(2) In those instances where sludge is disposed of on site, stored in a lagoon, or disposal practices are unknown, we included annual costs for vaccum filtration and contract hauling. This assumption is conservative because these plants will not experience sludge disposal costs as high as we have assumed. This regulation does not prescribe sludge disposal practices and, therefore it is unlikely that current disposal practices will change for most subcategories. Since contract hauling is in general more expensive than onsite disposal, we believe our costs are higher than most plants will actually experience.

(3) Many of the plants in the nonferrous metals manufacturing category are integrated facilities. For these plants, we costed segregation of wastewater and developed compliance costs only for nonferrous metals manufacturing wastewaters. We believe this procedure may result in overestimation of costs because this approach does not consider the economies of scale of combined treatment.

Overall wastewater treatment costs are likely to be reduced when co-treatable wastewaters are combined for treatment rather than treating them separately.

(4) Hazardous waste disposal was costed for wastewater treatment sludges generated from the treatment of polynuclear aromatic hydrocarbons and cyanide in primary aluminum, in addition to all sludges generated from sulfide precipitation and sedimentation. This is a conservative assumption because wastewater treatment sludges at primary smelters and refiners are currently exempted from RCRA by administrative interpretation of statute.

(5) For the secondary lead subcategory, each plant recovering lead from scrap batteries was assumed to generate handwash, respirator wash, laundering of uniforms, truck wash, and facility washdown. Data (dcp) available to the Agency do not indicate the presence of these flows at most plants. Therefore, we include costs for additional treatment capacity for these waste streams based on our assumption that these flows are not currently treated (unless specific plant data indicated otherwise). This assumption does not consider that these waste streams are generated in response to OSHA standards promulgated after our Section 308 data were received. It is quite likely that, where these discharges are necessary, plants have accommodated these discharges by expanding treatment capacity, identifying recycle opportunities, or reducing flow from other operations. Therefore, our costs for expanding treatment capacity are probably unnecessary.

(6) In the secondary silver subcategory, each facility with precipitation and filtration wastewaters also is assumed to have floor wash based on our conclusion that efficient operation of secondary silver recovery includes recapture of silver from small plants. Although data (dcp) available to the Agency do not indicate the presence of floor wash at most plants, additional capacity is included in the costs for this waste stream. This approach probably includes costs for many plants that do not have this wastewater source and other plants that accommodate the discharge in existing treatment.

Caustic is used instead of lime to develop compliance costs for hydroxide precipitation in the secondary silver subcategory so that wastewater treatment sludges can be recycled. This assumption is conservative because not every plant in the subcategory will generate sludges that contain enough precious metal value to warrant recycle. Lime will probably be used at many plants due to the cost difference between lime and caustic.

(7) Combined treatment for all primary tungsten plants is included in our costs based on preliminary treatment with ammonia steam stripping followed by lime, settle, and filter treatment. Several of the waste streams that contain ammonia at treatable concentrations do not contain toxic metals. Therefore, using lime and settle treatment on all wastewaters is conservative because not all streams need this treatment. Individual plants could reduce treatment costs by treating those streams that need lime and settle treatment first, and then combine this effluent with all other wastewaters requiring ammonia steam stripping.

(8) We believe segregation costs for non-scope wastewaters at many plants may be overstated. New piping and installation costs are developed for each regulated process waste stream present when it appears a combined sewer is used to convey wastewater to treatment. We believe this assumption is conservative because a plant will not necessarily abandon its current sewer system and install piping for waste streams covered by this regulation. In many cases, other practices such as storm drainage diversion or eliminating nonprocess discharge sources may be less expensive.

In one specific instance, we developed compliance costs for a primary columbium-tantalum facility that we believe the plant may not incur. Wastewater treatment capital costs are included for this plant so that wastewater treatment sludge can be segregated from undigested gangue, which plant comments claim is a low-level radioactive waste. The plant presently uses a sedimentation pond to store wastewater treatment sludges and reportedly cannot dispose of them because of their radioactivity. If wastewater treatment sludges are separated from undigested gangue, the Agency believes the treatment sludges are nonhazardous and can be disposed of using conventional methods. (Even if contaminated, no federal regulations apply to land disposal of low level radioactive wastes.) However, this plant may find it less expensive to switch raw material sources or take other action to eliminate these costs.

(9) We assumed presence of all industrial hygiene streams at primary and secondary lead facilities in costing treatment equipment size, even though these streams are not uniformly present.

D. Analyses and Reports

The economic impact assessment is presented in *Economic Impact Analysis of Effluent Limitations and Standards for the Nonferrous Metals Manufacturing Industry, Phase I*, EPA 440/2-84-004. This document details the investment and annual compliance costs for the industry as a whole and for each metal covered by the regulation. The report assesses the impact of effluent control costs in terms of production cost changes, price changes, plant closures, employment effects, and balance of trade effects. These impacts are presented for each regulatory option. Compliance costs are based on engineering estimates of the capital and operating costs for the effluent control systems described earlier in this preamble. Costs are incremental above the effluent control equipment already installed. Operating and maintenance costs are included where there is treatment-in-place that is not required by an existing regulation. Operating and maintenance costs where treatment-in-place is mandated by existing regulations were not included in the compliance costs. Cost estimates include such associated costs as solid waste disposal.

EPA has also conducted an analysis of the incremental removal cost per pound equivalent for each of the technology-based options. Pound equivalents are calculated by multiplying the number of pounds of a pollutant by a weighting factor for that pollutant. The weighting factor is equal to the water quality criterion for a standard pollutant (copper) divided by the water quality criterion for the pollutant being evaluated. The use of pound equivalents gives relatively more weight to removal of the more toxic pollutants. Thus, for a given expenditure, the cost per pound equivalent would be lower when a highly toxic pollutant is removed than if a less toxic pollutant is removed. The results of this analysis are presented in "Cost-Effectiveness Analysis of Effluent Limitations and Standards for the Nonferrous Metals Manufacturing Industry, Phase I." This analysis is included in the record of this rulemaking.

E. Costs and Impacts

EPA has identified 148 manufacturing facilities that will incur costs to comply with this regulation; 65 are direct dischargers and 83 are indirect dischargers. There are also 152 facilities in this industry that do not discharge wastewater. Total investment requirements for existing dischargers are estimated to be $34 million, and total annual costs are $15 million, including depreciation and interest. These costs are expressed in 1982 dollars. The major economic impacts associated with these costs are two potential plant closures, five production line closures, and an employment loss of 62. These impacts are projected for the secondary silver subcategory. The potential production loss associated with these closures represents an insignificant portion of total production capacity for that subcategory. The changes to production costs and prices are expected to be small in all subcategories, ranging from less than 1 to 1.5 percent. Balance of trade effects are not significant. The Agency concludes, therefore, that the regulation is economically achievable.

In order to measure the potential economic effects, EPA divided the industry into 10 separate metal groups. For purposes of the economic analysis, primary copper smelters, refiners, and acid plants at the same site are treated as one economic subcategory because they are a single economic entity. Similarly, primary lead smelters and associated acid plants are one economic subcategory, and primary zinc smelters and associated acid plants are one economic subcategory.

The methodological approach used in the economic analysis at proposal was the focus of many public comments. Commenters argued that major assumptions from that report were incorrect, and that the conclusions of the analysis were invalid due to a flawed methology. In addition, many public comments claimed the report did not reflect accurate financial conditions. In response to these comments, the Agency revised the economic impact analysis. Much of the financial information for various metals was updated to account for the recent economic recession. Further, in response to comments, the revised analysis does not rely on the assumptions used in the proposal report, and instead includes many of the assumptions urged by the commenters.

The methodology in the revised analysis first uses a screening analysis to identify plants that will not incur substantial compliance costs. This approach has two major differences from proposal. First, as explained above, compliance cost estimates are generated on a plant-specific basis, which accounts for treatment-in-place and for regulatory flows. Second, we revised the perspective of the screening analysis to identify plants that will not have a significant impact, as opposed to identifying plants that will incur high impacts. The screening analysis is based on a comparison of a plant's annual compliance costs to its estimated revenues. The threshold value for the screen was lowered from 5 percent to 1 percent to correspond to the change in perspective and in response to comments.

For the plants that had screening analysis results greater than 1 percent, we conducted a plant closure analysis. This part of the analysis is based on the same conceputal framework as referenced in the proposed report (see also 48 FR 7069 explaining how plant closure analysis is conducted), but the specific tests have been revised to correspond to the more current financial information. As at proposal, we used two plant closure tests: a net present value test and a liquidity test. The net present value part of the analysis focuses on long-term profitability; the viability of the plant is judged by a comparison of its cash flows to its liquidation value. The liquidity test addresses short-term viability and focuses on affordability during the first few years of compliance.

The Agency's assumptions at proposal concerning projected prices were the source of many comments, and the issue of price pass-through was closely related. In the revised analysis, projected prices are based on an average of prices over the last five years, which takes into account the depressed prices of the early 1980's, includes a complete business cycle for most metals, and reflects the expected and ongoing economic recovery. With respect to price pass-through, the revised closure analysis is based on the assumption of zero pass-through; that is, plants are assumed to absorb all of the compliance cost. This assumption is conservative in that the analysis is based on the most extreme situation: the entire increase to production cost is assumed to affect the plant's profit situation. The extreme was chosen to avoid overlooking potential impacts and is responsive to comments.

We also calculated other economic impacts as part of the analysis, even though they were not specifically included in the plant closure tests. These impacts included changes to cost of production, increase in price (based on an assumption of full pass-through, even though the opposite assumption was used for the plant closure tests), changes to return on investment, and comparison of compliance investment costs to average annual capital expenditures.

As part of revising the analysis, we made an effort to update information on financial conditions in order to base the impacts on more accurate projections. We consolidated the economic subcategories into groups of metal processes (e.g., manufacturing primary metals or reclamation of precious metals) and collected financial information for these processes on an economic group basis. These procedures and their limitations are described in detail in the report. The major assumption underlying the use of these economic groups is that an individual plant will have characteristics similar to its group. In some cases, as a check on this assumption, we conducted sensitivity analyses to assess the impact of these assumptions on the report's conclusions.

In the preamble to the proposed rules, the Agency identified three subcategories in which changing market structure required a re-evaluation of assumptions regarding profitability. These subcategories are secondary silver, secondary lead, and primary copper.

In the secondary silver subcategory, the Agency was concerned that toll processors and their position in the silver market was not adequately characterized. The Agency solicited comments on forming a separate subcategory for toll operations. We received none. Further analysis of the tolling segment indicates that a separate subcategory is not necessary. The impacts associated with compliance costs can be assessed without making an adjustment for ownership. In the revised economic analysis, income is estimated in the same manner for all plants.

With respect to the plant closures that were projected at proposal, the Agency solicited comments on establishing different limitations for small producers. While we did not receive any comments on this issue, the Agency has specifically addressed the effects on small plants in the revised economic analysis. The results again project a small number of plant and production line closures. These results are not considered to be substantial, and the regulation is considered to be economically achievable for both small and large plants.

For the secondary lead subcategory, the Agency was concerned about market shifts, and we solicited comments on prices, profitability, and capacity. Industry's comments addressed each of these parameters. We have considered the information in these comments and incorporated it, where possible, in the revised economic analysis. This included, for example, industry and plant-specific information as well as descriptions of types of plants. Further, several plants participated in a data-gathering effort that included case studies. Thus, the economic conditions of the industry during recent years have been incorporated in the analysis. Many of these concerns were also addressed by performing sensitivity analyses, which varied the assumptions on compliance costs, prices, and group financial data. Hence, the Agency's concerns at proposal have been addressed in this final rulemaking.

Market shifts and falling prices in the copper refining segment were also of concern to the Agency for their effect on properly assessing the economic impact of effluent guideline costs. Through additional data gathering efforts and industry's comments, we believe we have adequately assessed conditions in this industry segment. The revised economic analysis is based on economic conditions that incorporate the recent recession and its low copper prices.

BPT. New or amended BPT limitations are being promulgated for five subcategories: primary lead, secondary lead, secondary silver, primary tungsten, and primary columbium-tantalum. In these subcategories, 25 direct dischargers are expected to incur compliance costs. Investment costs are estimated to be $3.3 million, and total annualized costs are $2.4 million. Price changes for these subcatetories are small, ranging from less than one-tenth to 1 percent. One potential plant closure in the secondary silver subcategory is associated with these costs; it represents a very small portion of the subcategory's production.

BAT. New or amended BAT limitations are being promulgated for all subcategories except primary copper smelting and secondary copper with 65 plants expected to incur compliance costs. Total investment costs are $24.8 million and total annualized costs are $11.4 million. The price increases associated with these costs are small, ranging from less than one-tenth to 1.4 percent. There are no additional plant closures beyond the one identified at the BPT-level of costs.

PSES. New or amended pretreatment standards are being promulgated for primary lead, primary zinc, secondary aluminum, secondary copper, secondary lead, secondary silver, primary columbium-tantalum, and primary tungsten. Total investment costs for 83 indirect dischargers are $9.7 million, and total annualized costs are estimated to be $3.7 million. The price increases associated with PSES costs are small—less than 1 percent in all subcategories. In the secondary silver subcategory, the compliance costs are projected to result in one plant closure and five production line closures. In the case of the projected line closures, secondary silver production represents a limited portion of the facilities' total production capacity. Most of these plants produce a variety of metals; in some cases, the facility's production consists primarily of other nonferrous metals—those covered by the Phase II portion of this category and outside the scope of this regulation. The one facility identified as a plant closure does conduct secondary silver recovery as a major portion of the total metals production at the facility. Nevertheless, since the plant represents a very small amount of total secondary silver production we believe that PSES is economically achievable for the subcategory as a whole.

NSPS/PSNS. New source limitations are being promulgated for all subcategories. The technology basis for NSPS and PSNS is the same as for BAT with the exception of additional flow reductions in some subcategories. The additional flow reductions are based on reduced or zero discharge of certain waste streams. For some phases of processing, the equipment can be either water-using or non-water-using. The flow reductions can be achieved at a new facility by means of the non-water-using equipment. There is no incremental cost associated with these additional flow reductions, and therefore, new plants will not be operating at a cost disadvantage relative to existing manufacturers. The regulations for new sources are not expected to discourage entry into the industry or result in any differential economic impacts to new sources.

F. Regulatory Flexibility Analysis

Pub. L. 96-354 requires that EPA prepare a Regulatory Flexibility Analysis for regulations that have a significant impact on a substantial number of small entities. This analysis may be conducted in conjunction with or as part of other Agency analyses. A small business analysis is included in the economic impact analysis for this regulation.

For each metal group, small entities were defined on the plant level, using number of employees as the variable to divide each subcategory by size. The actual number of employees used to define small varies by subcategory. Using these definitions, the regulation affects 36 small plants, which is 24 percent of all plants incurring costs. We evaluated potential impacts on small business from the standpoint of projected closures, annual costs compared to revenues, and increases in costs of production. We also performed additional economic sensitivity analyses for those subcategories that contain the most small businesses. In all cases, we found that this regulation will not result in a significant adverse impact on a substantial number of small businesses. While this conclusion obviates the need for a formal Regulatory Flexibility Analysis, the small business analysis included in the report is extensive and supports the conclusion that the regulation is economically achievable.

G. Executive Order 12291

Executive Order 12291 requires EPA and other agencies to perform regulatory impact analyses of major regulations. Major rules impose an annual cost to the economy of $100 million or more or meet other economic impact criteria. The regulation for nonferous metals manufacturing, Phase I is not a major rule. The costs expected to be incurred by this industry will be significantly less than $100 million. Therefore, a formal Regulatory Impact Analysis is not required. This final rulemaking satisfies the requirements of the Executive Order for a non-major rule. The Agency's regulatory strategy considered both the cost and the economic impacts of the regulation.

H. SBA Loans

The Agency is continuing to encourage small plants to use Small Business Administration (SBA) financing as needed for pollution control equipment. The three basic programs are: (1) The Pollution Control Bond Program, (2) the Section 503 Program, and (3) the Regular Business Loan Program. Eligibility for SBA programs varies by industry. Generally, a company must be independently owned, not dominant in its field, the employee size ranges from 250 to 1,500 employees (dependent upon industry), and annual sales revenue ranges from $275,000 to $22 million (varies by industry).

For further information and specifics on the Pollution Control Bond Program, contact: U.S. Small Business Administration, Office of Pollution Control Financing, 4040 North Fairfax Drive, Rosslyn, Virginia 22203, (703) 235-2902.

The Section 503 Program, as amended in July 1980, allows long-term loans to small and medium sized businesses. These loans are made by SBA approved local development companies. These companies are authorized to issue Government-backed debentures that are bought by the Federal Financing Bank, an arm of the U.S. Treasury.

Through SBA's Regular Business Loan Program, loans are made available by commercial banks and are guaranteed by SBA. This program has interest rates equivalent to market rates.

For additional information on the Regular Business Loan and Section 503 Programs contact your district or local SBA office. The coordinator at EPA headquarters is Ms. Frances Desselle who may be reached at (202) 382-5373.

VII. Nonwater Quality Environmental Impacts

Eliminating or reducing one form of pollution may cause other environmental problems. Sections 304(b) and 306 of the Act require EPA to consider the nonwater quality environmental impacts (including energy requirements) of certain regulations. In compliance with these provisions, we considered the effect of this regulation on air pollution, solid waste generation, water scarcity, and energy consumption. this regulation was circulated to and reviewed by EPA personnel responsible for nonwater quality programs. While it is difficult to balance pollution problems against each other and against energy use, we believe that this regulation will best serve often competing national goals.

The following nonwater quality environmental impacts (including energy requirements) are associated with the final regulation. The Administrator has determined that the impacts identified below are justified by the benefits associated with compliance with the limitations and standards.

A. Air Pollution

Imposition of BPT, BAT, and PSES will not create any substantial air pollution problems because the wastewater treatment technologies required to meet these limitations and standards do not cause air pollution. The promulgated technology basis for the control of ammonia is steam stripping. The Agency chose steam stripping over air stripping because air stripping simply transfers the ammonia from one media to another.

The technology basis for NSPS and PSNS in a few instances requires scrubbing and dry slag dumping. The Agency does not anticipate these technologies causing any air quality problems. A few commenters stated that dry slag dumping would increase ambient levels of lead creating industrial hygiene and air pollution problems. It is the Agency's belief that new sources can properly hood and ventilate dry slag dumping areas and control lead emissions through dry means such as cyclones and baghouses. Furthermore, the efficiency of baghouses is well documented, and their use instead of wet scrubbers will not add to industrial hygiene or air quality problems.

B. Solid Waste

EPA estimates that BPT will contribute an additional 22,000 kkg (24,000 tons) per year of solid wastes over that which is currently being generated by the nonferrous metals manufacturing category. BAT and PSES will increase these wastes by approximately 675,000 kkg (770,000 tons) per year beyond BPT levels. These sludges will necessarily contain additional quantities (and concentrations) of toxic metal pollutants.

If these wastes are identified as hazardous, they will come within the scope of RCRA's "cradle to grave" hazardous waste management program, requiring regulation from the point of generation to point of final disposition. EPA's generator standards require generators of hazardous wastes to meet containerization, labeling, recordkeeping, and reporting requirements. In addition, if nonferrous metals manufacturers dispose of hazardous wastes offsite, they would have to prepare a manifest which would track the movement of the wastes from the generator's premises to a permitted off-site treatment, storage, or disposal facility. See 40 CFR 262.20 (45 FR 33142 (May 19, 1980)). The transporter regulations require transporters of hazardous wastes to comply with the manifest system to assure that the wastes are delivered to a permitted facility. See 40 CFR 263.20 (45 FR 33151 (May 19, 1980)), as amended at (45 FR 86973 (December 31, 1980)). Finally, RCRA regulations establish standards for hazardous waste treatment, storage, and disposal facilities allowed to receive such wastes. See 40 CFR Parts 264 and 265.

Wastes which are not hazardous must be disposed of in a manner that will not violate the open dumping prohibition of section 4005 of RCRA. The Agency has calculated as part of the costs for wastewater treatment the cost of hauling and disposing of additional wastes generated as a result of these reqirements. For more details, see Section VIII of the technical development document.

The Agency considered the solid wastes that would be generated at nonferrous metals manufacturing plants by the suggested treatment technologies and believes in most instances that they are not hazardous under section 3001 of the Resource Conservation and Recovery Act (RCRA). This judgment is made based on the recommended technology of lime precipitation. By the addition of a small excess of lime during treatment (for which we added compliance costs), the potential for leaching toxic metals is reduced, since metal hydroxides are relatively impervious to acidic and neutral leaching media. Similar sludges, specifically toxic metal bearing sludges generated by other industries such as the iron and steel industry, passed the EP toxicity test by a substantial margin and have been delisted (i.e., no longer are specifically listed as hazardous) as a result. See, e.g., 45 FR 78544 (November 25, 1980); 46 FR 40154 (August 6, 1981); and 47 FR 52668 (November 22, 1982); and 40 CFR 261.24. A discussion of sludge characteristics for each subcategory is provided below.

Primary Aluminum. Pilot-scale work performed by the Agency since proposal demonstrated that toxic polynuclear aromatic hydrocarbon pollutants found in primary aluminum wastewaters are removable using lime, settle, and filter technology. As a result, the Agency believes lime sludge from this subcategory will be toxic due to presence of these organic contaminants. In addition, sludges generated during cyanide precipitation are expected to be hazardous under RCRA. Consequently, in developing plant-by-plant compliance costs for the primary aluminum subcategory, the Agency considered the sludges generated as hazardous. The costs of hazardous waste disposal were considered in the economic analysis, and they were determined to be economically achievable. (This is a conservative assumption since these sludges are presently subject to a statutory and regulatory exemption from hazardous waste status.)

Secondary Aluminum. Sludge generation in the secondary aluminum subcategory is due to the precipitation of metal hydroxides and carbonates using lime. If a small excess of lime is added during treatment, the Agency does not believe these sludges would be identified as hazardous under RCRA. Disposal of spent carbon is costed as hazardous waste and is determined to be economically achievable.

Primary Copper Electrolytic Refining. The technology basis for one plant in the primary copper electrolytic refining subcategory includes separate sulfide precipitaiton for the control of arsenic. Disposal of sulfide cake from the filter press was costed as hazardous waste and were determined to be economically achieveable.

Secondary Copper. Sludge generation in the secondary copper subcategory is due to the precipitation of metal hydroxides and carbonates using lime. If a small excess of lime is added during treatment, the Agency does not believe these sludges would be identified as hazardous under RCRA.

Primary Lead. The technology basis for the primary lead subcategory includes sulfide precipitation for those plants that operate metallurgical acid plants. The Agency believes sludge generated through sulfide precipitation (followed by sedimentation) will be classified as hazardous under RCRA. The costs of hazardous waste disposal were considered in the economic analysis for this subcategory (even though the waste is now exempt), and they were determined to be economically achievable.

Primary Zinc. The technology basis for the primary zinc subcategory includes sulfide precipitation for the control of zinc, cadmium, and other toxic metals. These sludges differ from primary copper because sulfide precipitation solids are removed in a separate clarifier and not in the filter, where they are backwashed into the lime and settle clarifier. The Agency believes sludge generated through sulfide precipitation (followed by sedimentation) will be classified as hazardous under RCRA. The costs of hazardous waste disposal were considered in the economic analysis for this subcategory (even though the waste is now exempt), and they were determined to be economically achievable.

Metallurgical Acid Plants. The technology basis for the metallurgical acid plants subcategory includes sulfide precipitation for the control of various toxic metals. The Agency believes sludge generated through sulfide precipitation (followed by sedimentation) will be classified as hazardous under RCRA. The costs of hazardous waste disposal were considered in the economic analysis for this subcategory (in spite of the current statutory and regulation exemption), and they were determined to be economically achievable.

Primary Tungsten. Sludge generation in the primary tungsten subcategory is due to the precipitation of metal hydroxides and carbonates using lime. If a small excess of lime is added during treatment, the Agency does not believe these sludges would be identified as hazardous under RCRA.

Primary Columbium-Tantalum. Sludge generation in the primary columbium-tantalum subcategory is due to the precipitation of metal hydroxides and carbonates along with calcium fluoride using lime. If a small excess of lime is added during treatment, the Agency does not believe these sludges would be identified as hazardous under RCRA.

The Agency received comments stating that wastewater treatment sludges generated in the primary columbium-tantalum subcategory would have to be disposed of as low level radioactive waste. There are no RCRA regulations applicable to low level radioactive wastes, so the claim appears exaggerated. The Agency, therefore, requested specific data and information from the commenters so that the comments could be properly evaluated. However, no data or information were submitted to support this claim. In fact, one commenter submitted information and data showing the cost of disposal for gangue, the waste material remaining after the columbium-tantalum values are extracted from the raw material, rather than for wastewater treatment sludge. In any case, the Agency believes the disposal of gangue as a low level radioactive material is an expense of doing business and not attributable to the treatment of wastewaters.

Secondary Silver. Sludge generation in the secondary silver subcategory is due to the precipitation of metal hydroxides and carbonates using lime. If a small excess of lime is added during treatment, the Agency does not believe these sludges would be classified as hazardous under RCRA.

Secondary Lead. The Agency received several comments from the secondary lead subcategory claiming sludges generated through the use of lime as a wastewater treatment chemical were hazardous due to lead. To properly evaluate these comments, the Agency requested specific data and information from the commenters. From the material received, it appears lime sludges at two secondary lead and battery manufacturing plants will fail the EP toxicity test due to lead one-third of the time. The Agency contends these sludges would not have been classified as hazardous under RCRA if a small amount of excess lime was used during wastewater treatment. A third plant, which tests its lime sludges on a batch-by-batch basis, indicated that it disposed of its wastewater treatment sludges as a hazardous material less than 2 percent of the time, indicating that operation of the treatment system affects sludge quality.

It is also the Agency's understanding, based on comments, that one of the facilities disposing of lime sludges as a hazardous waste has entered into an agreement with a local landfill at preferential rates. The Agency contends that if this plant did not have a local disposal site to dispose of its lime sludge as hazardous, it could operate its treatment system using excess lime, which would make the sludges nonhazardous.

The Agency has recalculated the compliance costs for the secondary lead subcategory on a plant-by-plant basis. In the cost model, a contract hauling fee of $90 per ton (as nonhazardous waste) was used in estimating annual costs. The Agency solicited data on sludge disposal costs and only received information from one corporation. Data submitted by the commenter show the contract hauling costs when sludges are disposed of as hazardous wastes ranging from $90 to $110 per ton. This would indicate that the Agency's sludge disposal costs are conservative when lime sludges are disposed of as nonhazardous wastes. In addition, the Agency doubled the contract hauling costs for the secondary lead lime sludges from $90 per ton to $180 per ton and found no significant adverse economic impacts for this subcategory. In any case, we assessed the costs of disposing of these wastes as hazardous and found these costs to be economically achievable.

C. Consumptive Water Loss

Treatment and control technologies that require extensive recyling and reuse of water may require cooling mechanisms. Evaporative cooling mechanisms can cause water loss and contribute to water scarcity problems—a primary concern in arid and semi-arid regions. While this regulation assumes water reuse, the overall amount of reuse through evaporative cooling mechanisms is low and the quantity of water involved is not significant. In addition, most nonferrous plants are located east of the Mississippi where water scarcity is not a problem. We conclude that the consumptive water loss is insignificant and that the pollution reduction benefits of recycle technologies outweigh their impact on consumptive water loss.

D. Energy Requirements

EPA estimates that the achievement of BTP effluent limitations will result in a net increase in electrical energy consumption of approximately 10 million kilowatt-hours per year. The BAT effluent technology will increase energy consumption by 14 million kilowatt-hours per year over BPT. To achieve the BPT and BAT effluent limitations, a typical direct discharger will increase total energy consumption by less than 1 percent of the energy consumed for production purposes.

The Agency estimates that PSES will result in a net increase in electrical energy consumption of approximately 8 million killowatt-hours per year. To achieve PSES, a typical existing indirect discharger will increase energy consumption by less than 1 percent of the total energy consumed for production purposes.

New source performance standards for direct and indirect dischargers in the nonferrous metals manufacturing category will not significantly add to the total energy consumption of the category. This observation is based on the fact that BAT and PSES will increase energy consumption by 14 million and 8 million kilowatt-hours, respectively, and new source standards are generally equivalent to BAT and PSES.

VIII. Pollutants and Subcategories Not Regulated

The Settlement Agreement in *NRDC* v. *Train, Supra* contains provisions authorizing the exclusion from regulation in certain instances of toxic pollutants and industry subcategories. These provisions have been rewritten in a Revised Settlement Agreement which was approved by the District Court for the District of Columbia on March 9, 1979. See *NRDC* v. *Costle*, 12 ERC 1833 (D.D.C. 1979). Appendix B presents the pollutants selected for regulation.

A. Exclusion of Pollutants

The Agency has deleted the following three pollutants from the toxic pollutant list: (49) trichlorofluoromethane and (50) dichlorofluoromethane, 46 FR 79692 (January 8, 1981); and (17) bis(chloromethyl)ether, 46 FR 10723 (February 4, 1981).

Paragraph 8(a)(iii) of the Settlement Agreement allows the Administrator to exclude from regulation toxic pollutants not detectable by section 304(h) analytical methods or other-state-of-the-art methods. The toxic pollutants not detected and therefore excluded from regulation are listed in Appendix C to this notice.

Paragraph 8(a)(iii) also allows the Administrator to exclude from regulation toxic pollutants detected in amounts to small too be effectively reduced by technologies known to the Administrator. Appendix D to this notice lists the toxic pollutants in each subcategory which were detected in the effluent in amounts at or below the nominal limit of analytical quantification, which are too small to be effectively reduced by technologies known to the Administrator and which, therefore, are excluded from regulation.

Paragraph 8(a)(iii) also allows the Administrator to exclude from regulation toxic pollutants present in amounts too small to be effectively reduced by technologies known to the Administrator. Appendix E lists those toxic pollutants which are not treatable using technologies considered applicable to the category.

Paragraph 8(a)(iii) also allows the Administrator to exclude from regulation toxic pollutants detectable in the effluent from only a small number of sources within the subcategory because they are uniquely related to those sources. Appendix F to this notice lists for each subcategory the toxic pollutants which were detected in the effluents of only a small number of plants, are uniquely related to those plants, and are not related to the manufacturing processes under study.

Paragraph 8(a)(iii) also allows the Administrator to exclude from regulation toxic pollutants which will be effectively controlled by the technologies upon which are based other effluent limitations and guidelines, or pretreatment standards. Appendix G lists those toxic pollutants which will be effectively controlled by other regulated pollutants in the BAT limitations and NSPS, PSES, and PSNS, even though they are not specifically regulated.

Paragraph 8(a)(iii) also allows the Administrator to exclude from regulation toxic pollutants detected but only in trace amounts and not likely to cause toxic effects. Appendix H to this notice lists for each subcategory the toxic pollutants which were detected in trace amounts.

Paragraph 8(a)(iii) also allows the Administrator to exclude from regulation toxic pollutants detected solely as a result of their presence in the intake waters. Appendix I lists those pollutants excluded under this provision.

B. Exclusion of Subcategories

Additionally, Paragraph 8(a)(iv) of the Settlement Agreement authorizes the exclusion of subcategories in which the amount and toxicity of each pollutant in the discharge do not justify developing national regulations. The Agency has excluded the following subcategories from regulation based on the provisions of Paragraph 8(a)(iv) of the Settlement Agreement:

1. Primary Arsenic,
2. Primary Antimony,
3. Primary Barium,
4. Primary Bismuth,
5. Secondary Cadmium,
6. Primary Calcium,
7. Secondary Molybdenum,
8. Secondary Tantalum,
9. Primary Tin,
10. Secondary Babbitt, and
11. Secondary Beryllium.

Data gathered in conjunction with developing mass limitations for the second phase of the nonferrous metals manufacturing category indicate that secondary molybdenum, secondary tantalum, and primary tin generate wastewaters that are directly or indirectly discharged to navigable waterways. Therefore, the Agency is reconsidering whether to establish national regulations for these three subcategories as part of its phase II study.

IX. Public Participation and Response to Major Comments

Industry, government, individual citizens, and environmental groups have participated during the development of these effluent limitation guidelines and standards. Following the publication of the proposed rule on February 17, 1983 in the Federal Register, we provided the development document and the economic impact analysis supporting the proposed rule to industry, government agencies, and the public sector. The public record supporting this regulation was available for public use on April 6, 1983. The comment period ended on May 27, 1983. A permit writers' workshop open to the public was held on the nonferrous metals manufacturing rulemaking in Denver, Colorado on May 20, 1983. On April 27, 1983 in Washington, D.C., a public hearing was held on the proposed pretreatment standards at which four people presented testimony. Notices of data availability and a request for comment on data obtained after proposal were published in the Federal Register on November 4, 1983 and November 21, 1983 with the comment periods ending on November 25, 1983, and December 21, 1983.

Since proposal, 58 commenters submitted approximately 1,600 individual comments on the proposed regulation. We considered all comment carefully and made appropriate changes in the regulation whenever data and information supported those changes. Seven of the major issues raised by the comments are addressed in this section of the preamble. Othe major comments are discussed briefly in Section V, control treatment options and technology basis for final regulations. All comments received and our detailed responses to these comments are included in a document entitled *Response to Public Comments, Proposed Nonferrous Metals Manufacturing Effluent Limitations and Standards* which has been placed in the public record for this regulation. The following is a discussion of the Agency's responses to the principal comments.

1. Permit Writer Guidance for Handling Non-Regulated Wastewater Sources

Comment: Numerous comments were received claiming the Agency failed to include flow and discharge allowances for significant wastewater sources. The commenters' position is that flow and discharge allowances should be established for such general wastewater sources as boiler blowdown, noncontact cooling water, and contaminated groundwater seepage, in addition to other subcategory-specific wastewater sources.

Other commenters requested the Agency to list site-specific wastewater sources as a separate subpart of the final regulation. The commenters believe this will obligate the permit writers to consider these wastewater sources when writing a permit. If the site-specific wastewater sources are not listed in the regulation, the commenters contend that permit writer may write the permit for only those wastewater sources given flow allowances on a national basis.

Response: The Agency has carefully reviewed all of the comments requesting additional flow allowances for streams previously considered. In several cases, the Agency has agreed with the commenters and added flow allowances where they are appropriate. Each of the flow allowances added on a subcategory-specific basis is discussed in Section V of this preamble under BPT and BAT. For those waste streams not given flow allowances, the Agency does not believe they warrant treatment on a national basis because they are generally not contaminated or occur at only one or two plants. It is the Agency's belief that such wastewater sources as noncontact cooling and boiler blowdown ordinarily do not contain significant quantities of toxic pollutants to warrant treatment or on a national basis. However, the permit writer should be aware that in some instances wastewater sources such as these may be contaminated with toxic pollutants. In such instances, it is up to the permit writer to adjust the plant's permit to take this type of wastewater source into account.

The Agency has decided not to include a regulatory listing of site-specific wastewater sources. Although commenters have provided the Agency with many of the site-specific wastewater sources, the Agency believes that this list may not be conclusive for each subcategory because not every facility in the category has informed the Agency of its site-specific waste streams, and new streams undoubtedly may arise or be discovered. Therefore, to avoid missing a site-specific waste stream, the Agency will continue to list these wastewater sources in the Development Document and instruct the permit writer that there may be other site-specific wastewater sources.

To account for site-specific wastewater sources, the permit writer must quantify the discharge rate of the waste stream. The mass allowance provided for the waste stream is then obtained form the product of the discharge rate and treatment performance of the technology basis of the promulgated regulation. For example, if the permit writer determines that contaminated ground water seepage requires treatment, he must determine the flowrate of contaminated water to be treated. He then can determine the appropriate treatment technology basis by referring to Section V of today's notice. Treatment effectiveness values are presented in Section VII of the General Development Document. The product of the discharge rate and treatment performance is then the allowed mass discharge. This quantity can then be added to the other building blocks (i.e., mass discharge for the regulated streams) to determine total allowed mass discharge.

2. Stormwater and Other Non-Scope Flows

Comment: Numerous comments were received claiming that the Agency had failed to include flow and discharge allowances for stormwater and other wastewater sources such as noncontact cooling, boiler blowdown, contaminated groundwater, and so on. In addition, many of the commenters felt that the Agency understated the cost of compliance for the proposed regulation because the costs of treating contaminated stormwater and site-specific wastewater sources were not taken into account.

Response: The Agency believes the development of stormwater and other site-specific wastewater source mass limitations are inappropriate on a national basis because the volume of waste water is not constant from plant to plant and is not production related. Because of this, mass limitations on a national basis cannot be developed due to the variability of wastewater flow from plant to plant. Therefore, the Agency believes site-specific wastewater is best handled on a case-by-case basis in the NPDES permitting process. This is the Agency's consistent approach to this issue, reflected not only in other categorical effluent limitations guidelines and standards (e.g., aluminum forming category), but in general implementing regulations for these limitations and standards as well (see 40 CFR 401.11(q), definition of process wastewater).

Since the Agency did not propose (and is not promulgating) mass limitations for stormwater and other site-specific waste water sources, the cost of treating these wastewaters was not considered. In developing plant-by-plant costs for the nonferrous metals manufacturing category, the Agency provided segregation costs to route site-specific wastewater around the treatment system. Segregation of stormwater and other wastewaters for the purposes of costing does not mean the Agency believes these wastewaters are uncontaminated. On the contrary, the Agency recognizes that stormwater may be a significant source of pollutants and require treatment. We also recognize that central treatment of contaminated stormwater and process wastewater may be appropriate in some situations. For the reasons stated above, contaminated nonprocess wastewater will be handled by the permit writer on a case-by-case basis. We recommend that permit writers consider whether all stormwater requires treatment or if only certain parts of the flow (such as drainage from specific areas) or time periods (such as capturing only the initial drainage) need treatment. (See also the response to issue 1 above.)

3. Limitations and Standards for pH

Comment: Several commenters have expressed concern that the limits for pH and metals are incompatible. Optimum operating pH in lime and settle treatment may be different for each of the various metals regulated. Therefore, if the system is operated to maximize the removal of all regulated pollutants, individual metals will not be removed to the same extent as when the system is operated for removal of a single metal. The commenters express concern that the performance data used by the Agency to establish toxic metals limits have not been documented as actually occurring at a single pH resulting in simultaneous reduction of the pollutants to the proposed limits.

In addition, commenters contend that the pH range of control should be 3 units as opposed to the 2.5 range proposed because of the difficulties of maintaining pH within such a narrow range. Therefore, they recommend the limits be changed to 7 to 10 (rather than 7.5 to 10 as proposed). Some commenters state that since most industries have a lower pH limit of 6.0 and because some facilities do not employ lime and settle technology, the pH limits should be changed to 6 to 10 or handled on a case-by-case basis.

Response: The Agency proposed the pH range of 7.5 to 10 because it is within this range that the majority of toxic metals reach minimum solubility. Since the proposed limitations were derived from actual preformance data at plants operating the model technology (which operate their treatment systems within the range set forth as indicative of proper operation), we believe the limits are achievable using the recommended technology. However, comments and sampling data from the aluminum forming category show that the optimum pH level for aluminum removal is lower than for the regulated toxic metals. To facilitate meeting the aluminum limits at BPT and BAT, we have broadened the pH range from 7.5 to 10 to 7 to 10. The Agency does not believe the operation of primary or secondary aluminum treatment systems at the optimum pH for aluminum removal will affect the attainability of the nickel, antimony, lead, or zinc mass limitations. In the data gathered at aluminum forming plants, the Agency noted the removal performance for nickel and chromium were not serverely affected when the treatment systems were operated at pH 7 to 8. In fact, the performance values for nickle were being achieved. The Agency believes this observation is due to the coprecipitation of these metals with aluminum. The Agency anticipates this same phenomenon will occur with antimony, lead, zinc, and nickel. Lowering of the pH range will also aid in fluoride removal which has a minimum solubility as calcium fluoride between pH 7 and 8.

The Agency thus agrees with the commenters that the proposed 2.5 pH range is too narrow and has promulgated a pH range of 7 to 10. The Agency does not believe a pH range of 6 to 10 is appropriate for the nonferrous metals manufacturing category pH requirement. This pH range is established to ensure optimum metals removal; a pH of 6 is outside this range.

4. Achievability of 90 Percent Recycle

Comment: Several comments were received questioning the Agency's selection of 90 percent recycle as the basis in developing flow allowances for casting contact cooling water and wet scrubber blowdown. The commenters believe 90 percent recycle may not be achievable for these waste streams at all plants. In addition, the commenters stated plants with larger production normalized flows for a specific operation will be able to achieve a higher degree of recycle than plants with smaller production normalized flows.

Response: In determining the flow allowances, the Agency examined the production normalized flows for each operation. From the data set for each operation, a normalized flow allowance was developed based on existing preformance. In most cases, the normalized flow is not based on recycle with the exception of those instances where recycle is widely demonstrated for a production operation, as it is for wet scrubbing operations. Plants that were found to use an excessive amount of water on a production normalized basis when compared to other plants were not included in developing the flow allowance. The BAT flow allowance based on recycle was then calculated by reducing the normalized flow by a factor of 10 require 90 percent recycle.

The Agency would like to point out that the regulations do not require each plant to achieve 90 percent recycle to meet these promulgated mass allowances. For example, in some cases, a plant may only need to recycle 50 percent or less if it can reduce the volume of water used in the process to match the lowest water use observed in the subcategory.

The Agency realizes that the flow rates for wet scrubber streams may not be possible without pretreatment to remove the material that has been scrubbed. In developing compliance costs, the Agency carefully examined current methods of recycle and pretreatment for each wet scrubbing operation. Costs for in-process flow reduction were than developed based on the demonstrated recycling methods. In many instances, we developed costs for pretreatment consisting of holding and settling tanks to remove suspended solids, while in other (more unusual) instances we developed costs for lime and settle treatment used to achieve recycle of the scrubber liquor.

5. Mass-Based Limitations and Standards.

Comment: Several commenters oppose mass-based limitations and standards and recommend that, as it did for other industries, the Agency should establish concentration-based limits instead. It is contended that production normalized flows, necessary for mass-based limits, have not and cannot be properly established and that the standards should therefore be based on concentration. In addition, mass-based limits make compliance determinations unnecessarily complex, if not impossible.

For pretreatment standards, commenters contend that mass-based limits are especially inappropriate as most POTW sewer ordinances are concentration-based and as compliance determinations will depend on industry supplied data.

Response: Mass-based limitations and standards are the norm, not an exception. The Clean Water Act was premised on the notion that pollutant discharge to navigable waters be eliminated by pollutant removal, not by dilution. *Senate Comm. on Public Works, 93d Congress, 1st Sess.* A legislative history of this same philosophy is reflected in the Agency's regulations. See 40 CFR 122.45(f) stating that NPDES permits should be mass-based wherever possible, and 48 FR at 9442 (January 28, 1981) stating that Control Authorities may impose mass limitations to prevent dilution as a substitute for treatment.

The Agency accordingly is promulgating mass-based limitations and standards for this category. In addition to implementing the general policy of the Act, mass limitations and standards are necessary in order to ensure implementation of the effluent reduction benefits associated with flow reduction which is an integral part of the model treatment technology. In developing the nonferrous metals manufacturing regulation, the Agency examined the sources and amounts of water used in the various manufacturing operations. EPA found that for all process operations a significant number of plants used more water than the process required, and further, that for a number of processes, water was being recycled by many plants in the category. Accordingly, flow reduction was incorporated as an integral part of the model treatment technology for nonferrous metals manufacturing. Mass-based limitations are necessary for this category to adequately control the total discharge of pollutants.

The production normalized flows that were used in calculating the mass-based limitations are fully discussed in the Response to Public Comments Document and in the Proposed and Final Development Document supporting this regulation. The Agency believes that these flows were properly established and that they provide an adequate basis for the determination of mass-based limitations.

These limitations are not very difficult to enforce because most companies keep records of production in terms of mass. The permit writer or control authority establishes production levels once, on a case-by-case basis. The Agency has already established the relationship between wastewater discharge and production (by means of production normalizing parameters expressed in the regulation), as well as the effluent concentrations achievable. These production levels require modification only when substantial changes in production occur. The other two parameters, regulatory flow and treatment effectiveness concentration, will not change.

In general, to determine limits for integrated plants that are required to comply with both a categorical pretreatment standard expressed only in mass-based limits and another categorical pretreatment standard expressed only in concentration-based limits, the concentration limit is converted to a mass limit. This is accomplished by multiplying the concentration limit by the appropriate flow of the stream to which the limit applies. Guidance on how to apply the combined waste stream formula is provided in the General Pretreatment Regulations (40 CFR Part 403.6(e)).

6. Flow Allowances for Industrial Hygiene Practices

Comment: Several comments were received stating that EPA had failed to consider wastewater flow generated in the secondary lead subcategory by respirator wash, uniform laundering, hand washing, showers, and facility washdown. The commenters point out that these practices are frequently used to reduce airborne lead and maintain blood levels within current OSHA limits.

Response: After proposal, the Agency conducted two engineering site visits at integrated secondary lead and battery manufacturing plants. Analytical data were collected from respirator wash, uniform laundering, hand washing, and facility washdown. Lead was found in each of the samples with concentrations as high as 20 mg/1. The analytical data demonstrate that these wastewater sources contain lead and other toxic metals at treatable concentrations. An allowance was provided for truck and pallet washing for similar reasons. Therefore, the Agency has established flow allowances and mass allowances for these sources of wastewater.

The Agency disagrees with the commenters that discharge allowances are justified for employee showers and facility washdown. We believe that shower discharges will not contain sufficient lead to justify treatment with process wastewater discharges because most lead dusts will be collected on protective clothing and respirators. Therefore, we have not included any costs for routing these discharges through the process wastewater treatment system. A discharge allowance was not provided for facility washdown because the Agency believes floor washing can be accomplished with recycled effluent following lime and settle treatment. However, we did include costs for treating and recycling these discharges.

The Agency has promulgated these same mass limitations for the primary lead subcategory, as well as for the secondary lead subcategory. The Agency believes the primary lead subcategory generates similar waste streams to achieve OSHA standards. The methodology used to develop the flow allowances for these two subcategories is present in Section IX of the secondary lead supplemental development document and Section X of the primary lead supplemental development document.

Comments were also received from the primary zinc and primary copper subcategories stating that water balances have changed at the plants since the Agency had gathered its data as a result of industrial hygiene requirements. These commenters were asked to support their claims through section 308 data requests. However, no information was submitted to support their claims. Consequently, flow allowances associated with industrial hygiene requirements in the primary and secondary lead subcategories have not been provided for the primary zinc and copper subcategories.

7. Mass Limitations for Integrated Facilities

Comment: Several commenters stated that the Agency did not consider the impact of the regulation on plants that centrally treat wastewater discharges covered by more than one subcategory or category. The comments point out that the pollutants controled and the end-of-pipe treatment necessary may vary between nonferrous metals subcategories or between nonferrous metals manufacturing and other categories (such as aluminum forming). Several comments indicate that these differences could result in permits requiring treatment performance better than EPA's concentration component of the mass limits.

Response: We recognize that integrated plants may choose to treat their wastewater centrally, and problems may arise particularly where different pollutants are controlled by the applicable regulations. If the permitting or control authority does not allow appropriate allowances under best professional judgment (BPJ) for direct dischargers (or the combined waste stream formula for indirect dischargers) there is a possibility that in order to meet an end-of-pipe mass limitation, and integrated plant will have to reduce pollutant concentrations below the concentration performance contemplated in the regulation. For example, if an integrated primary aluminum plant has a mass allowance of 100 units of antimony (100 units of flow x 1 ppm of antimony) and it combines its wastewater with aluminum forming wastewater with a regulatory flow of 100 and no allowance for antimony, it would be forced to reduce antimony concentrations to 0.5 ppm in order to meet its allowance (200 units of combined flow x .5 ppm). Therefore, it is appropriate that plants combining process wastewaters to different controlled pollutants be credited with the appropriate mass allowances for the entire regulatory flow (i.e., the flow from all unit operations from the combined facilities) obtained through BPJ or the combined waste stream formula multiplied by the concentration achievable with the appropriate end-of-pipe technology. Without an allowance in each building block for all pollutants controlled by any regulation applying to the combined discharge, integrated plants would be forced to segregate discharges or achieve flow or pollutant concentration reductions not anticipated in any of the regulations. This same type of allowance is provided in the Combined Waste Streams forumula for integrated indirect dischargers. See 46 FR at 9420 (January 28, 1981).

Flow allowances for the regulated waste streams are presented in Section IX and X, while treatment performance for the various pollutants is presented in Section VII of the development documents. As an example, if the pollutant antimony is not regulated in both of the categories or subcategories, the permit writer must identify the regulatory flow allowances for the streams in the category or subcategory where antimony is not regulated along with the technology basis for the category or subcategory. Mass limitations for antimony are then calculated by multiplying the regulatory flow for each waste stream times the treatment performance for antimony.

The Agency does not believe it is necessary to consider different end-of-pipe requirements for control of the same pollutant regulated in different categories. In this situation, there is no possibility that a pollutant could be regulated to a lower concentration than intended. Under the approach outlined above, a plants' permit limitations would be the sum of all appropriate building blocks. Integrated plants will of course continue to have the flexibility of determining how they comply with our numerical limits. Thus, they may or may not treat centrally, or treat all or part of their various flows. Nothing in this regulation reduces this flexibility. For direct dischargers, developing mass limitations for regulated pollutants not common to both category or subcategory is handled procedurally as a Best Professional Judgement Decision (BPJ). For indirect dischargers, the provisions of the combined waste stream formula of the General Pretreatment Regulations are applicable.

As a final note, one commenter suggested that mass limitations were inappropriate for so-called "complex facilities" combining and co-treating refining and smelting water with water from ore mining and milling. The Agency has determined, as explained above, that refining and smelting wastewaters (and associated metallurgical acid plant wastewater) can be treated with sulfide precipitation, filter press, lime and settle, and filter technologies to achieve the promulgated limitations. This wastewater does not have to be co-treated with ore mining and milling wastewater. The Agency has evaluated the costs of segregating nonferrous and ore mining wastewaters at integrated plants and found time to be economically achievable. If such plants choose to co-treat, they should meet mass limitations developed for the combined flow. See 40 CFR 122.45(f) and 48 FR at 7048 (February 17, 1983). Nothing the Agency said in the ore mining regulation is contrary to this statement. Indeed, the Agency indicated in that rulemaking that "each (integrated) facility will be given effluent limitations that are derived from the BAT mine and mill guidelines and the smelter and refining guidelines . . ." 47 FR at 54601 (December 3, 1982.)

X. Best Management Practices

Section 304(e) of the Clean Water Act gives the Administrator discretionary authority to prescribe "best management practices" (BMP). EPA is not promulgating BMP specific to the 12 subcategories of the nonferrous metals manufacturing category discussed in today's preamble.

XI. Upset and Bypass Provisions

A recurring issue of concern has been whether industry guidelines should include provisions authorizing noncompliance with effluent limitations during periods of "upset" or "bypass." An upset, sometimes called as "excursion," is an unintentional noncompliance occurring for reasons beyond the reasonable control of the permittee. It has been argued that an upset provision in EPA's effluent limitations is necessary because such upsets will inevitably occur even in properly operated control equipment. Because technology-based limitations require only what technology can achieve, it is claimed that liability for such situations is improper. When confronted with this issue, courts have disagreed on whether an explicit upset or excursion exemption is necessary, or whether upset or excursion incidents may be handled through exercise of EPA's enforcement discretion. Compare *Marathon Oil Co.* v. *EPA,* 564 F.2d 1253 (9th Cir. 1977) with *Weyerhaeuser Co.* v. *Costle, supra,* and *Corn Refiners Association, et al.* v. *Costle,* No. 78-1069 (8th Cir., April 2, 1979). See also *American Petroleum Institute* v. *EPA,* 540 F.2d 1023 (10th Cir. 1976); *CPC International, Inc.* v. *Train,* 540 F.2d 1320 (98th Cir. 1976); *FMC Corp.* v. *Train,* 539 F.2d 973 (4th Cir. 1976).

An upset is an unintentional episode during which effluent limits are exceeded; a bypass, however, is an act of intentional noncompliance during which waste treatment facilities are circumvented in emergency situations.

We have, in the past, included bypass provisions in NPDES permits.

We determined that both upset and bypass provisions should be included in NPDES permits and have promulgated NPDES that include upset and bypass permit provisions (see 40 CFR 122.41 (m) and (n), 48 FR 14146 (April 1, 1983)). The upset provision establishes an upset as an affirmative defense to prosecution for violation of technology-based effluent limitations. The bypass provision authorizes bypassing to prevent loss of life, personal injury, or severe property damage. Consequently, although permittees in the nonferrous metals manufacturing industry will be entitled to upset and bypass provisions in NPDES permits, this final regulation does not address these issues.

XII. Variances and Modifications

Upon promulgation of this regulation, the appropriate effluent limitations must be applied in all Federal and State NPDES permits thereafter issued to direct dischargers in the nonferrous metals manufacturing category. In addition, on promulgation, the pretreatment limitations are directly applicable to any indirect dischargers.

For BPT effluent limitations, the only exception to the binding limitations is EPA's "fundamentally different factors" variance. See *E. I. duPont deNemours & Co.* v. *Train*, 430 U.S. 112 (1977); *Weyerhaeuser Co.* v. *Costle, supra.* This variance recognizes factors concerning a particular discharger that are fundamentally different from the factors considered in this rulemaking. However, the economic ability of the individual operator to meet the compliance cost for BPT standards is not a consideration for granting a variance. See *National Crushed Stone Association* v. *EPA*, 449 U.S. 64 (1980). Although this variance clause was set forth in EPA's 1973 to 1976 industry regulations, it is now included in the NPDES regulations and will not be included in the nonferrous metals manufacturing category or other category regulations. See the NPDES regulations at 40 CFR Part 125 Subpart D, 45 FR 33290 et seq. (May 19, 1980) for the text and explanation of "fundamentally different factors" variance.

The BAT limitations in this regulation also are subject to EPA's "fundamentally different factors" variance. In addition, BAT limitations for nonconventional pollutants are subject to individual modifications under sections 301(c) and 301(g) of the Act. According to section 301(j)(1)(B), applications for these modifications under sections 301(c) and 301(g) must be filed within 270 days after promulgation of final effluent limitations guidelines. See 40 CFR 122.21(l)(2), 48 FR 14161 (April 1, 1983).

The economic modification section of the Act (Section 301(c)) gives the Administrator authority to modify BAT requirements for nonconventional pollutants for dischargers who file a permit application after July 1, 1978, upon a showing that such modified requirements will: (1) Represent the maximum use of technology within the economic capability of the owner or operator and (2) result in reasonable further progress toward the elimination of the discharge of pollutants. The environmental modification section (301(g)) allows the Administrator, with the concurrence of the State, to modify BAT limitations for nonconventional pollutants from any point source upon a showing by the owner or operator of such point source satisfactory to the Administrator that:

(a) Such modified requirements will result at a minimum in compliance with BPT limitations or any more stringent limitations necessary to meet water quality standards;

(b) Such modified requirements will not result in any additional requirements on any other point or nonpoint source; and

(c) Such modification will not interfere with the attainment or maintenance of that water quality which shall assure protection of public water supplies, and the protection and propagation of a balanced population of shellfish, fish, and wildlife, and allow recreational activities, in and on the water and such modification will not result in the discharge of pollutants in quantities which may reasonably be anticipated to pose an unacceptable risk to human health or the environment because of bioaccumulation, persistency in the environment, acute toxicity, chronic toxicity (including carcinogenicity, mutagenicity, or teratogenicity), or synergistic propensities.

Section 301(j)(1)(B) of the Act requires that application for modifications under section 301 (c) or (g) must be filed within 270 days after the promulgation of an applicable effluent guide line. Initial applications must be filed with the Regional Administrator and, in those States that participate in the NPDES Program, a copy must be sent to the Director of the State program. Initial applications to comply with 301(j) must include the name of the permittee, the permit and outfall number, the applicable effluent guideline, and whether the permittee is applying for a 301(c) or 301(g) modification or both.

Indirect dischargers subject to PSES and PSNS are eligible for credits for toxic pollutants removed by POTW. See 40 CFR 403.7, 48 FR 9404 (January 28, 1981). New sources subject to NSPS are not eligible for any other statutory or regulatory modifications. See, *E. I. duPont de Nemours & Co.* v. *Train*, supra.

Indirect dischargers subject to PSES have, in the past, been eligible for the "fundamentally different factors" variance. See 40 CFR 403.13. However, on September 20, 1983, the United States Court of Appeals for the Third Circuit held that "FDF variances for toxic pollutants are forbidden by the Act," and remanded § 403.13 to EPA *NAMF et al.* v. *EPA*, Nos. 79–2256 et al. (3rd Cir., September 20, 1983). EPA is considering the effect of that decision.

In a few cases, information which would affect these PSES may not have been available to EPA or affected parties in the course of this rulemaking. As a result it may be appropriate to issue specific categorical standards for such facilities, treating them as a separate subcategory with more, or less, stringent standards as appropriate. This will only be done if a different standard is appropriate because of unique aspects of the factors listed in section 304(b)(2)(B) of the Act: the age of equipment and facilities involved, the process employed, the engineering aspects of applying control techniquies, nonwater quality environmental impacts (including energy requirements) or the cost of required effluent reductions (but not of ability to pay that cost).

Indirect dischargers and other affected parties may petition the Administrator to examine those factors and determine whether these PSES are properly applicable in specific cases or should be revised. Such petitions must contain specific and detailed support data, documentation, and evidence indicating why the relevant factors justify a more, or less, stringent standard, and must also indicate why those factors could not have been brought to the attention of the Agency in the course of this rulemaking. The Administrator will consider such rulemaking petitions and determine whether a rulemaking should be initiated.

XIII. Implementation of Limitations and Standards

A. Relationship to NPDES Permits

The BPT/BAT limitations and NSPS in this regulation will be applied to individual nonferrous metals manufacturing plants through NPDES permits issued by EPA or approved state agencies, under section 402 of the Act.

As discussed in the preceding section of this preamble, these limitations must be applied in all Federal and State NPDES Permits except to the extent that variances and modifications are expressly authorized. Other aspects of the interaction between these limitations and NPDES permits are discussed below.

One issue that warrants consideration is the effect of this regulation on the powers of NPDES permit issuing authorities. The promulgation of this regulation does not restrict the power of any permitting authority to act in any manner consistent with law or these or any other EPA regulations, guidelines, or policy. For example, even if this regulation does not control a particular pollutant, the permit issuer may still limit such plllutant on a case-by-case basis when limitations are necessary to carry out the purposes of the Act. In addition, to the extent that state water guality standards or other provisions of State or Federal law require limitation of pollutants not covered by this regulation (or require more stringent limitations on covered pollutants), such limitations must be applied by the permit issuing authority.

A second topic that warrants discussion is the operation of EPA's NDPES enforcement program, many aspects of which were considered in developing this regulation. We emphasize that although the Clean Water Act is a strict liability statute, the initiation of enforcement proceedings by EPA is discretionary.

We have exercised and intend to exercise that discretion in a manner that recognizes and promotes good-faith compliance efforts.

B. Indirect Dischargers

For Indirect dischargers, PSES and PSNS are implemented under National Pretreatment Program procedures outlined in 40 CFR Part 403. The table below may be of assistance in resolving questions about the operation of that program. A brief explanation of some of the submissions indicated on the table follows:

A "request for category determination" is a written request, submitted by an indirect discharger or its POTW, for a determination of which categorical pretreatment standard applies to the indirect discharger. This assists the indirect discharger in knowing which PSES or PSNS limits it will be required to meet. See 40 CFR 403.6(a).

A "baseline monitoring report" is the first report an indirect discharger must file following promulgation of an applicable standard. The baseline report includes: an identification of the indirect discharge; a description of its operation; a report on the flows of regulated streams and the results of sampling analyses to determine levels of regulated pollutants in those streams; a statement of the discharger's compliance or noncompliance with the standard; and a description of any additional steps required to achieve compliance. See 40 CFR 403.12(b).

A "report on compliance" is required of each indirect discharger within 90 days following the date for compliance with an applicable categorical pretreatment standard. The report must indicate the concentration of all regulated pollutants in the facility's regulated process wastestreams; the average and maximum daily flows of the regulated streams; and a statement of whether compliance is consistently being achieved, and if not, what additional operation and maintenance or pretreatment is necessary to achieve compliance. See 40 CFR 403.12(d).

A "periodic compliance report" is a report on continuing compliance with all applicable categorical pretreatment standards. It is submitted twice per year (June and December) by indirect dischargers subject to the standards. The report shall provide the concentrations of the regulated pollutants in its discharge to the POTW; the average and maximum daily flow rates of the facility; the methods used by the indirect discharger to sample and analyze the data, and a certification that these methods conform to the methods outlined in the regulations. See 40 CFR 403.12(e).

XIV. Availability of Technical Information

The basis for this regulation is detailed in four major documents. Analytical methods are discussed in "Sampling and Analysis Procedures for Screening of Industrial Effluents for Priority Pollutants." EPA's technical conclusions are detailed in the "Development Document for Effluent Guidelines, New Source Performance Standards and Pretreatment Standards for the Nonferrous Metals Manufacturing Point Source Category." The Agency's economic analysis is presented in "Economic Impact Analysis of Effluent Limitations and Standards for the Nonferrous Metals Manufacturing Industry." A summary of the public comments received on the proposed regulation is presented in a report "Responses to Public Comments, Proposed Nonferrous Metals Manufacturing Effluent Limitations Guidelines and Standards," which is a part of the public record for this regulation. Copies of the technical and economic documents may be obtained from the National Technical Information Service, Springfield, Virginia 22161. (703) 487-4600. Additional information concerning the economic impact analysis may be obtained from Ms. Debra Maness, Economic Analysis Staff (WH-586), U.S. Environmental Protection Agency, 401 M Street, S.W., Washington, D.C. 20460 or by calling (202) 382-5397. Technical information may be obtained by writing to Mr. James R. Berlow, Effluent Guidelines Division (WH-552), U.S. Environmental Protection Agency, 401 M Street, S.W., Washington, D.C. 20460 or by calling (202) 382-7126.

This regulation was submitted to the Office of Management and Budget for review as required by Executive Order 12291. This rule does not contain any information collection requirements subject to the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq.

XV. List of Subjects in 40 CFR Part 421

Metals, Nonferrous metals manufacturing, Water pollution control, Waste treatment and disposal.

Dated: February 23, 1984.

William D. Ruckelshaus,

Administrator.

XVI. Appendices

Appendix A—Abbreviations, Acronyms, and Other Terms Used in This Notice

Act—The Clean Water Act.

Agency—The U.S. Environmental Protection Agency.

BAT—The best available technology economically achievable under section 304(b)(2)(B) of the Act.

BCT—The best conventional pollutant control technology under section 304(b)(4) of the Act.

BMPs—Best management practices under section 304(e) of the Act.

BPT—The best practicable control technology currently available under section 304(b)(1) of the Act.

Clean Water Act—The Federal Water Pollution Control Act Amendments of 1972 (33 U.S.C. 1251 et seq.), as amended by the Clean Water Act of 1977 (Pub. L. 95-217).

DCP—Data collection portfolio.

Direct discharger—A facility which discharges or may discharge pollutants into waters of the United States.

Indirect discharger—A facility which discharges or may discharge pollutants into a publicly owned treatment works.

NPDES permit—A National Pollutant Discharge Elimination System permit issued under section 402 of the Act.

NSPS—New source performance standards under section 306 of the Act.

POTW—Publicly owned treatment works.

PSES—Pretreatment standards for existing sources of indirect discharges under section 307 (b) and (c) of the Act.

RCRA—Resource Conservation and Recovery Act (Pub. L. 94-580) of 1976, Amendments to Solid Waste Disposal Act.

Appendix B—Pollutants Selected for Regulation by Subcategory

(a) Subpart B—Primary Aluminum Smelting Subcategory.

73. benzo(a)pyrene
114. antimony
121. cyanide (Total)
124. nickel, aluminum, fluoride, oil and grease, TSS, pH

(b) Subpart C—Secondary Aluminum Subcategory.

122. lead
128. zinc, aluminum, ammonia (N), oil and grease, phenolics (total; by 4-AAP method), TSS, pH

(c) Subpart E—Primary Copper Electrolytic Refining Subcategory.

114. arsenic
120. copper
124. nickel, TSS, pH

(d) Subpart G—Primary Lead Subcategory.

122. lead
128. zinc, TSS, pH

(e) Subpart H—Primary Zinc Subcategory.

118. cadmium
120. copper
122. lead
128. zinc, TSS, pH

(f) Subpart I—Metallurgical Acid Plants Subcategory.

115. arsenic
118. cadmium
120. copper
122. lead
128. zinc, TSS, pH

(g) Subpart J—Primary Tungsten Subcategory.

122. lead
128. zinc, ammonia (N), TSS, pH

(h) Subpart K—Primary Columbium-Tantalum Subcategory.

122. lead
128. zinc, ammonia (N), fluoride, TSS, pH

(i) Subpart L—Secondary Silver Subcategory.

120. copper
128. zinc, ammonia (N), TSS, pH

(j) Subpart M—Secondary Lead Subcategory.

114. antimony
115. arsenic
122. lead
128. zinc, ammonia, TSS, pH

Appendix C—Toxic Pollutants Not Detected

(a) Subpart B—Primary Aluminum Smelting Subcategory

2. acrolein
3. acrylonitrile
5. benzidene
6. carbon tetrachloride (tetrachloromethane)
7. chlorobenzene
8. 1,2,4—trichlorobenzene
9. hexachlorobenzene
10. 1,2-dichloroethane
11. 1,1,1-trichlorethane
12. hexachlorethane
13. 1,1-dichloroethane
14. 1,1,2-trichloroethane
15. 1,1,2,2-tetrachloroethane
16. chloroethane
17. Deleted
18. bis(2-chloroethyl) ether
19. 2-chloroethyl vinyl ether (mixed)
21. 2,4,6-trichlorophenol
22. parachlorometa cresol
24. 2-chlorophenol
25. 1,2-dichlorobenzene
26. 1,3-dichlorobenzene
27. 1,4-dichlorobenzene
28. 3,3'-dichlorobenzidine
29. 1,1-dichloroethylene
30. 1,2-trans-dichloroethylene
31. 2,4-dichlorophenol
32. 1,2-dichloropropane
33. 1,3-dichloropropylene(1,3-dichloropropene)
34. 2,4-dimethylphenol
35. 2,4-dinitrotoluene
36. 2,6-dinitrotoluene
37. 1,2-diphenylhydrazine
38. ethylbenzene
40. 4-chlorophenyl phenyl ether
41. 4-bromophenyl phenyl ether
43. bis(2-chloroethoxy) methane
45. methyl chloride
46. methyl bromide (bromomethane)
47. bromoform (tribromomethane)
48. dichlorobromomethane
49. Deleted
50. Deleted
51. chlorodibromomethane
52. hexachlorobutadiene
53. hexachlorocyclopentadiene
56. nitrobenzene
57. 2-nitrophenol
58. 4-nitrophenol
59. 2,4-dinitrophenol
60. 4,6-dinitro-o-cresol
61. N-nitrosodimethylamine
63. N-nitrosodi-n-propylamine
64. pentachlorophenol
71. dimethyl phthalate
85. tetrachloroethylene
88. vinyl chloride (chloroethylene)
129. 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)

(b) Subpart C—Secondary Aluminum Subcategory.

1. acenaphthene
2. acrolein
3. acrylonitrile
5. benzidene
6. carbon tetrachloride
7. chlorobenzene
8. 1,2,4-trichlorobenzene
9. hexachlorobenzene
10. 1,2-dichloroethane
11. 1,1,1-trichlorethane
12. hexachlorethane
13. 1,1-dichloroethane
14. 1,1,2-trichloroethane
15. 1,1,2,2-tetrachloroethane
16. chloroethane
17. Deleted
18. bis(2-chloroethyl) ether
19. 2-chloroethyl vinyl ether (mixed)
20. 2-chloronaphthalene
21. 2,4,6-trichlorophenol
22. parachlorometa cresol
24. 2-chlorophenol
25. 1,2-dichlorobenzene
26. 1,3-dichlorobenzene
28. 3,3'-dichlorobenzidine
31. 2,4-dichlorophenol
32. 1,2-dichloropropane
33. 1,2-dichloropropylene(1,3-dichloropropene)
34. 2,4-dimethylphenol
35. 2,4-dinitrotoluene
36. 2,6-dinitrotoluene
37. 1,2-diphenylhydrazine
38. ethylbenzene
40. 4-chlorophenyl phenyl ether
41. 4-bromophenyl phenyl ether
42. bis(2-chloroisopropyl) ether
43. bis(2-chloroethoxy) methane
45. methyl chloride (chloromethane)
46. methyl bromide (bromomethane)
47. bromoform (tribromomethane)
49. Deleted
50. Deleted
51. chlorodibromomethane
52. hexachlorobutadiene
53. hexachlorocyclopentadiene
54. isophorone
55. naphthalene
56. nitrobenzene
57. 2-nitrophenol
58. 4-nitrophenol
59. 2,4-dinitrophenol
60. 4,6-dinitro-o-cresol
61. N-nitrosodimethylamine
62. N-nitrosodiphenylamine
63. N-nitrosodi-n-propylamine
64. pentachlorophenol
65. phenol
70. diethyl phthalate
72. benzo(a)anthracene(1,2-benzanthracene)
74. 3,4-benzofluoranthene
75. benzo(k)fluoranthene
78. anthracene(a)
79. benzo(ghi)perylene(1,12-benzoperylene)
80. fluorene
81. phenanthrene(a)
82. dibenzo(a,h)anthracene(1,2,5,6-dibenzanthracene)
83. indeno(1,2,3-cd)pyrene
86. toluene
88. vinyl chloride (chloroethylene)
89. aldrin
90. dieldrin
94. 4,4'-DDD(p,p'TDE)
95. a-endosulfan-Alpha
96. b-endosulfan-Beta
97. endosulfan sulfate
105. g-BHC-Delta
117. asbestos (fibrous)
129. 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)

(a) Reported together.

(c) Subpart E—Primary Copper Electrolytic Refining Subcategory.

2. acrolein
3. acrylonitrile
5. benzidene
6. carbon tetrachloride (tetrachloromethane)
7. chlorobenzene
8. 1,2,4-trichlorobenzene
9. hexachlorobenzene
10. 1,2-dichloroethane
12. hexachlorethane
13. 1,1-dichloroethane
14. 1,1,2-trichloroethane
16. chloroethane
17. Deleted
18. bis (2-chloroethyl) ether
19. 2-chloroethyl vinyl ether (mixed)
20. 2-chloronaphthalene

21. 2,4,6-trichlorophenol
22. parachlorometa cresol
24. 2-chlorophenol
25. 1,2-dichlorobenzene
26. 1,3-dichlorobenzene
27. 1,4-dichlorobenzene
28. 3,3'-dichlorobenzidine
31. 2,4-dichlorophenol
32. 1,2-dichloropropane
33. 1,2-dichloropropylene (1,3-dichloropropene)
34. 2,4-dimethylphenol
35. 2,4-dinitrotoluene
36. 2,6-dinitrotoluene
37. 1,2-diphenylhydrazine
38. ethylbenzene
40. 4-chlorophenyl phenyl ether
41. 4-bromophenyl phenyl ether
42. bis(2-chloroisopropyl) ether
43. bis(2-chloroethoxy) methane
44. methylene chloride (dichloromethane)
45. methyl chloride (chloromethane)
46. methyl bromide (bromomethane)
47. bromoform (tribromomethane)
48. dichlorobromomethane
49. Deleted
50. Deleted
51. chlorodibromomethane
52. hexachlorobutadiene
53. hexachlorocyclopentadiene
54. isophorone
56. nitrobenzene
57. 2-nitrophenol
58. 4-nitrophenol
59. 2,4-dinitrophenol
60. 4,6-dinitro-o-cresol
61. N-nitrosodimethylamine
62. N-nitrosodiphenylamine
63. N-nitrosodi-n-propylamine
64. pentachlorophenol
65. phenol
70. diethyl phthalate
72. benzo(a)anthracene (1,2-benzanthracene)
74. 3,4-benzofluoranthene
77. acenaphthylene
79. benzo(ghi)perylene (1,11-benzoperylene)
80. fluorene
82. dibenzo (a,h)anthracene (1,2,5,6-dibenzanthracene)
83. indeno (1,2,3-cd)pyrene
86. toluene
88. vinyl chloride (chloroethylene)
89. aldrin
90. dieldrin
94. 4,4'-DDD(p,p'TDE)
105. g-BHC-Delta
113. toxaphene
116. asbestos (Fibrous)
117. beryllium
118. cadmium
121. cyanide (Total)
123. mercury
127. thallium
129. 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)

(d) Subpart G—Primary Lead Subcategory.

1. acenaphthene
2. acrolein
3. acrylonitrile
5. benzidene
7. chlorobenzene
8. 1,2,4-trichlorobenzene
9. hexachlorobenzene
10. 1,2-dichloroethane
11. 1,1,1-trichlorethane
12. hexachlorethane
13. 1,1-dichloroethane
14. 1,1,2-trichloroethane
15. 1,1,2,2-tetrachloroethane
16. chloroethane
17. bis (chloromethyl) ether
18. bis (2-chloroethyl) ether
19. 2-chloroethyl vinyl ether (mixed)
20. 2-chloronaphthalene
21. 2,4,6-trichlorophenol
22. parachlorometa cresol
24. 2-chlorophenol
25. 1,2-dichlorobenzene
26. 1,3-dichlorobenzene
27. 1,4-dichlorobenzene
28. 3,3'-dichlorobenzidine
29. 1,1-dichloroethylene
30. 1,2-trans-dichloroethylene
31. 2,4-dichlorophenol
32. 1,2-dichloropropane
33. 1,2-dichloropropylene (1,3-dichloropropene)
34. 2,4-dimethylphenol
35. 2,4-dinitrotoluene
36. 2,6-dinitrotoluene
37. 1,2-diphenylhydrazine
38. ethylbenzene
39. fluoranthene
40. 4-chlorophenyl phenyl ether
41. 4-bromophenyl phenyl ether
42. bis(2-chloroisopropyl) ether
43. bis(2-chloroethoxy) methane
45. methyl chloride (chloromethane)
46. methyl bromide (bromomethane)
47. bromoform (tribromomethane)
48. dichlorobromomethane
49. Deleted
50. Deleted
51. chlorodibromomethane
52. hexachlorobutadiene
53. hexachlorocyclopentadiene
54. isophorone
55. naphthalene
56. nitrobenzene
57. 2-nitrophenol
58. 4-nitrophenol
59. 2,4-dinitrophenol
60. 4,6-dinitro-o-cresol
61. N-nitrosodimethylamine
62. N-nitrosodiphenylamine
63. N-nitrosodi-n-propylamine
64. pentachlorophenol
65. phenol
66. bis(2-ethylhexyl) phthalate
67. butyl benzyl phthalate
68. di-n-butyl phthalate
69. di-n-octyl phthalate
70. diethyl phthalate
71. dimethyl phthalate
72. benzo(a)anthracene (1,2-benzanthracene)
73. benzo(a)pyrene (3,4-benzopyrene
74. 3,4-benzofluoranthene
75. benzo(k)fluoranthane (11,12-benzofluoranthene)
76. chrysene
77. acenaphthylene
78. anthracene (a)
79. benzo(ghi)perylene (1,11-benzoperylene)
80. fluorene
81. phenanthrene (a)
82. dibenzo(a,h)anthracene (1,2,5,6-dibenzanthracene)
83. indeno (1,2,3-cd)pyrene
84. pyrene
85. tetrachloroethylene
86. toluene
87. trichloroethylene
88. vinyl chloride (chloroethylene)
89. aldrin
90. dieldrin
91. chlordane (technical mixture and metabolites)
92. 4,4'-DDT
93. 4,4'-DDE(p,p'DDX)
94. 4,4'-DDD(p,p'TDE)
95. a-endosulfan-Alpha
96. b-endosulfan-Beta
97. endosulfan sulfate
98. endrin
99. endrin aldehyde
100. heptachlor
101. heptachlor epoxide
102. a-BHC-Alpha
103. b-BHC-Beta
104. r-BHC (lindane)-Gamma
105. g-BHC-Delta
106. PCB-1242 (Arochlor 1242) (b)
107. PCB-1254 (Arochlor 1254) (b)
108. PCB-1221 (Arochlor 1221) (b)
109. PCB-1232 (Arochlor 1232) (c)
110. PCB-1248 (Arochlor 1248) (c)
111. PCB-1260 (Arochlor 1260) (c)
112. PCB-1016 (Arochlor 1016) (c)
113. toxaphene
121. cyanide (Total)
127. thallium
129. 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)

(a), (b), (c) Reported together.

(e) Subpart H—Primary Zinc Subcategory.

2. acrolein
3. acrylonitrile
5. benzidene
6. carbon tetrachloride (tetrachloromethane)
7. chlorobenzene
8. 1,2,4-trichlorobenzene
9. hexachlorobenzene
10. 1,2-dichloroethane
12. hexachlorethane
13. 1,1-dichloroethane
14. 1,1,2-trichloroethane
15. 1,1,2,2-tetrachloroethane
16. chloroethane
17. Deleted
19. 2-chloroethyl vinyl ether (mixed)
20. 2-chloronaphthalene
24. 2-chlorophenol
25. 1,2-dichlorobenzene
26. 1,3-dichlorobenzene
27. 1,4-dichlorobenzene
28. 3,3'-dichlorobenzidine
29. 1,1-dichloroethylene
30. 1,2-trans-dichloroethylene
31. 2,4-dichlorophenol
32. 1,2-dichloropropane
33. 1,2-dichloropropylene (1,3-dichloropropene)
35. 2,4-dinitrotoluene
36. 2,6-dinitrotoluene
37. 1,2-diphenylhydrazine
40. 4-chlorophenyl phenyl ether
41. 4-bromophenyl phenyl ether
42. bis(2-chloroisopropyl) ether
43. bis(2-chloroethoxy) methane
45. methyl chloride (chloromethane)
46. methyl bromide (bromomethane)
49. Deleted
50. Deleted
51. chlorodibromomethane
52. hexachlorobutadiene
53. hexachlorocyclopentadiene
54. isophorone

55. naphthalene
59. 2,4-dinitrophenol
60. 4,6-dinitro-o-cresol
61. N-nitrosodimethylamine
63. N-nitrosodi-n-propylamine
64. pentachlorophenol
67. butyl benzyl phthalate
69. di-n-octyl phthalate
71. dimethyl phthalate
72. benzo(a)anthracene (1,2-benzanthracene)
73. benzo(a)pyrene (3,4-benzopyrene)
74. 3,4-benzofluoranthene
75. benzo(k)fluoranthane (11,12-benzofluoranthene)
77. acenaphthylene
78. anthracene (a)
79. benzo(ghi)perylene (1,11-benzoperylene)
82. dibenzo(a,h)anthracene (1,2,5,6-dibenzanthracene)
83. indeno (1,2,3-cd)pyrene
88. vinyl chloride (chloroethylene)
89. aldrin
90. dieldrin
91. chlordane (technical mixture and metabolites)
92. 4,4'-DDT
93. 4,4'-DDE(p,p'DDX)
94. 4,4'-DDD(p,p'TDE)
96. b-endosulfan-Beta
97. endosulfan sulfate
98. endrin
106. PCB-1242 (Arochlor 1242) (a)
107. PCB-1254 (Arochlor 1254) (a)
108. PCB-1221 (Arochlor 1221) (a)
109. PCB-1232 (Arochlor 1232) (b)
110. PCB-1248 (Arochlor 1248) (b)
111. PCB-1260 (Arochlor 1260) (b)
112. PCB-1016 (Arochlor 1016) (b)
113. toxaphene
117. beryllium
127. thallium
129. 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)

(a), (b) Reported together.

(f) Subpart I—Metallurgical Acid Plants Subcategory.

2. acrolein
3. acrylonitrile
5. benzidene
7. chlorobenzene
8. 1,2,4-trichlorobenzene
9. hexachlorobenzene
12. hexachloroethane
16. chloroethane
17. Deleted
18. bis (2-chloroethyl) ether
19. 2-chloroethyl vinyl ether (mixed)
20. 2-chloronaphthalene
21. 2,4,6-trichlorophenol
24. 2-chlorophenol
25. 1,2-dichlorobenzene
26. 1,3-dichlorobenzene
27. 1,4-dichlorobenzene
28. 3,3'-dichlorobenzidine
30. 1,2-trans-dichloroethylene
31. 2,4-dichlorophenol
32. 1,2-dichloropropane
33. 1,2-dichloropropylene (1,3-dichloropropene)
35. 2,4-dinitrotoluene
36. 2,6-dinitrotoluene
37. 1,2-diphenylhydrazine
40. 4-chlorophenyl phenyl ether
41. 4-bromophenyl phenyl ether
42. bis(2-chloroisopropyl) ether
43. bis(2-chloroethoxy) methane
45. methyl chloride (chloromethane)
46. methyl bromide (bromomethane)
50. Deleted
52. hexachlorobutadiene
53. hexachlorocyclopentadiene
57. 2-nitrophenol
58. 4-nitrophenol
59. 2,4-dinitrophenol
60. 4,6-dinitro-o-cresol
61. N-nitrosodimethylamine
63. N-nitrosodi-n-propylamine
72. benzo(a)anthracene (1,2-benzanthracene)
77. acenaphthylene
79. benzo(ghi)perylene (1,11-benzoperylene)
82. dibenzo(a,h)anthracene (1,2,5,6-dibenzanthracene)
83. indeno (1,2,3-cd)pyrene
88. vinyl chloride (chloroethylene)
89. aldrin
95. a-endosulfan-Alpha
97. endosulfan sulfate
113. toxaphene
116. asbestos (Fibrous)
129. 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)

(g) Subpart J—Primary Tungsten Subcategory.

2. acrolein
3. acrylonitrile
5. benzidene
6. carbon tetrachloride (tetrachloromethane)
7. chlorobenzene
8. 1,2,4-trichlorobenzene
9. hexachlorobenzene
12. hexachlorpethane
13. 1,1-dichloroethane
14. 1,1,2-trichloroethane
16. chloroethane
17. bis (chloromethyl) ether
18. bis (2-chloroethyl) ether
19. 2-chloroethyl vinyl ether (mixed)
20. 2-chloronaphthalene
21. 2,4,6-trichlorophenol
22. parachlorometa cresol
24. 2-chlorophenol
25. 1,2-dichlorobenzene
26. 1,3-dichlorobenzene
27. 1,4-dichlorobenzene
28. 3,3'-dichlorobenzidine
30. 1,2-trans-dichloroethylene
31. 2,4-dichlorophenol
32. 1,2-dichloropropane
33. 1,2-dichloropropylene (1,3-dichloropropene)
34. 2,4-dimethylphenol
35. 2,4-dinitrotoluene
36. 2,6-dinitrotoluene
37. 1,2-diphenylhydrazine
39. fluoranthene
40. 4-chlorophenyl phenyl ether
41. 4-bromophenyl phenyl ether
42. bis(2-chloroisopropyl) ether
43. bis(2-chloroethoxy) methane
44. methylene chloride (dichloromethane)
45. methyl chloride (chloromethane)
46. methyl bromide (bromomethane)
48. dichlorobromomethane
49. trichlorofluoromethane
50. dichlorodifluoromethane
52. hexachlorobutadiene
53. hexachlorocyclopentadiene
56. nitrobenzene
57. 2-nitrophenol
58. 4-nitrophenol
59. 2,4-dinitrophenol
60. 4,6-dinitro-o-cresol
61. N-nitrosodimethylamine
62. N-nitrosodiphenylamine
63. N-nitrosodi-n-propylamine
64. pentachlorophenol
67. butyl benzyl phthalate
72. benzo(a)anthracene (1,2-benzanthracene)
74. 3,4-benzofluoranthene
75. benzo(k)fluoranthene (11,12-benzofluoranthene)
83. indeno (1,2,3-cd)pyrene
88. vinyl chloride (chloroethylene)
89. aldrin
90. dieldrin
91. chlordane (technical mixture and metabolites)
92. 4,4'-DDT
93. 4,4'-DDE(p,p'DDX)
94. 4,4'-DDD(p,p'TDE)
96. b-endosulfan-Beta
97. endosulfan sulfate
98. endrin
99. endrin aldehyde
100. heptachlor
101. heptachlor epoxide
102. a-BHC-Alpha
103. b-BHC-Beta
104. r-BHC (lindane)-Gamma
105. g-BHC-Delta
113. toxaphene
116. asbestos (Fibrous)
129. 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)

(h) Subpart K—Primary Columbium-Tantalum Subcategory.

2. acrolein
3. acrylonitrile
5. benzidene
9. hexachlorobenzene
13. 1,1-dichloroethane
16. chloroethane
17. Deleted
18. bis (2-chloroethyl) ether
19. 2-chloroethyl vinyl ether (mixed)
21. 2,4,6-trichlorophenol
22. parachlorometa cresol
24. 2-chlorophenol
25. 1,2-dichlorobenzene
26. 1,3-dichlorobenzene
27. 1,4-dichlorobenzene
28. 3,3'-dichlorobenzidine
29. 1,1-dichloroethylene
31. 2,4-dichlorophenol
32. 1,2-dichloropropane
33. 1,2-dichloropropylene (1,3-dichloropropene)
34. 2,4-dimethylphenol
37. 1,2-diphenylhydrazine
40. 4-chlorophenyl phenyl ether
41. 4-bromophenyl phenyl ether
42. bis(2-chloroisopropyl) ether
43. bis(2-chloroethoxy) methane
45. methyl chloride (chloromethane)
46. methyl bromide (bromomethane)
49. Deleted
50. Deleted
52. hexachlorobutadiene
53. hexachlorocyclopentadiene
55. naphthalene
57. 2-nitrophenol
58. 4-nitrophenol
59. 2,4-dinitrophenol
60. 4,6-dinitro-o-cresol
61. N-nitrosodimethylamine
62. N-nitrosodiphenylamine
63. N-nitrosodi-n-propylamine

64. pentachlorophenol
65. phenol
69. di-n-octyl phthalate
72. benzo(a)anthracene (1,2-benzanthracene)
74. 3,4-benzofluoranthene
75. benzo(k)fluoranthene (11,12-benzofluoranthene)
76. chrysene
77. acenaphthylene
79. benzo(ghi)perylene
82. dibenzo(a,h)anthracene (1,2,5,6-dibenzanthracene)
83. indeno (1,2,3-cd)pyrene
84. pyrene
86. toluene
88. vinyl chloride (chloroethylene)
89. aldrin
90. dieldrin
91. chlordane
92. 4,4'-DDT
93. 4,4'-DDE
94. 4,4'-DDD(p,p'TDE)
95. a-endosulfan-Alpha
96. b-endosulfan-Beta
97. endosulfan sulfate
98. endrin
99. endrin aldehyde
100. heptachlor
101. heptachlor epoxide
102. alpha-BHC
103. beta-BHC
104. gamma-BHC
105. delta-BHC
129. 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)

(i) Subpart L—Secondary Silver Subcategory.

2. acrolein
3. acrylonitrile
5. benzidene
8. 1,2,4-trichlorobenzene
9. hexachlorobenzene
12. hexachlorethane
13. 1,1-dichloroethane
14. 1,1,2-trichloroethane
16. chloroethane
17. Deleted
18. bis (2-chloroethyl) ether
19. 2-chloroethyl vinyl ether (mixed)
20. 2-chloronaphthalene
21. 2,4,6-trichlorophenol
22. parachlorometa cresol
24. 2-chlorophenol
25. 1,2-dichlorobenzene
26. 1,3-dichlorobenzene
27. 1,4-dichlorobenzene
28. 3,3'-dichlorobenzidine
31. 2,4-dichlorophenol
32. 1,2-dichloropropane
33. 1,2-dichloropropylene (1,3-dichloropropene)
34. 2,4-dimethylphenol
35. 2,4-dinitrotoluene
36. 2,6-dinitrotoluene
37. 1,2-diphenylhydrazine
39. fluoranthene
40. 4-chlorophenyl phenyl ether
41. 4-bromophenyl phenyl ether
42. bis(2-chloroisopropyl) ether
43. bis(2-choroethoxy) methane
45. methyl chloride (chloromethane)
46. methyl bromide (bromomethane)
48. dichlorobromomethane
49. Deleted
50. Deleted
52. hexachlorobutadiene
53. hexachlorocyclopentadiene
54. isophorone
55. napthalene
56. nitrobenzene
57. 2-nitrophenol
58. 4-nitrophenol
59. 2,4-dinitrophenol
60. 4,6-dinitro-o-cresol
61. N-nitrosodimethylamine
62. N-nitrosodiphenylamine
63. N-nitrosodi-n-propylamine
64. pentachlororphenol
65. phenol
71. dimethyl phthalate
72. benzo (a)anthracene (1,2-benzanthracene)
73. benzo (a)pyrene (3,4-benzopyrene)
74. 3,4-benzofluoranthene
75. benzo(k)fluoranthene (11,12-benzofluoranthene)
76. chrysene
77. acenaphthylene
79. benzo(ghi)perylene (1,11-benzoperylene)
80. fluorene
82. dibenzo (a,h)anthracene (1,2,5,6-dibenzanthracene)
83. indeno (1,2,3-cd)pyrene
88. vinyl chloride (chloroethylene)
89. aldrin
94. 4,4'-DDD(p,p'TDE)
95. a-endosulfan-Alpha
96. b-endosulfan-Beta
97. endosulfan sulfate
101. heptachlor epoxide
105. delta-BHC
117. beryllium
129. 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)

(j) Subpart M—Secondary Lead Subcategory.

1. acenaphthene
2. acrolein
3. acrylonitrile
5. benzidene
6. carbon tetrachloride (tetrachloromethane)
8. 1,2,4-trichlorobenzene
9. hexachlorobenzene
10. 1,2-dichloroethane
12. hexachlorethane
13. 1,1-dichloroethane
14. 1,1,2-trichloroethane
15. 1,1,2,2-tetrachloroethane
16. chloroethane
17. bis (chloromethyl) ether
18. bis (2-chloroethyl) ether
19. 2-chloroethyl vinyl ether (mixed)
20. 2-chloronaphthalene
22. parachlorometa cresol
24. 2-chlorophenol
25. 1,2-dichlorobenzene
26. 1,3-dichlorobenzene
27. 1,4-dichlorobenzene
28. 3,3'-dichlorobenzidine
29. 1,1-dichloroethylene
30. 1,2-*trans*-dichloroethylene
32. 1,2-dichloropropane
33. 1,2-dichloropropylene (1,3-dichloropropene)
34. 2,4-dimethylphenol
35. 2,4-dinitrotoluene
36. 2,6-dinitrotoluene
37. 1,2-diphenylhydrazine
38. ethylbenzene
41. 4-bromophenyl phenyl ether
42. bis(2-chloroisopropyl) ether
43. bis(2-chloroethoxy) methane
45. methyl chloride (chloromethane)
46. methyl bromide (bromomethane)
48. dichlorobromomethane
49. trichlorofluoromethane
50. dichlorodifluoromethane
51. chlorodibromomethane
52. hexachlorobutadiene
53. hexachlorocyclopentadiene
54. isophorone
55. naphthalene
58. 4-nitrophenol
59. 2,4-dinitrophenol
60. 4,6-dinitro-o-cresol
61. N-nitrosodimethylamine
62. N-nitrosodiphenylamine
63. N-nitrosodi-n-propylamine
64. pentachlorophenol
70. diethyl phthalate
73. benzo(a)pyrene
74. 3,4-benzofluoranthene
75. benzo(k)fluoranthene
79. benzo(ghi)perylene (1,11-benzoperylene)
82. dibenzo(a,h)anthracene
83. indeno(1,2,3-c,d)pyrene
85. tetrachloroethylene
87. trichloroethylene
88. vinyl chloride (chloroethylene)
95. a-endosulfan-Alpha
105. g-BHC-Delta
113. toxaphene
116. asbestos (Fibrous)
129. 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)

Appendix D—Toxic Pollutants Detected Below the Analytical Quantification Limit

(a) Subpart B—Primary Aluminum Smelting Subcategory.

54. isophorone
69. di-n-octyl phthalate
70. diethyl phthalate
86. toluene
87. trichloroethylene
89. aldrin
90. dieldrin
91. chlordane (technical mixture and metabolites)
92. 4,4'-DDT
93. 4,4'-DDE(p,p'DDX)
94. 4,4'-DDD
95. alpha-endosulfan
96. b-endosulfan-Beta
97. endosulfan sulfate
98. endrin
99. endrin aldehyde
100. heptachlor
101. heptachlor epoxide
102. a-BHC-Alpha
103. b-BHC-Beta
104. r-BHC (lindane)-Gamma
105. g-BHC-Delta
109. PCB-1232 (a)
110. PCB-1248 (a)
111. PCB-1260 (a)
112. PCB-1016 (a)
113. toxaphene

(a) Reported together.

(b) Subpart C—Secondary Aluminum Subcategory.

91. chlordane (technical mixture and metabolites)
92. 4,4'-DDT
93. 4,4'-DDE(p,p'DDX)
98. endrin
99. endrin aldehyde
100. heptachlor

101. heptachlor epoxide
102. a-BHC-Alpha
103. b-BHC-Beta
104. r-BHC (lindane)-Gamma
106. PCB-1242 (a)
107. PCB-1254 (a)
108. PCB-1221 (a)
109. PCB-1232 (b)
110. PCB-1248 (b)
111. PCB-1260 (b)
112. PCB-1016 (b)
113. toxaphene
121. cyanide (Total)

(a), (b) Reported together.

(c) Subpart E—Primary Copper Electrolytic Refining Subcategory.

1. acenaphthene
4. benzene
11. 1,1,1-trichlorethane
15. 1,1,2,2-tetrachloroethane
29. 1,1-dichloroethylene
30. 1,2-trans-dichloroethylene
39. fluoranthene
55. naphthalene
71. dimethyl phthalate
73. benzo (a)pyrene (3,4-benzopyrene)
75. benzo(k)fluoranthane (11,12-benzofluoranthene)
76. chrysene
78. anthracene (a)
81. phenanthrene (a)
84. pyrene
85. tetrachloroethylene
87. trichloroethylene
91. chlordane (technical mixture and metabolites)
92. 4,4'-DDT
93. 4,4'-DDE(p,p'DDX)
95. a-endosulfan-Alpha
96. b-endosulfan-Beta
97. endosulfan sulfate
98. endrin
99. endrin aldehyde
100. heptachlor
101. heptachlor epoxide
102. a-BHC-Alpha
103. b-BHC-Beta
104. r-BHC (lindane)-Gamma
106. PCB-1242 (Arochlor 1242) (b)
107. PCB-1254 (Arochlor 1254) (b)
108. PCB-1221 (Arochlor 1221) (b)
109. PCB-1232 (Arochlor 1232) (c)
110. PCB-1248 (c)
111. PCB-1260 (Arochlor 1260) (c)
112. PCB-1016 (Arochlor 1016) (c)

(a), (b), (c) Reported together.

(d) Subpart G—Primary Lead Subcategory.

4. benzene
6. carbon tetrachloride (tetrachloromethane)
23. chloroform (trichloromethane)
44. methylene chloride (dichloromethane)

(e) Subpart H—Primary Zinc Subcategory:

1. acenaphthene
18. bis(chloromethyl)ether
21. 2,4,6-trichlorophenol
23. chloroform
34. 2,4-dimethylphenol
39. fluoranthene
47. bromoform
48. dichlorobromomethane
56. nitrobenzene
57. 2-nitrophenol
58. 4-nitrophenol
62. N-nitrosodiphenylamine
65. phenol
70. diethyl phthalate
76. chrysene
80. fluorene
81. phenanthrene
84. pyrene
85. tetrachloroethylene
87. trichloroethylene
95. alpha-endosulfan
99. endrin aldehyde
100. heptachlor
101. heptachlor epoxide
102. alpha-BHC
103. beta-BHC
104. gamma-BHC
105. delta-BHC
114. antimony
121. cyanide (Total)

(f) Subpart I—Metallurgical Acid Plants Subcategory.

1. acenaphthene
4. benzene
10. 1,2-dichloroethane
11. 1,1,1-trichloroethane
14. 1,1,2-trichloroethane
15. 1,1,2,2-tetrachloroethane
29. 1,1-dichloroethylene
34. 2,4-dimethylphenol
39. fluoranthene
47. bromoform
49. Deleted
51. chlorodibromomethane
54. isophorone
55. naphthalene
56. nitrobenzene
62. N-nitrosodiphenylamine
64. pentachlorophenol
65. phenol
67. butyl benzyl phthalate
68. di-n-butyl phthalate
69. di-n-octyl phthalate
70. diethyl phthalate
71. dimethyl phthalate
73. benzo(a)pyrene (3,4-benzopyrene)
74. 3,4-benzofluoranthene
75. benzo(k)fluoranthane (11,12-benzofluoranthene)
76. chrysene
80. fluorene
84. pyrene
87. trichloroethylene
90. dieldrin
91. chlordane (technical mixture and metabolites)
92. 4,4'-DDT
93. 4,4'-DDE(p,p'DDX)
94. 4,4'-DDD(p,p'TDE)
96. b-endosulfan-Beta
98. endrin
99. endrin aldehyde
100. heptachlor
101. heptachlor epoxide
102. alpha-BHC
103. b-BHC-Beta
104. r-BHC (lindane)-Gamma
105. delta-BHC
106. PCB–1242 (Arochlor 1242) (a)
107. PCB–1254 (Arochlor 1254) (a)
108. PCB–1221 (Arochlor 1221) (a)
109. PCB–1232 (Arochlor 1232) (b)
110. PCB–1248 (Arochlor 1248) (b)
111. PCB–1260 (Arochlor 1260) (b)
112. PCB–1016 (Arochlor 1016) (b)
117. beryllium
121. cyanide (Total)

(a), (b) Reported together.

(g) Subpart J—Primary Tungsten Subcategory.

4. benzene
10. 1,2-dichloroethane
15. 1,1,2,2-tetrachloroethane
54. isophorone
70. diethyl phthalate
71. dimethyl phthalate
78. anthracene (a)
81. phenanthrene (a)
84. pyrene
87. trichloroethylene
95. a-endosulfan-Alpha
106. PCB–1242 (Arochlor 1242) (b)
107. PCB–1254 (Arochlor 1254) (b)
108. PCB–1221 (Arochlor 1221) (b)
109. PCB–1232 (Arochlor 1232) (c)
110. PCB–1248 (Arochlor 1248) (c)
111. PCB–1260 (Arochlor 1260) (c)
112. PCB–1016 (Arochlor 1016) (c)
114. antimony
125. selenium

(a), (b), (c) Reported together.

(h) Subpart K—Primary Columbium-Tantalum Subcategory.

14. 1,1,2-trichloroethane
15. 1,1,2,2-tetrachloroethylene
20. 2-chloronaphthalene
35. 2,4-dinitrotoluene
36. 2,6-dinitrotoluene
39. fluoranthene
67. butyl benzyl phthalate
73. benzo(a)pyrene (3,4-benzopyrene)
78. anthracene (a)
80. fluorene
81. phenanthrene (a)
113. toxapene
121. cyanide (Total)

(a) Reported together.

(i) Subpart L—Secondary Silver Subcategory.

7. chlorobenzene
15. 1,1,2,2-tetrachloroethane
51. chlorodibromomethane
78. anthracene (a)
81. phenanthrene (a)
90. dieldrin
91. chlordane (technical mixture and metabolites)
92. 4,4'-DDT
93. 4,4'-DDE(p,p'DDX)
98. endrin
99. endrin aldehyde
100. heptachlor
102. a-BHC-Alpha
103. b-BHC-Beta
104. r-BHC (lindane)-Gamma
113. toxaphene
116. asbestos (Fibrous)

(a) Reported together.

(j) Subpart M—Secondary Lead

4. benzene
7. chlorobenzene
11. 1,1,1-trichloroethane
21. 2,4,6-trichlorophenol
29. 1,1-dichloroethylene
31. 2,4-dichlorophenol
40. 4-chlorophenyl phenyl ether
44. methylene chloride
57. 2-nitrophenol
65. phenol
72. benzo(a)anthracene (1,2-benzanthracene)
78. anthracene (a)

80. fluorene
81. phenanthrene (a)
86. toluene
89. aldrin
90. dieldrin
91. chlordane (technical mixture and metabolites)
92. 4,4'-DDT
93. 4,4'-DDE(p,p'DDX)
94. 4,4'-DDD(p,p'TDE)
96. b-endosulfan-Beta
97. endosulfan sulfate
98. endrin
99. endrin aldehyde
100. heptachlor
101. heptachlor epoxide
102. a-BHC-Alpha
103. b-BHC-Beta
104. r-BHC (lindane)-Gamma
106. PCB-1242 (Arochlor 1242) (b)
107. PCB-1254 (Arochlor 1254) (b)
108. PCB-1221 (Arochlor 1221) (b)
109. PCB-1232 (Arochlor 1232) (c)
110. PCB-1248 (Arochlor 1248) (c)
111. PCB-1260 (Arochlor 1260) (c)
112. PCB-1016 (Arochlor 1016) (c)

(a), (b), (c) Reported together.

Appendix E—Toxic Pollutants Detected in Amounts Too Small To Be Effectively Reduced by Technologies Considered in Preparing This Guideline

(a) Subpart B—Primary Aluminum Smelting Subcategory.

4. benzene
23. chloroform
44. methylene chloride
123. mercury

(b) Subpart C—Secondary Aluminum Subcategory.

29. 1,1-dichloroethylene
30. 1,2-trans-dichloroethylene
48. dichlorobromomethane
114. antimony
117. beryllium
123. mercury
125. selenium
126. silver

(c) Subpart E—Primary Copper Electrolytic Refining Subcategory.

114. antimony
125. selenium

(d) Subpart G—Primary Lead Subcategory.

115. arsenic
117. beryllium
119. chromium (Total)
123. mercury
124. nickel
125. selenium
126. silver

(e) Subpart H—Primary Zinc Subcategory.

4. benzene
22. parachlorometa-cresol
86. toluene
123. mercury
125. selenium

(f) Subpart I—Metallurgical Acid Plants Subcategory.

22. parachlorometa-cresol
23. chloroform (trichloromethane)
38. ethylbenzene
48. dichlorobromomethane
85. tetrachloroethylene

(g) Subpart J—Primary Tungsten Subcategory.

23. chloroform (trichloromethane)
29. 1,1-dichloroethylene
38. ethylbenzene
51. chloroidibromomethane
85. tetrachloroethylene
86. toluene
117. beryllium
123. mercury

(h) Subpart K—Primary Columbium-Tantalum Subcategory.

4. benzene
48. dichlorobromomethane
54. isophorone
70. diethyl phthalate
117. beryllium
126. silver

(i) Subpart L—Secondary Silver Subcategory.

1. acenaphthene
30. 1,2-trans-dichloroethylene
38. ethybenzene

(j) Subpart M—Secondary Lead Subcategory.

23. chloroform (trichloromethane)
47. bromoform (tribromomethane)
56. nitrobenzene
71. dimethyl phthalate
117. beryllium

Appendix F—Toxic Pollutants Detected in the Effluent From Only a Small Number of Sources

(a) Subpart B—Primary Aluminum Smelting Subcategory.

20. 2-chlornaphthalene
42. bis(2-chloroisopropyl) ether
55. naphthalene
62. N-nitrosodiphenylamine
65. phenol
66. bis(2-ethylhexyl) phthalate
67. butyl benzyl phthalate
68. di-n-butyl phthalate
74. 3,4-benzofluoranthene
75. benzo(k)fluranthene
77. acenaphthylene
83. indeno(1,2,3-cd)pyrene
106. PCB-1242 (Arochlor 1242) (a)
107. PCB-1254 (Arochlor 1254) (a)
108. PCB-1221 (Arochlor 1221) (a)
117. beryllium
126. silver
127. thallium

(a) Reported together.

(b) Subpart C—Secondary Aluminum Subcategory.

4. benzene
23. chloroform (trichloromethane)
27. 1,4-dichlorobenzene
39. fluoranthene
44. methylene chloride (dichloromethane)
66. bis(2-ethylhexyl) phthalate
67. butyl benzyl phthalate
68. di-n-butyl phthalate
69. di-n-octyl phthalate
71. dimethyl phthalate
73. benzo (a)pyrene (3,4-benzopyrene)
76. chrysene
77. acenaphthylene
84. pyrene
85. tetrachloroethylene
87. trichloroethylene
115. arsenic
119. chromium (Total)
120 copper
124. nickel
127. thallium

(a), (b) Reported together.

(c) Subpart G—Primary Lead Subcategory.

114. antimony
120. copper

(d) Subpart H—Primary Zinc Subcategory.

11. 1,1,1-trichloroethane
38. ethylbenzene
44. methylene chloride
66. bis(2-ethylhexyl) phthalate
68. di-n-butyl phthalate
69. di-n-octyl phthalate

(e) Subpart I—Metallurgical Acid Plants Subcategory.

6. carbon tetrachloride
13. 1,1-dichloroethane
44. methylene chloride (dichloromethane)
66. bis(2-ethylhexyl) phthalate
78. anthracene
81. phenanthrene
86. toluene
127. thallium

(f) Subpart J—Primary Tungsten Subcategory.

47. bromoform (tribromomethane)
66. bis(2-ethylhexyl) phthalate
68. di-n-butyl phthalate
69. di-n-octyl phthalate
76. chrysene
115. arsenic
120. copper
121. cyanide (Total)

(g) Subpart K—Primary Columbium-Tantalum Subcategory.

1. acenaphthene
6. carbon tetrachloride (tetrachloromethane)
10. 1,2-dichloroethane
12. hexachlorethane
23. chloroform (trichloromethane)
44. methylene chloride (dichloromethane)
47. bromoform
56. nitrobenzene
66. bis(2-ethylhexyl) phthalate
68. di-n-butyl phthalate
71. dimethyl phthalate
85. tetrachloroethylene
106. PCB-1242 (Arochlor 1242) (a)
107. PCB-1254 (Arochlor 1254) (a)
108. PCB-1221 (Arochlor 1221) (a)
109. PCB-1232 (Arochlor 1232) (b)
110. PCB-1248 (Arochlor 1248) (b)
111. PCB-1260 (Arochlor 1260) (b)
112. PCB-1016 (Arochlor 1016) (b)
123. mercury

(a), (b) Reported together.

(h) Subpart L—Secondary Silver Subcategory.

11. 1,1,1-trichlorethane
23. chloroform (trichloromethane)
44. methylene chloride (dichloromethane)
47. bromoform (tribromomethane)
66. bis(2-ethylhexyl) phthalate
67. butyl benzyl phthalate
68. di-n-butyl phthalate
69. di-n-octyl phthalate
70. diethyl phthalate
84. pyrene
85. tetrachloroethylene
86. toluene

106. PCB-1242 (Arochlor 1242) (a)
107. PCB-1254 (Arochlor 1254) (a)
108. PCB-1221 (Arochlor 1221) (a)
109. PCB-1232 (Arochlor 1232) (b)
110. PCB-1248 (Arochlor 1248) (b)
111. PCB-1260 (Arochlor 1260) (b)
112. PCB-1016 (Arochlor 1016) (b)
123. mercury

(a), (b) Reported together.

(i) Subpart M—Secondary Lead Subcategory.

39. fluoranthene
67. butyl benzyl phthalate
66. bis(2-ethylhexyl) phthalate
68. di-n-butyl phthalate
69. di-n-octyl phthalate
76. chrysene
77. acenaphthylene
84. pyrene
121. cyanide
123. mercury
125. selenium

Appendix G—Toxic Pollutants Effectively Controlled by Technologies Upon Which Are Based Other Effluent Limitations and Guidelines

(a) Subpart B—Primary Aluminum Smelting Subcategory.

1. acenaphthene
39. fluoranthene
72. benzo (a)anthracene (1,2-benzanthracene)
76. chrysene
77. acenaphthylene
78. anthracene (a)
79. benzo(ghi)perylene (1,11-benzoperylene)
80. fluorene
81. phenanthrene (a)
82. dibenzo (a, h)anthracene (1,2,5,6-dibenzanthracene)
84. pyrene
115. arsenic
116. asbestos
118. cadmium
119. chromium (Total)
120. copper
122. lead
125. selenium
128. zinc

(a) Reported together.

(b) Subpart C—Secondary Aluminum Subcategory.

118. cadmium.

(c) Subpart E—Primary Copper Electrolytic Refining Subcategory.

119. chromium (Total)
122. lead
126. silver
128. zinc

(d) Subpart G—Primary Lead Subcategory.

116. asbestos (Fibrous)
118. cadmium

(e) Subpart H—Primary Zinc Subcategory.

115. arsenic
116. asbestos (Fibrous)
119. chromium (Total)
124. nickel
126. silver

(f) Subpart I—Metallurgical Acid Plants Subcategory.

114. antimony
119. chromium (Total)
123. mercury
124. nickel
125. selenium
126. silver

(g) Subpart J—Primary Tungsten Subcategory.

118. cadmium
119. chromium (Total)
124. nickel
126. silver
127. thallium

(h) Subpart K—Primary Columbium-Tantalum Subcategory.

114. antimony
115. arsenic
116. asbestos
118. cadmium
119. chromium (Total)
120. copper
124. nickel
125. selenium
127. thallium

(i) Subpart L—Secondary Silver Subcategory.

118. cadmium
114. antimony
115. arsenic
119. chromium (Total)
121. cyanide
122. lead
124. nickel
125. selenium
126. silver
127. thallium

(j) Subpart M—Secondary Lead Subcategory.

118. cadmium
119. chromium (Total)
120. copper
124. nickel

Appendix H—Toxic Pollutants Detected But Only in Trace Amounts and Are Neither Causing Nor Likely To Cause Toxic Effects

(a) Subpart J—Primary Tungsten Subcategory.

1. acenaphthene
11. 1,1,1-trichloroethane
55. naphthalene
65. phenol
73. benzo(a)pyrene
77. acenaphthylene
79. benzo(ghi)perylene
80. fluorene
82. dibenzo(a,h)anthracene

(b) Subpart K—Primary Columbium-Tantalum Subcategory.

7. chlorobenzene
8. 1,2,4-trichlorobenzene
10. 1,2-dichloroethane
30. 1,2-trans-dichloroethylene
38. ethylbenzene
51. chlorodibromomethane
87. trichloroethylene

(c) Subpart L—Secondary Silver Subcategory.

4. benzene
6. carbon tetrachloride (tetrachloromethane)
10. 1,2-dichloroethane
29. 1,1-dichloroethylene
87. trichloroethylene

Appendix I—Toxic Pollutants Detected But Present Solely as a Result of Their Presence in the Intake Waters

(a) Subpart E—Primary Electrolytic Copper Refining Subcategory.

23. chloroform (trichloromethane)
66. bis(2-ethylhexyl) phthalate
67. butyl benzyl phthalate
68. di-n-butyl phthalate
69. di-n-octyl phthalate

For the reasons discussed above, EPA amends 40 CFR Part 421 as follows:

1. By adding an undesignated subpart entitled "General Provisions," immediately preceding Subpart A as follows:

PART 421—NONFERROUS METALS MANUFACTURING POINT SOURCE CATEGORY

General Provisions

Sec.
421.1 Applicability.
421.2 [Reserved]
421.3 Monitoring and reporting requirements.
421.4 Compliance date for pretreatment standards for existing sources. (PSES.)
421.5 Removal allowances for pretreatment standards.

Authority. Secs. 301, 304 (b), (c), (e), and (g), 306 (b) and (c), 307 (b) and (c), 308, and 501 of the Federal Water Pollution Control Act as amended (the Act); 33 U.S.C. 1251, 1311, 1314 (b), (c), (e), and (g), 1316 (b) and (c), 1317 (b) and (c), and 1361; 86 Stat. 816, Pub. L. 92-500; 91 Stat. 1567, Pub. L. 95-217.

General Provisions

§ 421.1 Applicability.

This part applies to facilities producing primary metals from ore concentrates and recovering secondary metals from recycle wastes which discharge or may discharge pollutants to waters of the United States or which introduce or may introduce pollutants into a publicly owned treatment works. The applicability of this part to alloying or casting of nonferrous metals is limited to alloying or casting of hot metal directly from the nonferrous metals manufacturing process without cooling. Remelting followed by alloying or cooling is included in the aluminum forming, nonferrous metals forming, or metal molding and casting point source categories.

§ 421.2 [Reserved]

§ 421.3 Monitoring and reporting requirements.

The following special monitoring requirements apply to all facilities controlled by this regulation:

(a) The "monthly average" regulatory values shall be the basis for the monthly average discharge in direct discharge permits and for pretreatment standards. Compliance with the monthly discharge limit is required regardless of the number of samples analyzed and averaged.

§ 421.4 Compliance date for pretreatment standards for existing sources (PSES).

The compliance date for pretreatment standards for existing sources will be three years after promulgation of this regulation.

§ 421.5 Removal allowances for pretreatment standards.

Removal allowances pursuant to 40 CFR 403.7(a) may be granted for the toxic metals limited in 40 CFR Part 421 when used as indicator pollutants.

2. By revising Subparts B through I and by adding Subparts J through M to read as set forth below. (For purposes of clarity, promulgated BPT effluent limitations guidelines and provisions relating to applicability and definitions are being reprinted as part of today's regulation. The BPT limitations and other reprinted provisions remain unaffected by today's regulation and are not subject to judicial review. These provisions are indicated by an asterisk (*).)

the best practicable control technology currently available.
421.103 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.
421.104 Standards of performance for new sources.
421.105 Pretreatment standards for existing sources.
421.106 Pretreatment standards for new sources.
421.107 [Reserved]

Subpart K—Primary Columbium-Tantalum Subcategory

421.110 Applicability: description of the primary columbium-tantalum subcategory.
421.111 Specialized definitions.
421.112 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.
421.113 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.
421.114 Standards of performance for new sources.
421.115 Pretreatment standards for existing sources.
421.116 Pretreatment standards for new sources.
421.117 [Reserved]

Subpart L—Secondary Silver Subcategory

421.120 Applicability: description of the secondary silver subcategory.
421.121 Specialized definitions.
421.122 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.
421.123 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.
421.124 Standards of performance for new sources.
421.125 Pretreatment standards for existing sources.
421.126 Pretreatment standards for new sources.
421.127 [Reserved]

Subpart M—Secondary Lead Subcategory

421.130 Applicability: description of the secondary lead subcategory.
421.131 Specialized definitions.
421.132 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.
421.133 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.
421.134 Standards of performance for new sources.
421.135 Pretreatment standards for existing sources.
421.136 Pretreatment standards for new sources.
421.137 [Reserved]

Authority. Secs. 301, 304 (b), (c), (e), and (g), 306 (b) and (c), 307 (b) and (c), 308, and 501 of the Federal Water Pollution Control Act as amended (the Act); 33 U.S.C. 1251, 1311, 1314 (b), (c), (e), and (g), 1316 (b) and (c), 1317 (b) and (c), and 1361; 86 Stat. 816, Pub. L. 92-500; 91 Stat. 1567, Pub. L. 95-217.

Subpart B—Primary Aluminum Smelting Subcategory

§ 421.20 Applicability: description of the primary aluminum smelting subcategory.

The provisions of this subpart are applicable to discharges resulting from the production of aluminum from alumina in the Hall-Heroult process.

§ 421.21 Specialized definitions.

For the purpose of this subpart:

(a) Except as provided below, the general definitions, abbreviations and methods of analysis set forth in Part 401 of this chapter, shall apply to this subpart.

(b) The term "product" shall mean hot aluminum metal.

§ 421.22 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

Except as provided in 40 CFR 125.30-125.32, any existing point source subject to this subpart shall achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable technology currently available (BPT):

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of product	
	English units—pounds per million pounds of product	
Fluoride	2.0	1.0
Total Suspended solids	3.0	1.5
pH	(1)	(1)

[1] Within the range of 6 to 9 at all times.

§ 421.23 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.

Except as provided in 40 CFR 125.30-125.32, any existing point source subject to this subpart shall achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable: (a) Subpart B—Anode and Cathode Paste Plant Wet Air Pollution Control

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of paste produced	
Benzo(a)pyrene	.001	
Antimony	.263	.117
Nickel	.075	.050
Aluminum	.831	360
Fluoride	4.760	2.720

(b) Supart (B)—Anode Contact Cooling and Briquette Quenching.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of anodes cast	
Benzo(a)pyrene	.002	
Antimony	.403	.180
Nickel	.115	.077
Aluminum	1.277	.560
Fluoride	7.315	4.180

(c) Subpart (B)—Anode Bake Plant Wet Air Pollution Control (Closed Top Ring Furnace).

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of anodes baked	
Benzo(a)pyrene	.043	
Antimony	8.346	3.719
Nickel	2.378	1.600
Aluminum	26.420	11.720
Fluoride	151.400	86.480

(d) Subpart B—Anode Bake Plant Wet Air Pollution Control (Open Top Ring Furnace With Spray Tower Only).

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of anodes baked	
Benzo(a)pyrene	.001	
Antimony	.097	.043
Nickel	.028	.019
Aluminum	.306	.130
Fluoride	1.750	1.000

(e) Subpart B—Anode Bake Plant Wet Air Pollution Control (Open Top Ring Furnace With Wet Electrostatic Precipitator and Spray Tower).

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of anodes baked	
Benzo(a)pyrene	.007	
Antimony	1.409	.628
Nickel	.402	.270
Aluminum	4.461	1.979
Fluoride	25.550	14.600

(f) Subpart B—Anode Bake Plant Wet Air Pollution Control (Tunnel Kiln).

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of anodes baked	
Benzo(a)pyrene	.011	
Antimony	2.197	.979
Nickel	.626	.421
Aluminum	6.953	3.084
Fluoride	39.830	22.760

(g) Subpart B—Cathode Reprocessing (Operated With Dry Potline Scrubbing and Not Commingled With Other Process or Nonprocess Waters).

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of cryolite recovered	
Benzo(a)pyrene	.350	
Antimony	420.400	189.200
Cyanide	157.600	70.060
Nickel	80.570	35.030
Aluminum	273.200	122.600
Fluoride	29,430.000	13,310.000

(h) Subpart B—Cathode Reprocessing (Operated With Dry Potline Scrubbing and Commingled With Other Process or Nonprocess Waters).

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of cryolite recovered	
Benzo(a)pyrene	0.350	
Antimony	67.610	30.120
Cyanide	157.600	70.060
Nickel	19.270	12.960
Aluminum	214.000	94.930
Fluoride	1,226.000	700.600

(i) Subpart B—Cathode Reprocessing (Operated With Wet Potline Scrubbing).

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pound per million pounds) of cryolite recovered	
Benzo(a)pyrene	.000	
Antimony	.000	.000
Cyanide	.000	.000
Nickel	.000	.000
Aluminum	.000	.000
Fluoride	.000	.000

(j) Subpart B—Potline Wet Air Pollution Control (Operated Without Cathode Reprocessing).

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pound per million pounds) of aluminum produced from electrolytic reduction	
Benzo(a)pyrene	.003	
Antimony	1.618	.721
Nickel	.491	.310
Aluminum	5.120	2.271
Fluoride	29.330	16.760

(k) Subpart B—Potline Wet Air Pollution Control (Operated With Cathode Reprocessing and Not Commingled With Other Process or Nonprocess Waters).

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pound per million pounds) of aluminum produced from electrolytic reduction	
Benzo(a)pyrene	.003	
Antimony	10.060	4.525
Cyanide	3.771	1.676
Nickel	1.928	.833
Aluminum	6.537	2.933
Fluoride	703.800	318.500

(l) Potline Wet Air Pollution Control Cooperated With Cathode Reprocessing and Commingled With Other Process or Nonprocess Wastewaters).

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pound per million pounds) of aluminum produced from electrolytic reduction	
Benzo(a)pyrene	0.003	
Antimony	1.618	.721
Cyanide	3.771	1.676
Nickel	0.491	.310
Aluminum	5.120	2.271
Fluoride	29.330	16.760

(m) Subpart B—Potroom Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pound per million pounds) of aluminum produced from electrolytic reduction	
Benzo(a)pyrene	.017	
Antimony	3.204	1.428
Nickel	.913	.614
Aluminum	10.140	4.439
Fluoride	58.100	33.200

(n) Subpart B—Potline SO_2 Emissions Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pound per million pounds) of aluminum produced from electrolytic reduction	
Benzo(a)pyrene	.013	
Antimony	2.583	1.153
Nickel	.733	.486
Aluminum	8.194	3.634
Fluoride	45.940	26.820

(o) Subpart B—Degassing Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pound per million pounds) of aluminum produced from electrolytic reduction	
Benzo(a)pyrene	.028	
Antimony	5.036	2.244
Nickel	1.435	.965
Aluminum	15.940	7.071
Fluoride	91.320	52.180

(p) Subpart B—Pot Repair and Pot Soaking.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pound per million pounds) of aluminum produced from electrolytic reduction	
Benzo(a)pyrene	.000	
Antimony	.000	.000
Nickel	.000	.000
Aluminum	.000	.000
Fluoride	.000	.000

(q) Subpart B—Direct Chill Casting Contact Cooling.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pound per million pounds) of aluminum product from direct chill casting	
Benzo(a)pyrene	.013	
Antimony	2.565	1.143
Nickel	.731	.492
Aluminum	8.120	3.602
Fluoride	46.520	26.580

(r) Subpart B—Continuous Rod Casting Contact Cooling.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pound per million pounds) of aluminum product from rod casting	
Benzo(a)pyrene	.001	
Antimony	.201	.089
Nickel	.057	.038
Aluminum	.636	.282
Fluoride	3.640	2.080

(s) Subpart B—Stationary Casting or Shot Casting Contact Cooling.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pound per million pounds) of aluminum product from stationary casting or shot casting	
Benzo(a)pyrene	.000	
Antimony	.000	.000
Nickel	.000	.000
Aluminum	.000	.000
Fluoride	.000	.000

§ 421.24 Standards of performance for new sources.

Any new source subject to this subpart shall achieve the following new source performance standards:

(a) Subpart B—Anode and Cathode Paste Plant Wet Air.

POLLUTION CONTROL—NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pound per million pounds) of paste produced	
Benzo(a)pyrene	.000	
Antimony	.000	.000
Nickel	.000	.000
Aluminum	.000	.000
Fluoride	.000	.000
Oil and grease	.000	.000
Total suspended solids	.000	.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(b) Subpart B—Anode Contact Cooling and Briquette Quenching.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/Kg (pound per million pounds) of anodes cast	
Benzo(a)pyrene	.002	
Antimony	.403	.180
Nickel	.115	.077
Aluminum	1.277	.566
Fluoride	7.315	4.180
Oil and grease	2.090	2.090
Total suspended solids	3.135	2.508
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(c) Subpart B—Anode Bake Plant Wet Air Pollution Control.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/Kg (pound per million pounds) of anodes cast	
Benzo(a)pyrene	.000	
Antimony	.000	.000
Nickel	.000	.000
Aluminum	.000	.000
Fluoride	.000	.000
Oil and grease	.000	.000
Total suspended solids	.000	.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(d) Subpart B—Cathode Reprocessing (Operated With Dry Potline Scrubbing and Not Commingled With Other Process or Nonprocess Waters).

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/Kg (pound per million pounds) of cryolite recovered	
Benzo(a)pyrene	.350	
Antimony	420.400	189.200
Cyanide	157.600	70.060
Nickel	80.570	35.030
Aluminum	273.200	122.600
Fluoride	29,430.000	13,310.000
Oil and grease	350.300	350.300
Total suspended solids	2,172.000	945.800
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(e) Subpart B—Cathode Reprocessing (Operated With Dry Potline Scrubbing and Commingled With Other Process or Nonprocess Waters).

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pound per million pounds) of cryolite recovered	
Benzo(a)pyrene	0.350	
Antimony	67.610	30.120
Cyanide	157.600	70.060
Nickel	19.270	12.960
Aluminum	214.000	94.930
Fluoride	1,226.000	700.600
Oil and grease	350.300	350.300
Total suspended solids	2,172.000	945.800
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(f) Subpart B—Potline Wet Air Pollution Control.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pound per million pounds) of aluminum produced from electrolytic reduction	
Benzo(a)pyrene	.000	
Antimony	.000	.000
Nickel	.000	.000
Aluminum	.000	.000
Fluoride	.000	.000
Oil and grease	.000	.000
Total suspended solids	.000	.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(g) Subpart B—Potroom Wet Air Pollution Control.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pound per million pounds) of aluminum produced from electrolytic reduction	
Benzo(a)pyrene	.000	
Antimony	.000	.000
Nickel	.000	.000
Aluminum	.000	.000
Fluoride	.000	.000
Oil and grease	.000	.000
Total suspended solids	.000	.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(h) Subpart B—Potline SO_2 Emissions Wet Air Pollution Control.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pound per million pounds) aluminum produced from electrolytic reduction	
Benzo(a)pyrene	.013	
Antimony	2.598	1.153
Nickel	.738	.498
Aluminum	8.194	3.634
Fluoride	46.940	26.820

NSPS—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Oil and grease	13.410	13.410
Total suspended solids	20.120	16.090
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(i) Subpart B—Degassing Wet Air Pollution Control.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pound per million pounds) of aluminum produced from electrolytic reduction	
Benzo(a)pyrene	.000	
Antimony	.000	.000
Nickel	.000	.000
Aluminum	.000	.000
Fluoride	.000	.000
Oil and grease	.000	.000
Total suspended solids	.000	.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(j) Subpart B—Pot Repair and Pot Soaking.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pound per million pounds) of aluminum produced from electrolytic reduction	
Benzo(a)pyrene	.000	
Antimony	.000	.000
Nickel	.000	.000
Aluminum	.000	.000
Fluoride	.000	.000
Oil and grease	.000	.000
Total suspended solids	.000	.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(k) Subpart B—Direct Chill Casting Contact Cooling.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pound per million pounds) of aluminum product from direct chill casting	
Benzo(a)pyrene	.013	
Antimony	2.565	1.143
Nickel	.731	.492
Aluminum	8.120	3.602
Fluoride	46.520	26.530
Oil and grease	13.290	13.290
Total suspended solids	19.940	15.950
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(l) Subpart B—Continuous Rod Casting Contact Cooling.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pound per million pounds) of aluminum product from rod casting	
Benzo(a)pyrene	.001	
Antimony	.201	.033
Nickel	.057	.033
Aluminum	.636	.282
Fluoride	3.640	2.030
Oil and grease	1.040	1.040
Total suspended solids	1.560	1.248
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(m) Subpart B—Stationary Casting or Shot Casting Contact Cooling.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum product from stationary casting or shot casting	
Benzo(a)pyrene	.000	
Antimony	.000	.000
Nickel	.000	.000
Aluminum	.000	.000
Fluoride	.000	.000
Oil and grease	.000	.000
Total suspended solids	.000	.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

§ 421.25 [Reserved]

§ 421.26 Pretreatment standards for new sources.

Except as provided in 40 CFR 403.7, any new source subject to this subpart which introduced pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for new sources. The mass of wastewater pollutants in primary aluminum process wastewater introduced into a POTW shall not exceed the following values:

(a) Subpart B—Anode and Cathode Paste Plant Wet Air Pollution Control.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of paste produced	
Benzo(a)pyrene	.000	
Nickel	.000	.000
Fluoride	.000	.000

(b) Subpart B—Anode Contact Cooling and Briquette Quenching.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of anodes cast	
Benzo(a)pyrene	.002	
Nickel	.115	.077
Fluoride	7.315	4.180

(c) Subpart B—Anode Bake Plant Wet Air Pollution Control.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of anodes baked	
Benzo(a)pyrene	.000	
Nickel	.000	.000
Fluoride	.000	.000

(d) Subpart B—Cathode Reprocessing (Operated With Dry Potline Scrubbing and Not Commingled With Other Process or Nonprocess Waters).

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of cryolite recovered	
Benzo(a)pyrene	.350	
Cyanide	157.600	70.060
Nickel	80.570	35.030
Fluoride	29,430.000	13,310.000

(e) Subpart B—Cathode Reprocessing (Operated With Dry Potline Scrubbing and Commingled With Other Process or Nonprocess Waters).

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of cryolite recovered	
Benzo(a)pyrene	0.350	
Cyanide	157.600	70.060
Nickel	19.270	12.960
Fluoride	1,226.000	700.600

(f) Subpart B—Potline Wet Air Pollution Control.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum produced from electrolytic reduction	
Benzo(a)pyrene	.000	
Nickel	.000	.000
Fluoride	.000	.000

(g) Subpart B—Potroom Wet Air Pollution Control.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum produced from electrolytic reduction	
Benzo(a)pyrene	.000	
Nickel	.000	.000
Fluoride	.000	.000

(h) Subpart B—Potline SO_2 Emissions Wet Air Pollution Control.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum produced from electrolytic reduction	
Benzo(a)pyrene	.013	
Nickel	.738	.496
Fluoride	46.940	26.820

(i) Subpart B—Degassing Wet Air Pollution Control.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum produced from electrolytic reduction	
Benzo(a)pyrene	.000	
Nickel	.000	.000
Fluoride	.000	.000

(j) Subpart B—Pot Repair and Pot Soaking.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum produced from electrolytic reduction	
Benzo(a)pyrene	.000	
Nickel	.000	.000
Fluoride	.000	.000

(k) Subpart B—Direct Chill Casting Contact Cooling.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum product from direct chill casting	
Benzo(a)pyrene	.013	
Nickel	.731	.492
Fluoride	46.520	26.580

(l) Subpart B—Continuous Rod Casting Contact Cooling.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pound per million pounds) of aluminum product from rod casting	
Benzo(a)pyrene	.001	
Nickel	.057	.038
Fluoride	3.640	2.080

(m) Subpart B—Stationary Casting or Shot Casting Contact Cooling.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pound per million pounds) of aluminum product from stationary casting or shot casting	
Benzo(a)pyrene	.000	
Nickel	.000	.000
Fluoride	.000	.000

§ 421.27 [Reserved]

Subpart C—Secondary Aluminum Smelting Subcategory

§ 421.30 Applicability: description of the secondary aluminum smelting subcategory.

The provisions of this subpart are applicable to discharges resulting from the recovery, processing, and remelting of aluminum scrap to produce metallic aluminum alloys.

§ 421.31 Specialized definitions.

For the purpose of this subpart:

(a) Except as provided below, the general definitions, abbreviations and methods of analysis set forth in Part 401 of this chapter shall apply to this subpart.

(b) The term "product" shall mean hot aluminum metal.

(c) "At-the-source" means at or before the commingling of delacquering scrubber liquor blowdown with other process or nonprocess wastewaters.

§ 421.32 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

Except as provided in 40 CFR 125.30–125.32, any existing point source subject to this subpart shall achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable technology currently available:

(a) The following limitations establish the quantity or quality of pollutants or pollutant properties, which may be discharged by a point source subject to the provisions of this subpart and which uses water for metal cooling, after application of the best practicable control technology currently available: There shall be no discharge of process wastewater pollutants to navigable waters.

(b) The following limitations establish the quantity or quality of pollutants or pollutant properties which may be discharged by a point source subject to the provisions of this subpart and which uses aluminum fluoride in its magnesium removal process ("demagging process"), after application of the best practicable control technology currently available: There shall be no discharge of process wastewater pollutants to navigable waters.

(c) The following limitations establish the quantity or quality of pollutants or pollutant properties controlled by this section, which may be discharged by a point source subject to the provisions of this subpart and which uses chlorine in its magnesium removal process, after application of the best practicable control technology currently available:

EFFLUENT LIMITATIONS

Effluent characteristic	Average of daily values for 30 consecutive days shall not exceed—
	Metric units (kilograms per 1,000 kg magnesium removed)
	English units (pounds per 1,000 lb magnesium removed)
TSS	175
COD	6.5
pH	(1)

[1] Within the range of 7.5 to 9.0.

(d) The following limitations establish the quantity or quality of pollutants or pollutant properties which may be discharged by a point source subject to the provisions of this subpart and which processes residues by wet methods, after application of the best practical control technology currently available:

EFFLUENT LIMITATIONS

Effluent characteristic	Average of daily values for 30 consecutive days shall not exceed—
	Metric units (kilograms per 1,000 kg of product)
	English units (pounds per 1,000 lb of product)
TSS	1.5
Fluoride	0.4
Ammonia (as N)	0.01
Aluminum	1.0
Copper	0.003
COD	1.0
pH	[1]

[1] Within the range of 7.5 to 9.0.

§ 421.33 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.

Except as provided in 40 CFR 125.30–125.32, any existing point source subject to this subpart shall achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable:

(a) Subpart C—Scrap Drying Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum scrap dried	
Lead	.000	.000
Zinc	.000	.000
Aluminum	.000	.000
Ammonia (as N)	.000	.000

(b) Subpart C—Scrap Screening and Milling.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum scrap screened and milled	
Lead	.000	.000
Zinc	.000	.000
Aluminum	.000	.000
Ammonia (as N)	.000	.000

(c) Subpart C—Dross Washing.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of dross washed	
Lead	3.043	1.413
Zinc	11.030	4.565
Aluminum	66.410	29.450
Ammonia (as N)	1,449.000	638.600

(d) Subpart C—Demagging Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum demagged	
Lead	.185	.031
Zinc	.711	.293
Aluminum	4.263	1.803
Ammonia (as N)	82.910	40.250

(e) Subpart C—Delacquering Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum delacquered	
Lead	.022	.010
Zinc	.082	.034
Aluminum	.483	.217
Ammonia (as N)	10.670	4.690
Total phenolics (4-AAP method) [1]	.001	

[1] At the source.

(f) Subpart C—Direct Chill Casting Contact Cooling.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum cast	
Lead	.372	.173
Zinc	1.356	.558
Aluminum	8.120	3.602
Ammonia (as N)	177.200	77.880

(g) Subpart C—Ingot Conveyor Casting Contact Cooling (When Chloride Demagging is Not Practiced On Site).

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum cast	
Lead	.012	.006
Zinc	.044	.018
Aluminum	.263	.117
Ammonia (as N)	5.732	2.520

(h) Subpart C—Ingot Conveyor Casting Contact Cooling (When Chloride Demagging is Not Practiced On Site).

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum cast	
Lead	.000	.000
Zinc	.000	.000
Aluminum	.000	.000
Ammonia (as N)	.000	.000

(i) Subpart C—Stationary Casting Contact Cooling.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum cast	
Lead	.000	.000
Zinc	.000	.000
Aluminum	.000	.000
Ammonia (as N)	.000	.000

(j) Subpart C—Shot Casting Contact Cooling.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum cast	
Lead	.000	.000
Zinc	.000	.000
Aluminum	.000	.000
Ammonia (as N)	.000	.000

§ 421.34 Standards of performance for new sources.

Any new source subject to this subpart shall achieve the following new source performance standards:

(a) Subpart C—Scrap Drying Wet Air Pollution Control.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average.
	Mg/kg (pounds per million pounds) of aluminum scrap dried	
Lead	.000	.000
Zinc	.000	.000
Aluminum	.000	.000
Ammonia (as N)	.000	.000
Total suspended solids	.000	.000
Oil and grease	.000	.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times

(b) Subpart C—Scrap Screening and Milling.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum scrap screened and milled	
Lead	.000	.000
Zinc	.000	.000
Aluminum	.000	.000
Ammonia (as N)	.000	.000
Total suspended solids	.000	.000
Oil and grease	.000	.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(c) Subpart C—Dross Washing.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of dross washed	
Lead	.000	.000
Zinc	.000	.000
Aluminum	.000	.000
Ammonia (as N)	.000	.000
Total suspended solids	.000	.000
Oil and grease	.000	.000

NSPS—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(d) Subpart C—Demagging Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum demagged	
Lead	.195	.091
Zinc	.711	.293
Aluminum	4.259	1.889
Ammonia (as N)	92.910	40.850
Total suspended solids	10.460	8.364
Oil and grease	6.970	6.970
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(e) Subpart C—Delacquering Wet Air Pollution Control.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum delacquered	
Lead	.022	.010
Zinc	.082	.034
Aluminum	.489	.217
Ammonia (as N)	10.670	4.688
Total phenolics (4-AAP method) [1]	.001	
Total suspended solids	1.200	.960
Oil and grease	.800	.800
pH	(2)	(2)

[1] At the source.
[2] Within the range of 7.0 to 10.0 at all times.

(f) Subpart C—Direct Chill Casting Contact Cooling.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum cast	
Lead	.372	.173
Zinc	1.356	.558
Aluminum	8.120	3.602
Ammonia (as N)	177.200	77.880
Total suspended solids	19.940	15.950
Oil and grease	13.290	13.290
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(g) Subpart C—Ingot Conveyor Casting Contract Cooling (When Chloride Demagging is Not Practiced On Site).

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum cast	
Lead	.012	.000
Zinc	.044	.018
Aluminum	.263	.117
Ammonia (as N)	5.732	2.520
Total suspended solids	.645	.510
Oil and grease	.430	.430
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(h) Subpart C—Ingot Conveyor Casting Contact Cooling (When Chlorine Demagging is Practiced On Site).

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum cast	
Lead	.000	.000
Zinc	.000	.000
Aluminum	.000	.000
Ammonia (as N)	.000	.000
Total suspended solids	.000	.000
Oil and grease	.000	.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(i) Subpart C—Stationary Casting Contact Cooling.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum cast	
Lead	.000	.000
Zinc	.000	.000
Aluminum	.000	.000
Ammonia (as N)	.000	.000
Total suspended solids	.000	.000
Oil and grease	.000	.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(j) Subpart C—Shot Casting Contact Cooling.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum cast	
Lead	.000	.000
Zinc	.000	.000
Aluminum	.000	.000
Ammonia (as N)	.000	.000
Total suspended solids	.000	.000
Oil and grease	.000	.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

§ 421.35 Pretreatment standards for existing sources.

Except as provided in 40 CFR 403.7 and 403.13, any existing source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for existing sources. The mass of wastewater pollutants in secondary aluminum process wastewater introduced into a POTW shall not exceed the following values:

(a) Subpart C—Scrap Drying Wet Air Pollution Control.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum scrap dried	
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000

(b) Subpart C—Scrap Screening and Milling.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum scrap screened and milled	
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000

(c) Subpart C—Dross Washing.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of dross washed	
Lead	3.043	1.413
Zinc	11.090	4.565
Ammonia (as N)	1,449.000	636.000

(d) Subpart C—Demagging Wet Air Pollution Control.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum demagged	
Lead	.195	.091
Zinc	.711	.293
Ammonia (as N)	92.910	40.850

(e) Subpart C—Delacquering Wet Air Pollution Control.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum delacquered	
Lead	0.22	.010
Zinc	.032	.034
Ammonia (as N)	10.670	4.038
Total phenolics (4-AAP) method)[1]	.001	

[1] At the source.

(f) Subpart C—Direct Chill Casting Contact Cooling.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum cast	
Lead	.372	.173
Zinc	1.358	.558
Ammonia (as N)	177.200	77.800

(g) Subpart C—Ingot Conveyor Casting Contact Cooling. (When Chlorine Demagging Wet Air Pollution Control is Not Practiced on Site.)

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum cast	
Lead	.012	.006
Zinc	.044	.018
Ammonia (as N)	5.732	2.500

(h) Subpart C—Ingot Conveyor Casting Contact Cooling. (When Chlorine Demagging Wet Air Pollution Control is Practiced On Site.)

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum cast	
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000

(i) Subpart C—Stationary Casting Contact Cooling.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum cast	
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000

(j) Subpart C—Shot Casting Contact Cooling.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum cast	
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000

§ 421.36 Pretreatment standards for new sources.

Except as provided in 40 CFR 403.7, any new source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for new sources. The mass of wastewater pollutants introduced in secondary aluminum process wastewater into a POTW shall not exceed the following values:

(a) Subpart C—Scrap Drying Wet Air Pollution Control.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum scrap dried	
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000

(b) Subpart C—Scrap Screening and Milling.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum scrap screened and milled	
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000

(c) Subpart C—Dross Washing.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of dross washed	
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000

(d) Subpart C—Demagging Wet Air Pollution Control.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum demagged	
Lead	.195	.091
Zinc	.711	.293
Ammonia (as N)	92.910	40.850

(e) Subpart C—Delacquering Wet Air Pollution Control

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum delacquered	
Lead	.022	.010
Zinc	.082	.034
Ammonia (as N)	10.670	4.688
Total phenolics (4-AAP method) [1]	.001	

[1] At the source.

(f) Subpart C—Direct Chill Casting Contact Cooling.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum cast	
Lead	.372	.173
Zinc	1.356	.558
Ammonia (as N)	177.200	77.880

(g) Subpart C—Ingot Conveyor Casting Contact Cooling (When Chlorine Demagging Wet Air Pollution Control Is Not Practiced on Site).

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum cast	
Lead	.012	.006
Zinc	.044	.018
Ammonia (as N)	5.732	2.520

(h) Subpart C—Ingot Conveyor Casting Contact Cooling (When Chlorine Demagging Wet Air Pollution Control Is Practiced on Site).

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum cast	
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000

(i) Subpart C—Stationary Casting Contact Cooling.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum cast	
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000

(j) Subpart C—Shot Casting Contact Cooling.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of aluminum cast	
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000

§ 421.37 [Reserved]

Subpart D—Primary Copper Smelting Subcategory

§ 421.40 Applicability: Description of the primary copper smelting subcategory.

The provisions of this subpart apply to process wastewater discharges resulting from the primary smelting of copper from ore or ore concentrates. Primary copper smelting includes, but is not limited to, roasting, converting, leaching if preceded by a pyrometallurgical step, slag granulation and dumping, fire refining, and the casting of products from these operations.

§ 421.41 Specialized definitions.

For the purpose of this subpart:

(a) Except as provided below, the general definitions, abbreviations, and methods of analysis set forth in 40 CFR Part 401 apply to this subpart.

(b) In the event that the waste streams covered by this subpart are combined for treatment or discharge with waste streams covered by Subparts E—Primary Electrolytic Copper Refining and/or Subpart I—Metallurgical Acid Plants, the quantity of each pollutant or pollutant property discharged shall not exceed the quantity of each pollutant or pollutant property which could be discharged if each waste stream were discharged separately.

(c) For all impoundments constructed prior to the effective date of the interim final regulation (40 FR 8513), the term "within the impoundment," when used to calculate the volume of process wastewater which may be discharged, means the water surface area within the impoundment at maximum capacity plus the surface area of the inside and outside slopes of the impoundment dam as well as the surface area between the outside edge of the impoundment dam and any seepage ditch adjacent to the dam upon which rain falls and is returned to the impoundment. For the purpose of such calculations, the surface area allowances set forth above shall not exceed more than 30 percent of the water surface area within the impoundment dam at maximum capacity.

(d) For all impoundments constructed on or after the effective date of the interim final regulation (the interim regulation was effective February 27, 1975; 40 FR 8513, February 27, 1975), the term "within the impoundment," for purposes of calculating the volume of process wastewater which may be discharged, means the water surface area within the impoundment at maximum capacity.

§ 421.42 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

(a) Except as provided in 40 CFR 125.30–125.32 and paragraph (b) of this section, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT): There shall be no discharge of process wastewater pollutants to navigable waters.

(b) A process wastewater impoundment which is designed, constructed, and operated so as to contain the precipitation from the 10-year, 24-hour rainfall event as established by the National Climatic Center, National Oceanic and Atmospheric Administration, for the area in which such impoundment is located may discharge that volume of process wastewater which is equivalent to the volume of precipitation that falls within the impoundment in excess of that attributable to the 10-year, 24-hour rainfall event, when such event occurs.

§ 421.43 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.

Except as provided in 40 CFR 125.30–125.32, any existing point source subject to this subpart shall achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best avialable technology economically achievable:

(a) Subject to the provisions of paragraph (b) of this section, there shall be no discharge of process wastewater pollutants into navigable waters.

(b) A process wastewater impoundment which is designed, constructed, and operated so as to contain the precipitation from the 25-year, 24-hour rainfall event as established by the National Climatic Center, National Oceanic and Atmospheric Administration, for the area in which such impoundment is located may discharge that volume of process wastewater which is equivalent to the volume of preciptation that falls within the impoundment in excess of that attributable to the 25-year, 24-hour rainfall event, when such event occurs.

§ 421.44 Standards of performance for new sources.

Any new source subject to this subpart shall achieve the following new source performance standards: There shall be discharge of process wastewater pollutants into navigable waters.

§ 421.45 [Reserved]

§ 421.46 Pretreatment standards for new sources.

Except as provided in 40 CFR 403.7, any new source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for new sources. The mass of wastewater pollutants in primary copper smelting process wastewater introduced into a POTW shall not exceed the following values: There shall be no discharge of process wastewater pollutants into a publicly owned treatment works.

§ 421.47 [Reserved]

Subpart E—Primary Electrolytic Copper Refining Subcategory

§ 421.50 Applicability: description of the primary electrolytic copper refining subcategory.

The provisions of this subpart apply to process wastewater discharges resulting from the electrolytic refining of primary copper, including, but not limited to, anode casting performed at refineries which are not located on-site with a smelter, product casting, and by-product recovery.

§ 421.51 Specialized definitions.

For the purpose of this subpart:

(a) Except as provided below, the general definitions, abbreviations, and methods of analysis set forth in 40 CFR Part 401 apply to this subpart.

(b) The term "product" means electrolytically refined copper.

§ 421.52 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

Except as provided in 40 CFR 125.30–125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT):

EFFLUENT LIMITATIONS

Effluent characteristic	Maximum for any 1 day	Average of Daily values for 30 consecutive days shall not exceed
	(Metric units, kg/kkg of product; English units, pounds per 1,000 lb of product)	
Total suspended solids	0.100	0.050
Copper	0.0017	0.0003
Cadmium	0.00006	0.00003
Lead	0.0005	0.0028
Zinc	0.0012	0.0003
pH	(1)	(1)

[1] Within the range of 6.0 to 9.0.

§ 421.53 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.

Except as provided in 40 CFR 125.30–125.32, any existing point source subject to this subpart shall achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable:

(a) Subpart E—Casting Contact Cooling.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of copper cast	
Arsenic	.632	.224
Copper	.633	.304
Nickel	.274	.184

(b) Subpart E—Anode and Cathode Rinse.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of cathode copper production	
Arsenic	.000	.000
Copper	.000	.000
Nickel	.000	.000

(c) Subpart E—Spent Electrolyte.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of copper cathode production	
Arsenic	.063	.028
Copper	.063	.030
Nickel	.027	.018

(c) Subpart E—Casting Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of casting production	
Arsenic	.000	.000
Copper	.000	.000
Nickel	.000	.000

(e) Subpart E—By-Product Recovery.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of product recovered from electrolytic slimes processing	
Arsenic	.000	.000
Copper	.000	.000
Nickel	.000	.000

§ 421.54 Standards of performance for new sources.

Any new source subject to this subpart shall achieve the following new source performance standards:

(a) Subpart E—Casting Contact Cooling.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of copper cast	
Arsenic	.692	.284
Copper	.638	.304
Nickel	.274	.184
Total suspended solids	7.470	5.976
pH	1	1

[1] Within the range of 7.0 to 10.0 at all times.

(b) Subpart E—Anode and Cathode Rinse.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of cathode copper production	
Arsenic	.000	.000
Copper	.000	.000
Nickel	.000	.000
Total suspended solids	.000	.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(c) Subpart E—Spent Electrolyte.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of copper cathode production	
Arsenic	.068	.028
Copper	.063	.030
Nickel	.027	.018
Total suspended solids	.735	.588
pH	(1)	(1)

[1] Within the range 7.0 to 10.0 at all times.

(d) Subpart E—Casting Wet Air Pollution Control.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of casting production	
Arsenic	.000	.000
Copper	.000	.000
Nickel	.000	.000
Total suspended solids	.000	.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(e) Subpart E—By-Product Recovery.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of product recovered from electrolytic slimes processing	
Arsenic	.000	.000
Copper	.000	.000
Nickel	.000	.000
Total suspended solids	.000	.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

§ 421.55 [Reserved]

§ 421.56 Pretreatment standards for new sources.

Except as provided in 40 CFR 403.7, any new source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for new sources. The mass of wastewater pollutants in primary electrolytic copper refining process wastewater introduced into a POTW shall not exceed the following values:

(a) Subpart E—Casting Contact Cooling.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of copper cast	
Arsenic	.692	.284
Copper	.638	.304
Nickel	.274	.184

(b) Subpart E—Anode and Cathode Rinse.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of cathode copper production	
Arsenic	.000	.000
Copper	.000	.000
Nickel	.000	.000

(c) Subpart E—Spent Electrolyte.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of cathode copper production	
Arsenic	.068	.028
Copper	.063	.030
Nickel	.027	.018

(d) Subpart E—Casting Wet Air Pollution Control.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of casting production	
Arsenic	.000	.000
Copper	.000	.000
Nickel	.000	.000

(e) Subpart E—By-Product Recovery.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of product recovered from electrolytic slimes processing	
Arsenic	.000	.000
Copper	.000	.000
Nickel	.000	.000

§ 421.57 [Reserved]

Subpart F—Secondary Copper Subcategory

§ 421.60 Applicability: description of the secondary copper subcategory.

The provisions of this subpart are applicable to discharges resulting from the recovery, processing, and remelting of new and used copper scrap and residues to produce copper metal and copper alloys, but are not applicable to continuous rod casting.

§ 421.61 Specialized definitions.

For the purpose of this subpart:

(a) Except as provided below, the general definitions, abbreviations, and methods of analysis set forth in 40 CFR 401 shall apply to this subpart.

(b) For all impoundments constructed prior to the effective date of this regulation the term "within the impoundment" when used for purposes of calculating the volume of process wastewater which may be discharged shall mean the water surface area within the impoundment at maximum capacity plus the surface area of the inside and outside slopes of the impoundment dam as well as the surface area between the outside edge of the impoundment dam and any seepage ditch immediately adjacent to the dam upon which rain falls and is returned to the impoundment. For the purpose of such calculations, the surface area allowances set forth above shall not be more than 30 percent of the water surface area within the impoundment dam at maximum capacity.

(c) For all impoundments constructed on or after the effective date of this regulation, the term "within the impoundment" for purposes of calculating the volume of process wastewater which may be discharged shall mean the water surface area within the impoundment at maximum capacity.

(d) The term "pond water surface area" when used for the purpose of calculating the volume of wastewater which may be discharged shall mean the water surface area of the pond created by the impoundment for storage of process wastewater at normal operating level. This surface shall in no case be less than one-third of the surface area of the maximum amount of water which could be contained by the impoundment. The normal operating level shall be the average level of the pond during the preceding calendar month.

§ 421.62 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

(a) Except as provided in 40 CFR 125.30–125.32, any existing point source subject to this subpart shall achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable technology currently available: Subject to the provisions of paragraphs (b), (c), and (d) of this section, there shall be no discharge of process wastewater pollutants into navigable waters.

(b) A process wastewater impoundment which is designed, constructed, and operated so as to contain the precipitation from the 10-year, 24-hour rainfall event as established by the National Climatic Center, National Oceanic and Atmospheric Administration for the areas in which such impoundment is located may discharge that volume of process wastewater which is equivalent to the volume of precipitation that falls within the impoundment in excess of that attributable to the 10-year, 24-hour rainfall event, when such event occurs.

(c) During any calendar month there may be discharged from a process wastewater impoundment either a volume of process wastewater equal to the difference between the precipitation for the month that falls within the impoundment and either the evaporation from the pond water surface area for that month, or a volume of process wastewater equal to the difference between the mean precipitation for that month that falls within the impoundment and the mean evaporation from the pond water surface area as establsihed by the National Climatic Center, National Oceanic and Atmospheric Administration, for the area in which such impoundment is located (or as otherwise determined if no monthly data have been established by the National Climatic Center), whichever is greater.

(d) Any process wastewater discharged pursuant to paragraph (c) of this section shall comply with each of the following requirements:

Effluent limitations	Effluent characteristic: Maximum for any 1 day	Effluent characteristic: Average of daily values for 30 consecutive days shall not exceed
	Metric Units (mg/1) English Units (ppm)	
TSS	50	25
Cu	0.5	0.25
Zn	10	5
Oil and grease	20	10
pH	(¹)	(¹)

¹ Within the range of 0.0 to 9.0.

§ 461.63 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.

Except as provided in 40 CFR 125.30–125.32, any existing point source subject to this subpart shall achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable:

(a) Subject to the provisions of paragraph (b) of this section, there shall be no discharge of process wastewater pollutants into navigable waters.

(b) a process wastewater impoundment which is designed, constructed, and operated so as to contain the precipitation from the 25-year, 24-hour rainfall event as established by the National Climatic Center, National Oceanic and Atmospheric Administration, for the area in which such impoundment is located may discharge that volume of process wastewater which is equivalent to the volume of precipitation that falls within the impoundment in excess of that attributable to the 25-year, 24-hour rainfall event, when such event occurs.

§ 421.64 Standards of performance for new sources.

Any new source subject to this subpart shall achieve the following new source performance standards: There shall be no discharge of process wastewater pollutants into navigable waters.

§ 421.65 Pretreatment standards for existing sources.

Except as provided in 40 CFR 403.7 and 403.13, any existing source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for existing sources. The mass of wastewater pollutants in secondary copper process wastewater introduced into a POTW shall not exceed the following values:

(a) There shall be no discharge of process wastewater pollutants into a publicly owned treatment works subject to the provisions of paragraph (b).

(b) A process wastewater impoundment which is designed, constructed, and operated so as to contain the precipitation from the 25-year, 24-hour rainfall event as established by the National Climatic Center, National Oceanic and Atmospheric Administration, for the area in which such impoundment is located may discharge that volume of process wastewater equivalent to the volume of precipitation that falls within the impoundment in excess of that attributable to the 25-year, 24-hour rainfall event, when such event occurs.

§ 421.66 Pretreatment standards for new sources.

Except as provided in 40 CFR 403.7 any new source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for new sources. The mass of wastewater pollutants in secondary copper process wastewater introduced into a POTW shall not exceed the following values: There shall be no discharge of process wastewater pollutants into a publicly owned treatment works.

§ 421.67 [Reserved]

Subpart G—Primary Lead Subcategory

§ 421.70 Applicability: description of the primary lead subcategory.

The provisions of this subpart are applicable to discharges resulting from the production of lead at primary lead smelters and refineries.

§ 421.71 Specialized definitions.

For the purpose of this subpart the general definitions, abbreviations, and methods of analysis set forth in 40 CFR 401 shall apply to this subpart.

§ 421.72 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

Except as provided in 40 CFR 125.30–125.32, any existing point source subject to this subpart shall achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available:

(a) Subpart G—Sinter Plant Materials Handling Wet Air Pollution Control.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of sinter production	
Lead	594.000	270.000
Zinc	525.000	219.000
Total suspended solids	14,760.000	7,020.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(b) Subpart G—Blast Furnace Wet Air Pollution Control.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of blast furance lead bullion produced	
Lead	.000	.000
Zinc	.000	.000
Total suspended solids	.000	.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(c) Subpart G—Blast Furnace Slag Granulation.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of blast furance lead bullion produced	
Lead	6,155.000	2,798.000
Zinc	5,446.000	2,276.000
Total suspended solids	153,000.000	72,740.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(d) Subpart G—Dross Reverberatory Slag Granulation.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of slag, speiss, or matte granulated	
Lead	9,499.000	4,318.000
Zinc	8,405.000	3,512.000
Total suspended solids	236,000.000	112,300.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(e) Subpart G—Dross Reverberatory Furnace Wet Air Pollution Control.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of dross reverberatory furnace production	
Lead	15,920.000	7,235.000
Zinc	14,080.000	5,884.000
Total suspended solids	395,500.000	188,100.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(f) Subpart G—Zinc Fuming Wet Air Pollution Control.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of blast furance lead bullion produced	
Lead	702.900	319.500
Zinc	622.000	259.000
Total suspended solids	17,470.000	8,307.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(g) Subpart G—Hard Lead Refining Slag Granulation.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of hard lead produced	
Lead	.000	.000
Zinc	.000	.000
Total suspended solids	.000	.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(h) Subpart G—Hard Lead Refining Air Pollution Control.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of hard lead produced	
Lead	32,730.000	14,880.000
Zinc	28,960.000	12,100.000
Total suspended solids	813,300.000	386,800.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(i) Subpart G—Facility Washdown.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of lead bullion produced	
Lead	.000	.000
Zinc	000	.000
Total suspended solids	.000	.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(j) Subpart G—Employee Handwash.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of lead bullion produced	
Lead	5.445	2.475
Zinc	4.818	2.013
Total suspended solids	135.300	64.350
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(k) Subpart G—Respirator Wash.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of lead bullion produced	
Lead	8.745	3.975
Zinc	7.738	3.233
Total suspended solids	217.300	103.400
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(l) Subpart G—Laundering of Uniforms.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of lead bullion produced	
Lead	25.580	11.630
Zinc	22.630	9.455
Total suspended solids	635.500	302.300
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

§ 421.73 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.

Except as provided in 40 CFR 125.30–125.32, any existing point source subject to this subpart shall achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable:

(a) Subpart G—Sinter Plant Materials Handling Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of sinter production	
Lead	100.800	46.800
Zinc	367.200	151.200

(b) Subpart G—Blast Furnace Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of blast furnace lead bullion produced	
Lead	.000	.000
Zinc	.000	.000

(c) Subpart G—Blast Furnace Slag Granulation.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of blast furnace lead bullion produced	
Lead	.000	.000
Zinc	.000	.000

(d) Subpart G—Dross Reverberatory Slag Granulation.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of slag, speiss, or matte granulated	
Lead	1,812.000	740.400
Zinc	5,072.000	2,418.000

(e) Subpart G—Dross Reverberatory Furnace Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of dross reverberatory furnace production	
Lead	.000	.000
Zinc	.000	.000

(f) Subpart G—Zinc Fuming Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of blast furnace lead bullion produced	
Lead	.000	.000
Zinc	.000	.000

(g) Subpart G—Hard Lead Refining Slag Granulation.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of hard lead produced	
Lead	.000	.000
Zinc	.000	.000

(h) Subpart G—Hard Lead Refining Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of hard lead produced	
Lead	.000	.000
Zinc	.000	.000

(i) Subpart G—Facility Washdown.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of lead bullion produced	
Lead	.000	.000
Zinc	.000	.000

(j) Subpart G—Employee Handwash.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of lead bullion produced	
Lead	.924	.429
Zinc	3.356	1.326

(k) Subpart G—Respirator Wash.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of lead bullion produced	
Lead	1.434	.639
Zinc	5.406	2.226

(l) Subpart G—Laundering of Uniforms.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of lead bullion produce	
Lead	4.340	2.015
Zinc	15.810	6.510

§ 421.74 Standards of performance for new sources.

Any new source subject to this subpart must achieve the following performance standards:

(a) Subpart G—Sinter Plant Materials Handling Wet Air Pollution Control.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of sinter production	
Lead	.000	.000
Zinc	.000	.000
Total suspended solids	.000	.000
pH	(¹)	(¹)

¹Within the range of 7.0 to 10.0 at all times.

(b) Subpart G—Blast Furnace Wet Air Pollution Control.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of blast furnace lead bullion produced	
Lead	.000	.000
Zinc	.000	.000
Total suspended solids	.000	.000
pH	(1)	(1)

1 Within the range of 7.0 to 10.0 at all times.

(c) Subpart G—Blast Furnace Slag Granulation.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of blast furnance lead bullion produced	
Lead	.000	.000
Zinc	.000	.000
Total suspended solids	.000	.000
pH	(1)	(1)

1 Within the range of 7.0 to 10.0 at all times.

(d) Subpart G—Dross Reverberatory Slag Granulation.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of slag, speiss, or matte granulated	
Lead	.000	.000
Zinc	.000	.000
Total suspended solids	.000	.000
pH	(1)	(1)

1 Within the range of 7.0 to 10.0 at all times.

(e) Subpart G—Dross Reverberatory Furnace Wet Air Pollution Control.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of dross reverberatory furnace production	
Lead	.000	.000
Zinc	.000	.000
Total suspended solids	.000	.000
pH	(1)	(1)

1 Within the range of 7.0 to 10.0 at all times.

(f) Subpart G—Zinc Fuming Wet Air Pollution Control.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of blast furnace lead bullion produced	
Lead	.000	.000
Zinc	.000	.000
Total suspended solids	.000	.000
pH	(1)	(1)

1 Within the range of 7.0 to 10.0 at all times.

(g) Subpart G—Hard Lead Refining Slag Granulation.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of hard lead produced	
Lead	.000	.000
Zinc	.000	.000
Total suspended solids	.000	.000
pH	(1)	(1)

1 Within the range of 7.0 to 10.0 at all times.

(h) Subpart G—Hard Lead Refining Wet Air Pollution Control.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of hard lead produced	
Lead	.000	.000
Zinc	.000	.000
Total suspended solids	.000	.000
pH	(1)	(1)

1 Within the range of 7.0 to 10.0 at all times.

(i) Subpart G—Facility Washdown.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of lead bullion produced	
Lead	.000	.000
Zinc	.000	.000
Total suspended solids	.000	.000
pH	(1)	(1)

Within the range of 7.0 to 10.0 at all times.

(j) Subpart G—Employee Handwash.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of lead bullion produced	
Lead	.924	.429
Zinc	3.366	1.386

NSPS—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Total suspended solids	49.500	39.600
pH	(1)	(1)

Within the range of 7.0 to 10.0 at all times.

(k) Subpart G—Respirator Wash.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of lead bullion produced	
Lead	1.484	.689
Zinc	5.406	2.226
Total suspended solids	79.500	63.600
pH	(1)	(1)

Within the range of 7.0 to 10.0 at all times.

(l) Subpart G—Laundering of Uniforms.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of lead bullion produced	
Lead	4.340	2.015
Zinc	15.810	6.510
Total suspended solids	232.500	186.000
pH	(1)	(1)

Within the range of 7.0 to 10.0 at all times.

§ 421.75 Pretreatment standards for existing sources.

Except as provided in 40 CFR 403.7 and 403.13, any existing source subject to this subpart which introduces pollutants into a publicly owned treatment works mut comply with 40 CFR Part 403 and achieve the following pretreatment standards for existing sources. The mass of wastewater pollutants in primary lead process wastewater introduced into a POTW shall not exceed the following values:

(a) Subpart G—Sinter Plant Materials Handling Wet Air Pollution Control.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of sinter production	
Lead	100.800	40.800
Zinc	367.200	151.200

(b) Subpart G—Blast Furnace Wet Air Pollution Control.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pound per billion pounds) of blast furnace lead bullion produced	
Lead	.000	.000
Zinc	.000	.000

(c) Subpart G—Blast Furnace Slag Granulation.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pound per billion pounds) of blast furance lead bullion produced	
Lead	.000	.000
Zinc	.000	.000

(d) Subpart G—Dross Reverberatory Slag Granulation.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of slag, speiss, or matte granulated	
Lead	1,612.000	748.400
Zinc	5,872.000	2,418.000

(e) Subpart G—Dross Reverberatory Furnance Wet Air Pollution Control.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of dross reverberatory furnace production	
Lead	.000	.000
Zinc	.000	.000

(f) Subpart G—Zinc Fuming Wet Air Pollution Control.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of blast furnace lead bullion produced	
Lead	.000	.000
Zinc	.000	.000

(g) Subpart G—Hard Lead Refining Slag Granulation.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of hard lead produced	
Lead	.000	.000
Zinc	.000	.000

(h) Subpart G—Hard Lead Refining Wet Air Pollution Control.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of hard lead produced	
Lead	.000	.000
Zinc	.000	.000

(i) Subpart G—Facility Washdown.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of lead bullion produced	
Lead	.000	.000
Zinc	.000	.000

(j) Subpart G—Employee Handwash.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of lead bullion produced	
Lead	.924	.428
Zinc	3.366	1.398

(k) Subpart G—Respirator Wash.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of lead bullion produced	
Lead	1.484	.623
Zinc	5.406	2.226

(l) Subpart G—Laundering of Uniforms.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of lead bullion produced	
Lead	4.340	2.015
Zinc	15.810	6.510

§ 421.76 Pretreatment standards for new sources.

Except as provided in 40 CFR 403.7, any new source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for new sources. The mass of wastewater pollutants in primary lead process wastewaters introduced into a POTW shall not exceed the following values.

(a) Subpart G—Sinter Plant Materials Handling Wet Air Pollution Control.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of sinter production	
Lead	.000	.000
Zinc	.000	.000

(b) Subpart G—Blast Furnace Wet Air Pollution Control.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of blast furnace lead bullion produced	
Lead	.000	.000
Zinc	.000	.000

(c) Subpart G—Blast Furnace Slag Granulation.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kkg (pounds per billion pounds) of blast furnace lead bullion produced	
Lead	.000	.000
Zinc	.000	.000

(d) Subpart G—Dross Reverberatory Slag Granulation.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Mg/kkg (pounds per billion pounds) of slag, speiss, or matte granulated		
Lead	.000	.000
Zinc	.000	.000

(e) Subpart G—Dross Reverberatory Furnace Wet Air Pollution Control.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Mg/kkg (pounds per billion pounds) of dross reverberatory furnace production		
Lead	.000	.000
Zinc	.000	.000

(f) Subpart G—Zinc Fuming Wet Air Pollution Control.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Mg/kkg (pounds per billion pounds) of blast furnace lead bullion produced		
Lead	.000	.000
Zinc	.000	.000

(g) Subpart G—Hard Lead Refining Slag Granulation.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per billion pounds) of hard lead produced	
Lead	.000	.000
Zinc	.000	.000

(h) Subpart G—Hard Lead Refining Wet Air Pollution Control.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per billion pounds) of hard lead produced	
Lead	.000	.000
Zinc	.000	.000

(i) Subpart G—Facility Washdown.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per billion pounds) of lead bullion produced	
Lead	.000	.000
Zinc	.000	.000

(j) Subpart G—Employee Handwash.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per billion pounds) of lead bullion produced	
Lead	.924	.429
Zinc	3.366	1.386

(k) Subpart G—Respirator Wash.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per billion pounds) of lead bullion produced	
Lead	1.484	.689
Zinc	5.406	2.226

(l) Subpart G—Laundering of Uniforms.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per billion pounds) of lead bullion produced	
Lead	4.340	2.015
Zinc	15.810	6.510

§ 421.77 [Reserved]

Subpart H—Primary Zinc Subcategory

§ 421.80 Applicability: description of the primary zinc subcategory.

The provisions of this subpart are applicable to discharges resulting from the production of primary zinc by either electrolytic or pyrolytic means.

§ 421.81 Specialized definitions.

For the purpose of this subpart:

(a) Except as provided below, the general definitions, abbreviations, and methods of analysis set forth in 40 CFR 401 shall apply to this subpart.

(b) The term "product" shall mean zinc metal.

§ 421.82 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

Except as provided in 40 CFR 125.30–125.32, any existing point source subject to this subpart shall achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable technology currently available:

EFFLUENT LIMITATIONS

Effluent characteristics	Maximum for any 1 day	Average of Daily values for 30 consecutive days shall not exceed
	Metric Units (kg/kkg of product) English Units (pounds per 1,000 pounds of product)	
TSS	0.42	0.21
As	0.0016	0.0008
Cd	0.008	0.004
Se	0.608	0.04
Zn	0.08	0.04
pH	(1)	(1)

Within the range of 6.0 to 9.0.

§ 421.83 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.

Except as provided in 40 CFR 125.30–125.32, any existing point source subject to this subpart shall achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable:

(a) Subpart H—Zinc Reduction Furnace Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of zinc reduced	
Cadmium	.334	.134
Copper	2.135	1.018
Lead	.467	.217
Zinc	1.702	.701

(b) Subpart H—Preleach of Zinc Concentrates.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of concentrate leached	
Cadmium	.160	.072

BAT EFFLUENT LIMITATIONS—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Copper	1.153	.550
Lead	.252	.117
Zinc	.919	.378

(c) Subpart H—Leaching Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of zinc processed through leaching	
Cadmium	.000	.000
Copper	.000	.000
Lead	.000	.000
Zinc	.000	.000

(d) Subpart H—Electrolyte Bleed Wastewater.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of cathode zinc produced	
Cadmium	.086	.035
Copper	.553	.264
Lead	.121	.056
Zinc	.441	.182

(e) Subpart H—Cathode and Anode Wash Wastewater.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of cathode zinc produced	
Cadmium	.150	.060
Copper	.961	.458
Lead	.210	.098
Zinc	.766	.315

(f) Subpart H—Casting Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of zinc cast	
Cadmium	.051	.021
Copper	.329	.157
Lead	.072	.033
Zinc	.262	.108

(g) Subpart H—Casting Contact Cooling.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of zinc cast	
Cadmium	.033	.014
Copper	.232	.110
Lead	.051	.024
Zinc	.165	.078

(h) Subpart H—Cadmium Plant Wastewater.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of cadmium produced	
Cadmium	1.234	.494
Copper	7.899	3.765
Lead	1.728	.802
Zinc	6.295	2.592

§ 421.84 Standards of performance for new sources.

Any new source subject to this subpart shall achieve the following new source performance standards:

(a) Subpart H—Zinc Reduction Furnace Wet Air Pollution Control.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of zinc reduced	
Cadmium	.334	.134
Copper	2.135	1.018
Lead	.467	.217
Zinc	1.702	.701
Total suspended solids	25.020	20.020
pH	[1]	[1]

[1] Within the range of 7.0 to 10.0 at all times.

(b) Subpart H—Preleach of Zinc Concentrates.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of concentrate leached	
Cadmium	.100	.072
Copper	1.153	.550
Lead	.252	.117
Zinc	.919	.378
Total suspended solids	13.520	10.810
pH	[1]	[1]

[1] Within the range of 7.0 to 10.0 at all times.

(c) Subpart H—Leaching Wet Air Pollution Control.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of zinc processed through leaching	
Cadmium	.000	.000
Copper	.000	.000
Lead	.000	.000
Zinc	.000	.000
Total suspended solids	.000	.000
pH	[1]	[1]

[1] Within the range of 7.0 to 10.0 at all times.

(d) Subpart H—Electrolyte Bleed Wastewater.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of cathode zinc produced	
Cadmium	.086	.035
Copper	.553	.264
Lead	.121	.056
Zinc	.441	.182
Total suspended solids	6.480	5.184
pH	[1]	[1]

[1] Within the range of 7.0 to 10.0 at all times.

(e) Subpart H—Cathode and Anode Wash Wastewater.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of cathode zinc produced	
Cadmium	.150	.060
Copper	.961	.458
Lead	.210	.098
Zinc	.766	.315
Total suspended solids	11270.	9.012
pH	[1]	[1]

[1] Within the range of 7.0 to 10.0 at all times.

(f) Subpart H—Casting Wet Air Pollution Control.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of zinc cast	
Cadmium	.051	.021
Copper	.329	.157
Lead	.072	.033
Zinc	.262	.108
Total suspended solids	3.855	3.084
pH	[1]	[1]

[1] Within the range of 7.0 to 10.0 at all times.

(g) Subpart H—Casting Contact Cooling.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of zinc cast	
Cadmium	.036	.014
Copper	.232	.110
Lead	.051	.024
Zinc	.185	.076
Total suspended solids	2.715	2.172
pH	(¹)	(¹)

¹ Within the range of 7.0 to 10.0 at all times.

(h) Subpart H—Cadmium Plant Wastewater.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of cadmium produced	
Cadmium	1.234	.494
Copper	7.899	3.765
Lead	1.728	.802
Zinc	6.295	2.592
Total suspended solids	92.570	74.050
pH	(¹)	(¹)

¹ Within the range of 7.0 to 10.0 at all times.

§ 421.85 Pretreatment standards for existing sources.

Except as provided in 40 CFR 403.7 and 403.13, any existing source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for existing sources. The mass of wastewater pollutants in primary zinc process wastewater introduced into a POTW shall not exceed the following values:

(a) Subpart H—Zinc Reduction Furnace Wet Air Pollution Control.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of zinc reduced	
Cadmium	.334	.134
Zinc	1.702	.701

(b) Subpart H—Preleach of Zinc Concentrates.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of concentrate leached	
Cadmium	.180	.072
Zinc	.919	.378

(c) Subpart H—Leaching Wet Air Pollution Control.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of zinc processed through leaching	
Cadmium	.000	.000
Zinc	.000	.000

(d) Subpart H—Electrolyte Bleed Wastewater.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of cathode zinc produced	
Cadmium	.086	.035
Zinc	.441	.182

(e) Subpart H—Cathode and Anode Wash Wastewater.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of cathode zinc produced	
Cadmium	.150	.060
Zinc	.768	.315

(f) Subpart H—Casting Wet Air Pollution Control.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of zinc cast	
Cadmium	.051	.021
Zinc	.262	.108

(g) Subpart H—Casting Contact Cooling.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of zinc cast	
Cadmium	.036	.014
Zinc	.185	.076

(h) Subpart H—Cadmium Plant Wastewater.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of cadmium produced	
Cadmium	1.234	.494
Zinc	6.295	2.592

§ 421.86 Pretreatment standards for new sources.

Except as provided in 40 CFR 403.7, any new source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for new sources. The mass of wastewater pollutants in primary zinc process wastewaters introduced into a POTW shall not exceed the following values:

(a) Subpart H—Zinc Reduction Furnace Wet Air Pollution Control.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of zinc reduced	
Cadmium	.334	.134
Zinc	1.702	.701

(b) Subpart H—Preleach of Zinc Concentrates.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of concentrate leached	
Cadmium	.180	.072
Zinc	.919	.378

(c) Subpart H—Leaching Wet Air Pollution Control.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of zinc processed through leaching	
Cadmium	.000	.000
Zinc	.000	.000

(d) Subpart H—Electrolyte Bleed Wastewater.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of cathode zinc produced	
Cadmium	.086	.035
Zinc	.441	.182

(e) Subpart H—Cathode and Anode Wash Wastewater.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of cathode zinc produced	
Cadmium	.150	.060
Zinc	.766	.315

(f) Subpart H—Casting Wet Air Pollution Control.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of zinc cast	
Cadmium	.051	.021
Zinc	.262	.108

(g) Subpart H—Casting Contact Cooling.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of zinc cast	
Cadmium	0.036	0.014
Zinc	0.185	0.076

(h) Subpart H—Cadmium Plant Wastewater.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of cadmium produced	
Cadmium	1.234	0.494
Zinc	6.285	2.592

§ 421.87 [Reserved]

Subpart I—Metallurgical Acid Plants Subcategory

§ 421.90 Applicability: description of the metallurgical acid plants subcategory.

The provisions of this subpart apply to process wastewater discharges resulting from or associated with the manufacture of by-product sulfuric acid at primary copper smelters, primary zinc facilities, and primary lead facilities, including any associated air pollution control or gas-conditioning systems for sulfur dioxide off-gases from pyrometallurgical operations.

§ 421.91 Specialized definitions.

(a) Except as provided below, the general definitions, abbreviations, and methods of analysis set forth in 40 CFR Part 401 apply to this subpart.

(b) The term "product" means 100 percent equivalent sulfuric acid, H^2SO^4 capacity.

§ 421.92 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

Except as provided in 40 CFR 125.30–125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT):

Effluent characteristic	Effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—
	Metric units, kg/kkg of product English units, pounds per 1,000 pounds of product	
Total suspended solids	0.304	0.152
Copper	0.005	0.002
Cadmium	0.00018	0.00009
Lead	0.0018	0.00078
Zinc	0.0036	0.0003
pH	(¹)	(¹)

¹ Within the range of 6.0 to 9.0.

§ 421.93 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.

Except as provided in 40 CFR 125.30–125.32, any existing point source subject to this subpart shall achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable:

Subpart I—Metallurgical Acid Plant

Pollutant or pollutant property	BAT Effluent Limitations	
	Maximum for any 1 day	Maximum for monthly average
	(Mg/kg pounds per million pounds) of 100 pct sulfuric acid capacity	
Arsenic	3.550	1.456
Cadmium	.511	.204
Copper	3.263	1.559
Lead	.715	.332
Zinc	2.605	1.073

§ 421.94 Standards of performance for new sources.

Any new source subject to this subpart shall achieve the following new source performance standards:

Subpart I—Metallurgical Acid Plant

Pollutant or pollutant property	NSPS	
	Maximum for any 1 day	Maximum for monthly average
	(Mg/kg pounds per million pounds) of 100 pct sulfuric acid capacity	
Arsenic	3.550	1.456
Cadmium	.511	.204
Copper	3.263	1.559
Lead	.715	.332
Zinc	2.605	1.073
Total suspended solids	33.310	30.650
pH	(¹)	(¹)

¹ Within the range of 7.0 to 10.0 at all times.

§ 421.95 Pretreatment standards for existing sources.

Except as provided in 40 CFR 403.7 and 403.13, any existing source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for existing sources. The mass of wastewater pollutants in metallurgical acid plant blowdown introduced into a POTW shall not exceed the following values:

SUBPART I—METALLURGICAL ACID PLANT

Pollutant or pollutant property	PSES	
	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of 100 pct sulfuric acid capacity	
Cadmium	0.511	0.204
Zinc	2.605	1.073

§ 421.96 Pretreatment standards for new sources.

Except as provided in 40 CFR 403.7, any new source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for new sources. The mass of wastewater pollutants in metallurgical acid plant blowdown introduced into a POTW shall not exceed the following values:

SUBPART I—METALLURGICAL ACID PLANT

Pollutant or pollutant property	PSNS	
	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of 100 percent sulfuric acid capacity	
Arsenic	3.550	1.456
Cadmium	.511	.204
Copper	3.269	1.558
Lead	.715	.332
Zinc	2.605	1.073

§ 421.97 [Reserved]

Subpart J—Primary Tungsten Subcategory

§ 421.100 Applicability: description of the primary tungsten subcategory.

The provisions of this subpart are applicable to discharges resulting from the production of tungsten at primary tungsten facilities.

§ 421.101 Specialized definitions.

For the purpose of this subpart the general information, abbreviations, and methods of analysis set forth in 40 CFR 401 shall apply to this subpart.

§ 421.102 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

Except as provided in 40 CFR 125.30–125.32, any existing point source subject to this subpart shall achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable technology currently available:

(a) Subpart J—Tungstic Acid Rinse.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tungstic acid produced	
Lead	12.680	6.038
Zinc	44.080	18.420
Ammonia (as N)	4,025.000	1,769.000
Total suspended solids	1,238.000	588.700
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(b) Subpart J—Acid Leach Wet Air Pollution Control.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pound per million pounds) of tungstic acid produced	
Lead	11.070	5.270
Zinc	38.470	16.080
Ammonia (as N)	3,513.000	1,544.000
Total suspended solids	1,081.000	513.800
pH	(1)	(1)

[1] Within tha range of 7.0 to 10.0 at all time.

(c) Subpart J—Alkali Leach Wash.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of sodium tungstate produced	
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000
Total suspended solids	.000	.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(d) Subpart J—Ion-Exchange Raffinate.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of ammonium tungstate produced	
Lead	21.300	10.140
Zinc	74.030	30.930
Ammonia (as N)	6,759.000	2,972.000
Total suspended solids	2,079.000	988.800
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(e) Subpart J—Calcium Tungstate Precipitate Wash.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of calcium tungstate produced	
Lead	19.800	9.428
Zinc	68.830	28.760
Ammonia (as N)	6,284.000	2,763.000
Total suspended solids	1,933.000	919.300
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(f) Subpart J—Cystallization and Drying of Ammonium Paratungstate.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of ammonium paratungstate produced	
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000
Total suspended solids	.000	.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(g) Subpart J—Ammonium Paratungstate Conversion to Oxides Wet Air Pollution Control.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tungstic oxide (WO3) produced	
Lead	9.198	4.380
Zinc	31.080	13.360
Ammonia (as N)	2,919.000	1,284.000
Total suspended solids	897.900	427.100
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(h) Subpart J—Ammonium Paratungstate Coversion to Oxides Water of Formation.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tungstic oxide (WO3)sodium tungstate produced	
Lead	.021	.010
Zinc	.073	.031
Ammonia (as N)	6.665	2.930
Total suspended solids	2.050	.975
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(i) Subpart J—Reduction to Tungsten Wet Air Pollution Control.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tungsten metal produced	
Lead	12.940	6.161
Zinc	44.970	18.790
Ammonia (as N)	4,105.000	1,805.000
Total suspended solids	1,263.000	600.700
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(j) Subpart J—Reduction to Tungsten Water of Formation.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tungsten metal produced	
Lead	.205	.098
Zinc	.714	.298
Ammonia (as N)	65.190	28.660
Total suspended solids	20.050	9.536
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(k) Subpart J—Tungsten Powder Acid Leach and Wash.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tungsten metal produced	
Lead	1.008	.480
Zinc	3.504	1.464
Ammonia (as N)	319.900	140.700
Total suspended solids	98.400	46.800
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(l) Subpart J—Molybdenum Sulfide Precipitation Wet Air Pollution Control.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of molybdenum sulfide precipitated	
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000
Total suspended solids	.000	.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

§ 421.103 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.

Except as provided in 40 CFR 125.30–125.32, any existing point source subject to this subpart shall achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable:

(a) Subpart J—Tungstic Acid Rinse.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tungstic acid produced	
Lead	8.453	3.925
Zinc	30.800	12.680
Ammonia (as N)	4,025.000	1,763.000

(b) Subpart J—Acid Leach Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tungstic acid produced	
Lead	.733	.343
Zinc	2.693	1.107
Ammonia (as N)	351.300	154.400

(c) Subpart J—Alkali Leach Wash.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of sodium tungstate produced	
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000

(d) Subpart J—Ion-Exchange Raffinate.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of ammonium tungstate produced	
Lead	14.200	6.592
Zinc	51.720	21.300
Ammonia (as N)	6,750.000	2,972.000

(e) Subpart J—Calcium Tungstate Precipitate Wash.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of calcium tungstate produced	
Lead	13.200	6.128
Zinc	48.080	19.800
Ammonia (as N)	6,224.000	2,763.000

(f) Subpart J—Crystallization and Drying of Ammonium Paratungstate.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of ammonium paratungstate produced	
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000

(g) Subpart J—Ammonium Paratungstate Conversion to Oxides Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tungstic oxide (WO_3) produced	
Lead	.613	.285
Zinc	2.234	.920
Ammonia (as N)	291.900	128.400

(h) Subpart J—Ammonium Paratungstate Conversion to Oxides Water of Formation.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tungstic oxide (WO_3) produced	
Lead	.014	.007
Zinc	.051	.021
Ammonia (as N)	6.665	2.930

(i) Subpart J—Reduction to Tungsten Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tungsten metal produced	
Lead	.862	.400
Zinc	3.142	1.294
Ammonia (as N)	410.600	[illegible]

(j) Subpart J—Reduction to Tungsten Water of Formation.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tungsten metal produced	
Lead	.137	.064
Zinc	.499	.205
Ammonia (as N)	65.190	28.660

(k) Subpart J—Tungsten Powder Acid Leach and Wash t+1.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tungsten metal produced	
Lead	.672	.312
Zinc	2.448	1.008
Ammonia (as N)	319.900	140.700

(l) Subpart J—Molybdenum Sulfide Precipitation Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of molybdenum sulfide precipitated	
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000

§ 421.104 Standards of performance for new sources.

Any new source subject to this subpart shall achieve the following new source performance standards:

(a) Subpart J—Tungstic Acid Rinse.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tungstic acid produced	
Lead	8.453	3.925
Zinc	30.800	12.680
Ammonia (as N)	4,025.000	1,769.000
Total suspended solids	452.900	362.300
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(b) Subpart J—Acid Leach Wet Air Pollution Control.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tungstic acid produced	
Lead	.738	.343
Zinc	2.688	1.107
Ammonia (as N)	351.300	154.400
Total suspended solids	39.530	31.620
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(c) Subpart J—Alkali Leach Wash.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of sodium tungstate produced	
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000
Total suspended solids	.000	.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(d) Subpart J—Ion-Exchange Raffinate.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of ammonium tungstate produced	
Lead	14.200	6.592
Zinc	51.720	21.300
Ammonia (as N)	6,759.000	2,972.000
Total suspended solids	760.600	608.500
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(e) Subpart J—Calcium Tungstate Precipitate Wash.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of calcium tungstate produced	
Lead	13.200	6.128
Zinc	48.080	19.800
Ammonia (as N)	6,284.000	2,763.000
Total suspended solids	707.100	565.700
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(f) Subpart J—Crystallization and Drying of Ammonium Paratungstate.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of ammonium paratungstate produced	
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000
Total suspended solids	.000	.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(g) Subpart J—Ammonium Paratungstate Conversion to Oxides Wet Air Pollution Control.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tungstic oxide (WO_3) produced	
Lead	.613	.285
Zinc	2.234	.920
Ammonia (as N)	291.900	128.400
Total suspended solids	32 850	26.280
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(h) Subpart J—Ammonium Paratungstate Conversion to Oxides Water of Formation.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tungstic oxide (WO_3) produced	
Lead	.014	.007
Zinc	.051	.021
Ammonia (as N)	6.665	2.930
Total suspended solids	.750	.600
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(i) Subpart J—Reduction to Tungsten Wet Air Pollution Control.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tungsten metal produced	
Lead	.862	.400
Zinc	3.142	1.294
Ammonia (as N)	410.600	180.600
Total suspended solids	46.200	36.960
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(j) Subpart J—Reduction to Tungsten Water of Formation.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tungsten metal produced	
Lead	.137	.064
Zinc	.499	.205
Ammonia (as N)	65.190	28.660
Total suspended solids	7.335	5.868
pH	(¹)	(¹)

¹ Within the range of 7.0 to 10.0 at all times.

(k) Subpart J—Tungsten Powder Acid Leach and Wash.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tungsten metal produced	
Lead	.672	.312
Zinc	2.448	1.008
Ammonia (as N)	319.900	140.700
Total suspended solids	36.000	28.800
pH	(¹)	(¹)

¹ Within the range of 7.0 to 10.0 at all times.

(l) Subpart J—Molybdenum Sulfide Precipitation Wet Air Pollution Control.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of molybdenum sulfide precipitated	
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000
Total suspended solids	.000	.000
pH	(¹)	(¹)

¹ Within the range of 7.0 to 10.0 at all times.

§ 421.105 Pretreatment standards for existing sources.

Except as provided in 40 CFR 403.7 and 403.13, any existing source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for existing sources. The mass of wastewater pollutants in primary tungsten process wastewater introduced into a POTW shall not exceed the following values:

(a) Subpart J—Tungstic Acid Rinse.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tungstic acid produced	
Lead	8.453	3.925
Zinc	30.800	12.680
Ammonia (as N)	4,025.000	1,763.000

(b) Subpart J—Acid Leach Wet Air Pollution Control.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tungstic acid produced	
Lead	.733	.343
Zinc	2.683	1.107
Ammonia (as N)	351.300	154.400

(c) Subpart J—Alkali Leach Wash.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of sodium tungstate produced	
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000

(d) Subpart J—Ion-Exchange Raffinate.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of ammonium tungstate produced	
Lead	14.200	6.592
Zinc	51.720	21.300
Ammonia (as N)	6,759.000	2,972.000

(e) Subpart J—Calcium Tungstate Precipitate Wash.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of calcium tungstate produced	
Lead	13.200	6.129
Zinc	48.000	19.000
Ammonia (as N)	6,284.000	2,763.000

(f) Subpart J—Crystallization and Drying of Ammonium Paratungstate.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of ammonium paratungstate produced	
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000

(g) Subpart J—Ammonium Paratungstate Conversion to Oxides Wet Air Pollution Control.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tungstic oxide (WO3) produced	
Lead	.613	.285
Zinc	2.234	.920
Ammonia (as N)	231.900	123.400

(h) Subpart J—Ammonium Paratungstate Conversion to Oxides Water of Formation.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tungstic oxide (WO3) produced	
Lead	.014	.007
Zinc	.051	.021
Ammonia (as N)	6.665	2.930

(i) Subpart J—Reduction to Tungsten Wet Air Pollution Control.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tungsten metal produced	
Lead	.862	.400
Zinc	3.142	1.294
Ammonia (as N)	410.600	180.500

(j) Subpart J—Reduction to Tungsten Water of Formation.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tungsten metal produced	
Lead	.137	.064
Zinc	.433	.205
Ammonia (as N)	65.190	28.660

(k) Subpart J—Tungsten Powder Acid Leach and Wash.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tungsten metal produced	
Lead	.672	.312
Zinc	2.448	1.008
Ammonia (as N)	319.900	140.700

(l) Subpart J—Molybdenum Sulfide Precipitation Wet Air Pollution Control.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of molybdenum sulfide precipitated	
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000

§ 421.106 Pretreatment standards for new sources.

Except as provided in 40 CFR 403.7, any new source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for new sources. The mass of wastewater pollutants in primary tungsten process wastewater introduced into a POTW shall not exceed the following values:

(a) Subpart J—Tungstic Acid Rinse.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tungstic acid produced	
Lead	8.453	3.925
Zinc	30.800	12.680
Ammonia (as N)	4,025.000	1,769.000

(b) Subpart J—Acid Leach Wet Air Pollution Control.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tungstic acid produced	
Lead	.738	.343
Zinc	2.688	1.107
Ammonia (as N)	351.300	154.400

(C) Subpart J—Alkali Leach Wash.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of sodium tungstate produced	
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000

(d) Subpart J—Ion-Exchange Raffinate.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of ammonium tungstate produced	
Lead	14.200	6.592
Zinc	51.720	21.300
Ammonia (as N)	6,759.000	2,972.000

(e) Subpart J—Calcium Tungstate Precipitate Wash.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of calcium tungstate produced	
Lead	13.200	6.128
Zinc	48.080	19.800
Ammonia (as N)	6,284.000	2,763.000

(f) Subpart J—Crystallization and Drying of Ammonium Paratungstate.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of ammonium paratungstate produced	
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000

(g) Subpart J—Ammonium Paratungstate Conversion to Oxides Wet Air Pollution Control.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tungstic oxide (WO_3) produced	
Lead	.613	.285
Zinc	2.234	.920
Ammonia (as N)	291.900	128.400

(h) Subpart J—Ammonium Paratungstate Conversion to Oxides Water of Formation.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tungstic oxide (WO_3 produced	
Lead	.014	.007
Zinc	.051	.021
Ammonia (as N)	6.665	2.930

(i) Subpart J—Reduction to Tungsten Wet Air Pollution Control.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tungstic metal produced	
Lead	.882	.400
Zinc	3.142	1.294
Ammonia (as N)	410.600	180.500

(j) Subpart J—Reduction to Tungsten Water of Formation.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tungstic metal produced	
Lead	.137	.064
Zinc	.499	.205
Ammonia (as N)	65.190	28.660

(k) Subpart J—Tungsten Powder Acid Leach and Wash.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tungstic metal produced	
Lead	.672	.312
Zinc	2.448	1.008
Ammonia (as N)	319.900	140.700

(l) Subpart J—Molybdenum Sulfide Precipitation Wet Air Pollution Control.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of molybdenum sulfide precipitated	
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000

§ 421.107 [Reserved]

Subpart K—Primary Columbium-Tantalum Subcategory

§ 421.110 Applicability: description of the primary columbium-tantalum subcategory.

The provisions of this subpart are applicable to discharges resulting from the production of columbium or tantalum by primary columbium-tantalum facilities.

§ 421.111 Specialized definitions.

For the purpose of this subpart the general definitions, abbreviations, and methods of analysis set forth in 40 CFR 401 shall apply to this subpart.

§ 421.112 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

Except as provided in 40 CFR 125.30–125.32, any existing point source subject to this subpart shall achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable technology currently available:

(a) Subpart K—Concentrate Digestion Wet Air Pollution Control.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of concentrate digested	
Lead	2.612	1.244
Zinc	9.080	3.794
Ammonia (as N)	829.000	364.500
Fluoride	217.700	124.400
Total suspended solids	255.000	121.300
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(b) Subpart K—Solvent Extraction Raffinate.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of concentrate digested	
Lead	3.845	1.831
Zinc	13.370	5.595
Ammonia (as N)	1,221.000	536.900
Fluoride	320.400	183.100
Total suspended solids	375.400	178.500
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(c) Subpart K—Solvent Extraction Wet Air Pollution Control.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of concentrate digested	
Lead	1.032	.431
Zinc	3.586	1.493
Ammonia (as N)	327.400	143.900
Fluoride	85.950	49.120
Total suspended solids	100.700	47.930
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(d) Subpart K—Precipitation and Filtration.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of concentrate digested	
Lead	5.750	2.733
Zinc	19.990	8.359
Ammonia (as N)	1,825.000	802.200
Fluoride	479.100	273.800
Total suspended solids	561.300	267.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(e) Subpart K—Precipitation and Filtration Wet Air Pollution Control.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of concentrate digested	
Lead	26.690	12.700
Zinc	82.730	33.740
Ammonia (as N)	8,465.000	3,722.000
Fluoride	2,223.000	1,270.000
Total suspended solids	2,604.000	1,233.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(f) Subpart K—Tantalum Salt Drying.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tantalum salt dried	
Lead	25.430	12.110
Zinc	88.330	36.930
Ammonia (as N)	8,070.000	3,548.000
Fluoride	2,119.000	1,211.000
Total suspended solids	2,492.000	1,181.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(g) Subpart K—Oxides Calcining Wet Air Pollution Control.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of columbium-tantalum oxide dried	
Lead	16.140	7.685
Zinc	56.100	23.440
Ammonia (as N)	5,122.000	2,252.000
Fluoride	1,345.000	768.500
Total suspended solids	1,576.000	749.200
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(h) Subpart K—Reduction of Tantalum Salt to Metal.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tantalum salt reduced	
Lead	69.750	33.220
Zinc	242.500	101.300
Ammonia (as N)	22,140.000	9,732.000
Fluoride	5,813.000	3,322.000
Total suspended solids	6,809.000	3,233.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(i) Subpart K—Reduction of Tantalum Salt to Metal Wet Air Pollution Control.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tantalum salt reduced	
Lead	.858	.409
Zinc	2.933	1.246
Ammonia (as N)	272.400	119.700
Fluoride	71.510	40.860
Total suspended solids	83.770	39.840
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(j) Subpart K—Tantalum Powder Wash.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tantalum power washed	
Lead	8.582	4.087
Zinc	29.830	12.470
Ammonia (as N)	2,724.000	1,198.000
Fluoride	715.200	408.700
Total suspended solids	837.800	398.500
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(k) Subpart K—Consolidation and Casting Contact Cooling.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of columbium or tantalum cast or consolidated	
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000
Fluoride	.000	.000
Total suspended solids	.000	.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

§ 421.113 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.

Except as provided in 40 CFR 125.30–125.32, any existing point source subject to this subpart shall achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable:

(a) Subpart K—Concentrate Digestion Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of concentrate digested	
Lead	.174	.081
Zinc	.635	.261
Ammonia (as N)	82.910	36.450
Fluoride	21.770	12.440

(b) Subpart K—Solvent Extraction Raffinate.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of concentrate digested	
Lead	2.564	1.190
Zinc	9.338	3.845
Ammonia (as N)	1,221.000	536.500
Fluoride	320.400	183.100

(c) Subpart K—Solvent Extraction Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of concentrate digested	
Lead	.069	.032
Zinc	.251	.103
Ammonia (as N)	32.790	14.420
Fluoride	8.610	4.920

(d) Subpart K—Precipitation and Filtration.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of concentrate digested	
Lead	3.833	1.780
Zinc	13.960	5.750
Ammonia (as N)	1,825.000	802.200
Fluoride	479.100	273.800

(e) Subpart K—Precipitation and Filtration Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of concentrate digested	
Lead	1.778	.826
Zinc	6.478	2.668
Ammonia (as N)	846.600	372.200
Fluoride	222.300	127.000

(f) Subpart K—Tantalum Salt Drying.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tantalum salt dried	
Lead	16.950	7.871
Zinc	61.750	25.430
Ammonia (as N)	8,070.000	3,548.000

BAT EFFLUENT LIMITATIONS—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Fluoride	2,119.000	1,211.000

(g) Subpart K—Oxides Calcining Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of columbium-tantalum oxide	
Lead	1.076	.500
Zinc	3.919	1.614
Ammonia (as N)	512.200	225.200
Fluoride	134.500	76.840

(h) Subpart K—Reduction of Tantalum Salt to Metal.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tantalum salt reduced	
Lead	46.500	21.590
Zinc	169.400	69.750
Ammonia (as N)	22,140.000	9,732.000
Fluoride	5,813.000	3,322.000

(i) Subpart K—Reduction of Tantalum Salt to Metal Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tantalum salt reduced	
Lead	.572	.266
Zinc	2.084	.858
Fluoride	71.510	40.860

(j) Subpart K—Tantalum Powder Wash.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tantalum powder washed	
Lead	5.721	2.656
Zinc	20.840	8.582
Ammonia (as N)	2,724.000	1,198.000
Fluoride	715.200	408.700

(k) Subpart K—Consolidation and Casting Contact Cooling.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of columbium or tantalum cast or consolidated	
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000
Fluoride	.000	.000

§ 421.114 Standards of performance for new sources.

Any new source subject to this subpart shall achieve the following new source performance standards:

(a) Subpart K—Concentrate Digestion Wet Air Pollution Control.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of concentrate digested	
Lead	.174	.081
Zinc	.635	.261
Ammonia (as N)	82.910	36.450
Fluoride	21.770	12.440
Total suspended solids	9.330	7.464
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(b) Subpart K—Solvent Extraction Raffinate.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of concentrate digested	
Lead	2.564	1.190
Zinc	9.338	3.845
Ammonia (as N)	1,221.000	536.500
Fluoride	320.400	183.100
Total suspended solids	137.300	109.900
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(c) Subpart K—Solvent Extraction Wet Air Pollution Control.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of concentrate digested	
Lead	.069	.032
Zinc	.251	.103
Ammonia (as N)	32.790	14.420
Fluoride	8.610	4.920
Total suspended solids	3.690	2.952
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(d) Subpart K—Precipitation and Filtration.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of concentrate digested	
Lead	3.833	1.780
Zinc	13.900	5.750
Ammonia (as N)	1,825.000	802.200
Fluoride	479.100	273.800
Total suspended solids	205.400	164.300
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(e) Subpart K—Precipitation and Filtration Wet Air Pollution Control.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of concentrate digested	
Lead	1.770	.826
Zinc	6.478	2.663
Ammonia (as N)	846.000	372.200
Fluoride	222.300	127.000
Total suspended solids	95.270	76.210
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(f) Subpart K—Tantalum Salt Drying.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tantalum salt dried	
Lead	16.850	7.871
Zinc	61.750	25.430
Ammonia (as N)	8,070.000	3,549.000
Fluoride	2,118.000	1,211.000
Total suspended solids	908.200	726.500
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(g) Subpart K—Oxides Calcining Wet Air Pollution Control.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of columbium-tantalum oxide dried	
Lead	1.076	.500
Zinc	3.919	1.614
Ammonia (as N)	512.200	225.200
Fluoride	134.500	76.840
Total suspended solids	57.630	46.110
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(h) Subpart K—Reduction of Tantalum Salt to Metal.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tantalum salt reduced	
Lead	45.500	21.590
Zinc	163.400	69.750
Ammonia (as N)	22,140.000	9,732.000
Fluoride	5,813.000	3,322.000
Total suspended solids	2,431.000	1,993.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(i) Subpart K—Reduction of Tantalum Salt to Metal Wet Air Pollution Control.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tantalum salt reduced	
Lead	.572	.266
Zinc	2.024	.858
Ammonia (as N)	272.400	119.700
Fluoride	71.510	40.860
Total suspended solids	30.650	24.520
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(j) Subpart K—Tantalum Powder Wash.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tantalum powder washed	
Lead	5.721	2.656
Zinc	20.840	8.582
Ammonia (as N)	2,724.000	1,198.000
Fluoride	715.200	408.700
Total suspended solids	306.500	245.200
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(k) Subpart K—Consolidation and Casting Contact Cooling.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of columbium or tantalum cast or consolidated	
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000
Fluoride	.000	.000
Total suspended solids	.000	.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

§ 421.115 Pretreatment standards for existing sources.

Except as provided in 40 CFR 403.7 and 403.13, any existing source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for existing sources. The mass of wastewater pollutants in primary columbium-tantalum process wastewater introduced into a POTW shall not exceed the following values:

(a) Subpart K—Concentrate Digestion Wet Air Pollution Control.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of concentrate digested	
Lead	.174	.081
Zinc	.635	.261
Ammonia (as N)	82.910	36.450
Fluoride	21.770	12.440

(b) Subpart K—Solvent Extraction Raffinate.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of concentrate digested	
Lead	2.564	1.190
Zinc	9.338	3.845
Ammonia (as N)	1,221.000	536.500
Fluoride	320.400	183.100

(c) Subpart K—Solvent Extraction Wet Air Pollution Control.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of concentrate digested	
Lead	.069	.032
Zinc	.251	.103
Ammonia (as N)	32.790	14.420
Fluoride	8.610	4.920

(d) Subpart K—Precipitation and Filtration.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of concentrate digested	
Lead	3.833	1.780
Zinc	13.960	5.750
Ammonia (as N)	1,825.000	802.200
Fluoride	479.100	273.800

(e) Subpart K—Precipitation and Filtration Wet Air Pollution Control.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of concentrate digested	
Lead	1.778	.826
Zinc	6.478	2.668
Ammonia (as N)	846.600	372.200
Fluoride	222.300	127.000

(f) Subpart K—Tantalum Salt Drying.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tantalum salt dried	
Lead	16.950	7.871
Zinc	61.750	25.430
Ammonia (as N)	8,070.000	3,548.000
Fluoride	2,119.000	1,211.000

(g) Subpart K—Oxides Calcining Wet Air Pollution Control.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of columbium-tantalum oxide dried	
Lead	1.076	.500
Zinc	3.919	1.614
Ammonia (as N)	512.200	225.200
Fluoride	134.500	76.840

(h) Subpart K—Reduction of Tantalum Salt to Metal.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tantalum salt reduced	
Lead	46.500	21.590
Zinc	169.400	69.750
Ammonia (as N)	22,140.000	9,732.000
Fluoride	5,813.000	3,322.000

(i) Subpart K—Reduction of Tantalum Salt to Metal Wet Air Pollution Control.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tantalum salt reduced	
Lead	.572	.260
Zinc	2.084	.858
Ammonia (as N)	272.400	119.700
Fluoride	71.510	40.860

(j) Subpart K—Tantalum Powder Wash.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tantalum powder washed	
Lead	5.721	2.656
Zinc	20.840	8.582
Ammonia (as N)	2,724.000	1,198.000
Fluoride	715.200	409.700

(k) Subpart K—Consolidation and Casting Contact Cooling.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of columbium or tantalum cast or consolidated	
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000
Fluoride	.000	.000

§ 421.116 Pretreatment standards for new sources.

Except as provided in 40 CFR 403.7, any new source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for new sources. The mass of wastewater pollutants in primary columbium-tantalum process wastewater introduced into a POTW shall not exceed the following values:

(a) Subpart K—Concentrate Digestion Wet Air Pollution Control.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of concentrate digested	
Lead	.174	.081
Zinc	.635	.261
Ammonia (as N)	82.910	36.450
Fluoride	21.770	12.440

(b) Subpart K—Solvent Extraction Raffinate.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of concentrate digested	
Lead	2.564	1.190
Zinc	9.338	3.845
Ammonia (as N)	1,221.000	536.500
Fluoride	320.400	183.100

(c) Subpart K—Solvent Extraction Wet Air Pollution Control.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of concentrate digested	
Lead	.069	.032
Zinc	.251	.103
Ammonia (as N)	32.790	14.420
Fluoride	8.610	4.920

(d) Subpart K—Precipitation and Filtration.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of concentrate digested	
Lead	3.833	1.780
Zinc	13.960	5.750
Ammonia (as N)	1,825.000	802.200
Fluoride	479.100	273.800

(e) Subpart K—Precipitation and Filtration Wet Air Pollution Control.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of concentrate digested	
Lead	1.778	.826
Zinc	6.478	2.669
Ammonia (as N)	846.600	372.200
Fluoride	222.300	127.000

(f) Subpart K—Tantalum Salt Drying.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tantalum salt dried	
Lead	16.950	7.871
Zinc	61.750	25.430
Ammonia (as N)	8,070.000	3,548.000
Fluoride	2,119.000	1,211.000

(g) Subpart K—Oxides Calcining Wet Air Pollution Control.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of columbium-tantalum oxide dried	
Lead	1.076	.500
Zinc	3.919	1.614
Ammonia (as N)	512.200	225.200
Fluoride	134.500	76.840

(h) Subpart K—Reduction of Tantalum Salt to Metal.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tantalum salt reduced	
Lead	46.500	21.590
Zinc	103.400	63.750
Ammonia (as N)	22,140.000	9,732.000
Fluoride	5,813.000	3,322.000

(i) Subpart K—Reduction of Tantalum Salt to Metal Wet Air Pollution Control.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tantalum salt reduced	
Lead	.572	.265
Zinc	2.034	.859
Ammonia (as N)	272.400	119.700
Fluoride	71.510	40.850

(j) Subpart K—Tantalum Powder Wash.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of tantalum powder washed	
Lead	5.721	2.656
Zinc	20.840	8.582
Ammonia (as N)	2,724.000	1,198.000
Fluoride	715.200	408.700

(k) Subpart K—Consolidation and Casting Contact Cooling.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of columbium or tantalum cast or consolidated	
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000
Fluoride	.000	.000

§ 421.117 [Reserved]

Subpart L—Secondary Silver Subcategory

§ 421.120 Applicability: description of the secondary silver subcategory.

The provisions of this subpart are applicable to discharges resulting from the production of silver from secondary silver facilities processing protographic and nonphotographic raw materials.

§ 421.121 Specialized definitions.

For the purpose of this subpart the general definitions, abbreviations, and methods of analysis set forth in 40 CFR 401 shall apply to this subpart.

§ 421.122 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

Except as provided in 40 CFR 125.30–125.32, any existing point source subject to this subpart shall achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable technology currently available:

(a) Subpart L—Film Stripping.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver from film stripping	
Copper	95.670	50.350

BPT EFFLUENT LIMITATIONS—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Zinc	73.510	30.720
Ammonia (as N)	6,712.000	2,951.000
Total suspended solids	2,065.000	981.800
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(b) Subpart L—Film Stripping Wet Air Pollution Control and Precipitation and Filtration of Film Stripping Solutions Wet Air Pollution Control.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver from precipitation and filtration of film stripping solutions	
Copper	1.843	.970
Zinc	1.416	.592
Ammonia (as N)	129.300	56.840
Total suspended solids	39.770	18.920
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(c) Subpart L—Precipitation and Filtration of Film Stripping Solutions.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver precipitated	
Copper	109.400	57.570
Zinc	84.050	35.120
Ammonia (as N)	7,674.000	3,374.000
Total suspended solids	2,361.000	1,123.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(d) Subpart L—Precipitation and Filtration of Photographic Solutions,

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver precipitated	
Copper	50.540	26.600
Zinc	38.836	16.226
Ammonia (as N)	3,545.000	1,559.000
Total suspended solids	1,090.600	518.700
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(e) Subpart L—Precipitation and Filtration of Photographic Solutions Wet Air Pollution Control.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver from precipitation and filtration of photographic solutions	
Copper	23.070	12.140
Zinc	17.730	7.408
Ammonia (as N)	1,618.000	711.400
Total suspended solids	497.800	236.800
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(f) Subpart L—Electrolytic Refining.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver from electrolytic refining	
Copper	1.444	.760
Zinc	1.110	.464
Ammonia (as N)	101.300	44.540
Total suspended solids	31.160	14.820
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(g) Subpart L—Furnace Wet Air Pollution Control.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver roasted, smelted, or dried	
Copper	1.273	.670
Zinc	.978	.409
Ammonia (as N)	69.310	39.260
Total suspended solids	27.470	13.070
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(h) (Subpart L—Leaching.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver produced from leaching	
Copper	.164	.086
Zinc	.126	.053
Ammonia (as N)	11.470	5.040
Total suspended solids	3.526	1.677
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(i) Subpart L—Leaching Wet Air Pollution Control and Precipitation of Nonphotographic Solutions Wet Air Pollution Control.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver produced from leaching or silver precipitated	
Copper	8.417	4.430
Zinc	6.468	2.703
Ammonia (as N)	590.500	259.600
Total suspended solids	181.700	86.390
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(j) Subpart L—Precipitation and Filtration of Nonphotographic Solutions.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver precipitated	
Copper	5.833	3.070
Zinc	4.482	1.873
Ammonia (as N)	409.300	179.900
Total suspended solids	125.900	59.870
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(k) Subpart L—Floor and Equipment Washdown.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver production	
Copper	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000
Total suspended solids	.000	.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

§ 421.123 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.

Except as provided in 40 CFR 125.30–125.32, any existing point source subject to this subpart shall achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable:

(a) Subpart L—Film Stripping.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver from film stripping	
Copper	64.450	30.720
Zinc	51.360	21.150

BAT EFFLUENT LIMITATIONS—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Ammonia (as N)	6,712.000	2,951.000

(b) Subpart L—Film Stripping Wet Air Pollution Control and Precipitation and Filtration of Film Stripping Solutions Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver from precipitation and filtration of film stripping solutions	
Copper	1.242	.592
Zinc	.990	.408
Ammonia (as N)	129.300	56.840

(c) Subpart L—Precipitation and Filtration of Film Stripping Solutions.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver precipitated	
Copper	73.690	35.120
Zinc	58.720	24.160
Ammonia (as N)	7,674.000	3,374.000

(d) Subpart L—Precipitation and Filtration of Photographic Solutions.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver precipitated	
Copper	34.048	16.226
Zinc	27.132	11.172
Ammonia (as N)	3,545.000	1,559.000

(e) Subpart L—Precipitation and Filtration of Photographic Solutions Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver from precipitation and filtration of photographic solutions	
Copper	15.540	7.406
Zinc	12.380	5.039
Ammonia (as N)	1,618.000	711.400

(f) Subpart L—Electrolytic Refining.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver from electrolytic refining	
Copper	.973	.464
Zinc	.775	.318
Ammonia (as N)	101.300	44.540

(g) Subpart L—Furnace Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver roasted, smelted, or dried	
Copper	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000

(h) Subpart L—Leaching.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver produced from leaching	
Copper	.110	.053
Zinc	.089	.036
Ammonia (as N)	11.470	5.040

(i) Subpart L—Leaching Wet Air Pollution Control and Precipitation of Nonphotographic Solutions Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver produced from leaching or silver precipitated	
Copper	5.671	2.703
Zinc	4.518	1.861
Ammonia (as N)	589.000	259.000

(j) Subpart L—Precipitation and Filtration of Nonphotographic Solutions.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver precipitated	
Copper	3.930	1.873
Zinc	3.132	1.289
Ammonia (as N)	403.300	173.900

(k) Subpart L—Floor and Equipment Washdown.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver production	
Copper	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000

§ 421.124 Standards of performance for new sources.

Any new source subject to this subpart shall achieve the following new source performance standards:

(a) Subpart L—Film Stripping.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver from film stripping	
Copper	64.450	30.720
Zinc	51.360	21.150
Ammonia (as N)	6,712.000	2,951.000
Total suspended solids	755.300	604.200
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(b) Subpart L—Film Stripping Wet Air Pollution Control and Precipitation and Filtration of Film Stripping Solutions Wet Air Pollution Control.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver from precipitation and filtration of film stripping solutions	
Copper	1.242	.592
Zinc	.990	.408
Ammonia (as N)	129.300	56.840
Total suspended solids	14.550	11.640
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(c) Subpart L—Precipitation and Filtration of Film Stripping Solutions.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of silver precipitated	
Copper	73.690	35.120
Zinc	58.720	24.180
Ammonia (as N)	7,674.000	3,374.000
Total suspended solids	863.600	690.900
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(d) Subpart L—Precipitation and Filtration of Photographic Solutions.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver precipitated	
Copper	34.048	16.226
Zinc	27.132	11.172
Ammonia (as N)	3,545.000	1,559.000
Total suspended solids	399.000	319.200
pH	(¹)	(¹)

¹ Within the range of 7.0 to 10.0 at all times.

(e) Subpart L—Precipitation and Filtration of Photographic Solutions Wet Air Pollution Control.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver from precipitation and filtration of photographic solutions	
Copper	15.540	7.406
Zinc	12.380	5.099
Ammonia (as N)	1,618.000	711.400
Total suspended solids	182.100	145.700
pH	(¹)	(¹)

¹ Within the range of 7.0 to 10.0 at all times.

(f) Subpart L—Electrolytic Refining.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver from electrolytic refining	
Copper	.973	.464
Zinc	.775	.319
Ammonia (as N)	101.300	44.540
Total suspended solids	11.400	9.120
pH	(¹)	(¹)

¹ Within the range of 7.0 to 10.0 at all times.

(g) Subpart L—Furnace Wet Air Pollution Control.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver roasted, smelted, or dried	
Copper	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000
Total suspended solids	.000	.000
pH	(¹)	(¹)

¹ Within the range of 7.0 to 10.0 at all times.

(h) Subpart L—Leaching.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver produced from leaching	
Copper	.110	.053
Zinc	.088	.036
Ammonia (as N)	11.470	5.040
Total suspended solids	1.290	1.032
pH	(¹)	(¹)

¹ Within the range of 7.0 to 10.0 at all times.

(i) Subpart L—Leaching Wet Air Pollution Control and Precipitation of Nonphotographic Solutions Wet Air Pollution Control.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver produced from leaching or silver precipitated	
Copper	5.671	2.703
Zinc	4.519	1.861
Ammonia (as N)	590.500	259.600
Total suspended solids	66.450	53.160
pH	(¹)	(¹)

¹ Within the range of 7.0 to 10.0 at all times.

(j) Subpart L—Precipitation and Filtration of Nonphotograhic Solutions.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver precipitated	
Copper	3.930	1.873
Zinc	3.132	1.290
Ammonia (as N)	409.300	179.900
Total suspended solids	46.050	36.840
pH	(¹)	(¹)

¹ Within the range of 7.0 to 10.0 at all times.

(k) Subpart L—Floor and Equipment Washdown.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver production	
Copper	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000
Total suspended solids	.000	.000
pH	(¹)	(¹)

¹ Within the range of 7.0 to 10.0 at all times.

§ 421.125 Pretreatment standards for existing sources.

Except as provided in 40 CFR 403.7 and 403.13, any existing source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for existing sources. The mass of wastewater pollutants in secondary silver process wastewater introduced into a POTW must not exceed the following values.

(a) Subpart L—Film Stripping.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver from film stripping	
Copper	64.450	30.720
Zinc	51.360	21.150
Ammonia (as N)	6,712.000	2,951.000

(b) Subpart L—Film Stripping Wet Air Pollution Control and Precipitation and Filtration of Film Stripping Solutions Wet Air Pollution Control.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver from precipitation and filtration of film stripping solutions	
Copper	1.242	.592
Zinc	.990	.408
Ammonia (as N)	129.300	56.840

(c) Subpart L—Precipitation and Filtration of Film Stripping Solutions.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver precipitated	
Copper	73.690	35.120
Zinc	58.720	24.180
Ammonia (as N)	7,674.000	3,374.000

(d) Subpart L—Precipitation and Filtration of Photographic Solutions.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver precipitated	
Copper	34.048	16.226
Zinc	27.132	11.172
Ammonia (as N)	3,545.000	1,559.000

(e) Subpart L—Precipitation and Filtration of Photographic Solutions Wet Air Pollution Control.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver from precipitation and filtration of photographic solutions	
Copper	15.540	7.406
Zinc	12.380	5.099
Ammonia (as N)	1,618.000	711.400

(f) Subpart L—Electrolytic Refining.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver from electrolytic refining	
Copper	.973	.464
Zinc	.775	.319
Ammonia (as N)	101.300	44.540

(g) Subpart L—Furnace Wet Air Pollution Control.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver roasted, smelted, or dried	
Copper	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000

(h) Subpart L—Leaching.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver produced from leaching	
Copper	.110	.053
Zinc	.088	.036
Ammonia (as N)	11.470	5.040

(i) Subpart L—Leaching Wet Air Pollution Control and Precipitation of Nonphotographic Solutions Wet Air Pollution Control.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver produced from leaching or silver precipitated	
Copper	5.671	2.703
Zinc	4.519	1.861
Ammonia (as N)	590.500	259.600

(j) Subpart L—Precipitation and Filtration of Nonphotographic Solutions.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver precipitated	
Copper	3.930	1.873
Zinc	3.132	1.290
Ammonia (as N)	409.300	179.900

(k) Subpart L—Floor and Equipment Washdown.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver production	
Copper	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000

§ 421.126 Pretreatment standards for new sources.

Except as provided in 40 CFR 403.7, any new source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for new sources. The mass of wastewater pollutants in secondary silver process wastewater introduced into a POTW shall not exceed the following values:

(a) Subpart L—Film Stripping.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver from film stripping	
Copper	64.450	30.720
Zinc	51.350	21.150
Ammonia (as N)	6,712.000	2,851.000

(b) Subpart L—Film Stripping Wet Air Pollution Control and Precipitation and Filtration of Film Stripping Solutions Wet Air Pollution Control.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver from precipitation and filtration of film stripping solutions	
Copper	1.242	.592
Zinc	.930	.403
Ammonia (as N)	129.300	56.849

(c) Subpart L—Precipitation and Filtration of Film Stripping Solutions.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver precipitated	
Copper	73.630	35.120
Zinc	53.720	24.180
Ammonia (as N)	7,674.000	3,374.000

(d) Subpart L—Precipitation and Filtration of Photographic Solutions.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver precipitated	
Copper	34.048	16.226
Zinc	27.132	11.172
Ammonia (as N)	3,545.000	1,553.000

(e) Subpart L—Precipitation and Filtration of Photographic Solutions Wet Air Pollution Control.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver from precipitation and filtration of photographic solutions	
Copper	15.540	7.406
Zinc	12.380	5.099
Ammonia (as N)	1,618.000	5.099.711.400
Ammonia (as N)	1,618.000	711.400

(f) Subpart L—Electrolytic Refining.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver from electrolytic refining	
Copper	.973	.464
Zinc	.775	.319
Ammonia (as N)	101.300	44.540

(g) Subpart L—Furnace Wet Air Pollution Control.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver roasted, smelted or dried	
Copper	.000	000
Zinc	.000	.000
Ammonia (as N)	.000	.000

(h) Subpart L—Leaching.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver produced from leaching	
Copper	.110	.053
Zinc	.088	.036
Ammonia (as N)	11.470	5.040

(i) Subpart L—Leaching Wet Air Pollution Control and Precipitation of Nonphotographic Solutions Wet Air Pollution Control.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver produced from leaching or silver precipitated	
Copper	5.671	2.703
Zinc	4.519	1.861
Ammonia (as N)	590.500	259.600

(j) Subpart L—Precipitation and Filtration of Nonphotographic Solutions.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver precipitated	
Copper	3.930	1.873
Zinc	3.132	1.290
Ammonia (as N)	409.300	179.900

(k) Subpart L—Floor and Equipment Washdown.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/troy ounce of silver production	
Copper	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000

§ 421.127 [Reserved].

Subpart M—Secondary Lead Subcategory

§ 421.130 Applicability: description of the secondary lead subcategory.

The provisions of this subpart are applicable to discharges resulting from the production of lead by secondary lead facilities.

§ 421.131 Specialized definitions.

For the purpose of this subpart the general definitions, abbreviations, and methods of analysis set forth in 40 CFR 401 shall apply to this subpart.

§ 421.132 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

Except as provided in 40 CFR 125.30–125.32, any existing point source subject to this subpart shall achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable technology currently available:

(a) Subpart M—Battery Cracking

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead scrap produced	
Antimony	1.932	.862
Arsenic	1.407	.579
Lead	.283	.135
Zinc	.983	.411
Ammonia (as N)	.000	.000
Total suspended solids	27.600	13.130
pH	(¹)	(¹)

¹ Within the range of 7.0 to 10.0 at all times.

(b) Subpart M—Blast, Reverberatory, or Rotary Furnace Wet Air Pollution Control

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead produced from smelting	
Antimony	7.491	3.341
Arsenic	5.455	2.245
Lead	1.096	.522
Zinc	3.811	1.592
Ammonia (as N)	.000	.000
Total suspended solids	107.000	50.900
pH	(¹)	(¹)

¹ Within the range of 7.0 to 10.0 at all times.

(c) Subpart M—Kettle Wet Air Pollution Control

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead produced from refining	
Antimony	.129	.058
Arsenic	.094	.039
Lead	.019	.009
Zinc	.066	.027
Ammonia (as N)	.000	.000
Total suspended solids	1.845	.878
pH	(¹)	(¹)

¹ Within the range of 7.0 to 10.0 at all times.

(d) Subpart M—Lead Paste Desulfurization

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead processed through desulfurization	
Antimony	.000	.000
Arsenic	.000	.000
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000
Total suspended solids	.000	.000
pH	(¹)	(¹)

¹ Within the range of 7.0 to 10.0 at all times.

(e) Subpart M—Casting Contact Cooling

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead cast	
Antimony	.634	.283
Arsenic	.462	.190
Lead	.093	.044
Zinc	.323	.135
Ammonia (as N)	.000	.000
Total suspended solids	9.061	4.310
pH	(¹)	(¹)

¹ Within the range of 7.0 to 10.0 at all times.

(f) Subpart M—Truck Wash.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead produced from smelting	
Antimony	.060	.027
Arsenic	.044	.018
Lead	.009	.004
Zinc	.031	.013
Ammonia (as N)	.000	.000
Total suspended solids	.861	.410
pH	(¹)	(¹)

¹ Within the range of 7.0 to 10.0 at all times.

(g) Subpart M—Facility Washdown

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead produced from smelting	
Antimony	.000	.000
Arsenic	.000	.000
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000
Total suspended solids	.000	.000
pH	(¹)	(¹)

¹ Within the range of 7.0 to 10.0 at all times.

(h) Subpart M—Battery Case Classification.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead scrap produced	
Antimony	.000	.000
Arsenic	.000	.000
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000
Total suspended solids	.000	.000
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(i) Subpart M—Employee Handwash.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead produced from smelting	
Antimony	.077	.035
Arsenic	.056	.023
Lead	.011	.005
Zinc	.039	.016
Ammonia (as N)	.000	.000
Total suspended solids	1.107	.527
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(j) Subpart M—Employee Respirator Wash.

BPT EFFULENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead produced from smelting	
Antimony	.126	.056
Arsenic	.092	.038
Lead	.018	.009
Zinc	.064	.027
Ammonia (as N)	.000	.000
Total suspended solids	1.804	.858
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(k) Subpart M—Laundering of Uniforms.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead produced from smelting	
Antimony	.367	.164
Arsenic	.268	.110
Lead	.054	.026
Zinc	.187	.076
Ammonia (as N)	.000	.000
Total suspended solids	5.248	2.496
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

§ 421.133 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.

Except as provided in 40 CFR 125.30–125.32, any existing point source subject to this subpart shall achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable:

(a) Subpart M—Battery Cracking.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead scrap produced	
Antimony	1.233	.578
Arsenic	.836	.394
Lead	.189	.097
Zinc	.697	.233
Ammonia (as N)	.000	.000

(b) Subpart M—Blast, Reverberatory, or Rotary Furnace Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead produced from smelting	
Antimony	5.033	2.245
Arsenic	3.628	1.493
Lead	.731	.333
Zinc	2.682	1.036
Ammonia (as N)	0.000	0.000

(c) Subpart M—Kettle Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead produced from refining	
Antimony	.037	.033
Arsenic	.053	.026
Lead	.013	.006
Zinc	.046	.019
Ammonia (as N)	.000	.000

(d) Subpart M—Lead Paste Desulfurization.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead processed through desulfurization	
Antimony	.000	.000
Arsenic	.000	.000
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000

(e) Subpart M—Casting Contact Cooling.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead cast	
Antimony	.042	.019
Arsenic	.031	.013
Lead	.006	.003
Zinc	.022	.009
Ammonia (as N)	.000	.000

(f) Subpart M—Truck Wash.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead produced from smelting	
Antimony	.041	.018
Arsenic	.029	.012
Lead	.006	.003
Zinc	.021	.009
Ammonia (as N)	.000	.000

(g) Subpart M—Facility Washdown.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead produced from smelting	
Antimony	.000	.000
Arsenic	.000	.000
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000

(h) Subpart M—Battery Case Classification.

BAT EFFLUENT LIMITATIONS

Pollutant pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead scrap produced	
Antimony	.000	.000
Arsenic	.000	.000

BAT EFFLUENT LIMITATIONS—Continued

Pollutant pollutant property	Maximum for any 1 day	Maximum for monthly average
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000

(i) Subpart M—Employee Handwash.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead produced from smelting	
Antimony	.052	.023
Arsenic	.038	.015
Lead	.008	.004
Zinc	.028	.011
Ammonia (as N)	.000	.000

(j) Subpart M—Employee Respirator Wash.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead produced from smelting	
Antimony	.085	.038
Arsenic	.061	.025
Lead	.012	.006
Zinc	.045	.018
Ammonia (as N)	.000	.000

(k) Subpart M—Laundering of Uniforms.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead produced from smelting	
Antimony	.247	.110
Arsenic	.178	.073
Lead	.036	.017
Zinc	.131	.054
Ammonia (as N)	.000	.000

§ 421.134 Standards of performance for new sources.

Any new source subject to this subpart shall achieve the following new source performance standards:

(a) Subpart M—Battery Cracking.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead scrap produced	
Antimony	1.299	.579
Arsenic	.936	.384
Lead	.169	.087
Zinc	.687	.283
Ammonia (as N)	.000	.000
Total suspended solids	10.100	8.076
pH	(¹)	(¹)

¹ Within the range of 7.0 to 10.0 at all times.

(b) Subpart M—Blast, Reverberatory, or Rotary Furnace Wet Air Pollution Control.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead produced from smelting	
Antimony	5.038	2.245
Arsenic	3.628	1.488
Lead	.731	.339
Zinc	2.662	1.096
Ammonia (as N)	0.000	0.000
Total suspended solids	39.150	31.320
pH	(¹)	(¹)

¹ Within the range of 7.0 to 10.0 at all times.

(c) Subpart M—Kettle Wet Air Pollution Control.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead produced from refining	
Antimony	.000	.000
Arsenic	.000	.000
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000
Total suspended solids	.000	.000
pH	(¹)	(¹)

¹ Within the range of 7.0 to 10.0 at all times.

(d) Subpart M—Lead Paste Desulfurization.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead processed through desulfurization	
Antimony	.000	.000
Arsenic	.000	.000
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000
Total suspended solids	.000	.000
pH	(¹)	(¹)

¹ Within the range of 7.0 to 10.0 at all times.

(e) Subpart M—Casting Contact Cooling.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead cast	
Antimony	.042	.019
Arsenic	.031	.013
Lead	.006	.003
Zinc	.022	.009
Ammonia (as N)	.000	.000
Total suspended solids	.330	.264
pH	(¹)	(¹)

¹ Within the range of 7.0 to 10.0 at all times.

(f) Subpart M—Truck Wash.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead produced from smelting	
Antimony	.041	.018
Arsenic	.029	.012
Lead	.006	.003
Zinc	.021	.009
Ammonia (as N)	.000	.000
Total suspended solids	.315	.252
pH	(¹)	(¹)

¹ Within the range of 7.0 to 10.0 at all times.

(g) Subpart M—Facility Washdown.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead produced from smelting	
Antimony	.000	.000
Arsenic	.000	.000
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000
Total suspended solids	.000	.000
pH	(¹)	(¹)

¹ Within the range of 7.0 to 10.0 at all times.

(h) Subpart M—Battery Case Classification.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead scrap produced	
Antimony	.000	.000
Arsenic	.000	.000
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000
Total suspended solids	.000	.000
pH	(¹)	(¹)

¹ Within the range of 7.0 to 10.0 at all times.

(i) Subpart M—Employee Handwash.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead produced from smelting	
Antimony	.052	.023
Arsenic	.038	.015
Lead	.008	.004
Zinc	.028	.011
Ammonia (as N)	.000	.000
Total suspended solids	.405	.324
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(j) Subpart M—Employee Respirator Wash.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead produced from smelting	
Antimony	.085	.038
Arsenic	.061	.025
Lead	.012	.006
Zinc	.045	.018
Ammonia (as N)	.000	.000
Total suspended solids	.660	.528
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

(k) Subpart M—Laundering of Uniforms.

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead produced from smelting	
Antimony	.247	.110
Arsenic	.178	.073
Lead	.036	.017
Zinc	.131	.054
Ammonia (as N)	.000	.000
Total suspended solids	1.920	1.536
pH	(1)	(1)

[1] Within the range of 7.0 to 10.0 at all times.

§ 421.135 Pretreatment standards for existing sources.

Except as provided in 40 CFR 403.7 and 403.13, any existing source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for existing sources. The mass of wastewater pollutants in secondary lead process wastewater introduced into a POTW shall not exceed the following values:

(a) Subpart M—Battery Cracking.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead scrap produced	
Antimony	1.233	.579
Arsenic	.809	.334
Lead	.180	.087
Zinc	.637	.263
Ammonia (as N)	.000	.000

(b) Subpart M—Blast, Reverberatory, or Rotary Furnace Wet Air Pollution Control.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead produced from smelting	
Antimony	5.093	2.245
Arsenic	3.628	1.493
Lead	.731	.339
Zinc	2.602	1.036
Ammonia (as N)	.000	.000

(c) Subpart M—Kettle Wet Air Pollution Control.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead produced from refining	
Antimony	.087	.039
Arsenic	.063	.026
Lead	.013	.006
Zinc	.046	.019
Ammonia (as N)	.000	.000

(d) Subpart M—Lead Paste Desulfurization.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead processed through desulfurization	
Antimony	.000	.000
Arsenic	.000	.000
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000

(e) Subpart M—Casting Contact Cooling.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead cast	
Antimony	.042	.019
Arsenic	.031	.013
Lead	.006	.003
Zinc	.022	.009
Ammonia (as N)	.000	.000

(f) Subpart M—Truck Wash.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead produced from smelting	
Antimony	.041	.018
Arsenic	.029	.012
Lead	.006	.003
Zinc	.021	.009
Ammonia (as N)	.000	.000

(g) Subpart M—Facility Washdown.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead produced from smelting	
Antimony	.000	.000
Arsenic	.000	.000
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000

(h) Subpart M—Battery Case Classification.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead scrap produced	
Antimony	.000	.000
Arsenic	.000	.000
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000

(i) Subpart M—Employee Handwash.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead produced from smelting	
Antimony	.052	.023
Arsenic	.038	.015
Lead	.008	.004
Zinc	.028	.011

PSES—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Ammonia (as N)	.000	.000

(j) Subpart M—Employee Respirator Wash.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead produced from smelting	
Antimony	.085	.038
Arsenic	.061	.025
Lead	.012	.006
Zinc	.045	.018
Ammonia (as N)	.000	.000

(k) Subpart M—Laundering of Uniforms.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead produced from smelting	
Antimony	.247	.110
Arsenic	.178	.073
Lead	.036	.017
Zinc	.131	.054
Ammonia (as N)	.000	.000

§ 421.136 Pretreatment standards for new sources.

Except as provided in 40 CFR 403.7, any new source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for new sources. The mass of wastewater pollutants in secondary lead process wastewater introduced into a POTW shall not exceed the following values:

(a) Subpart M—Battery Cracking.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead scrap produced	
Antimony	1.299	.579
Arsenic	.936	.384
Lead	.189	.087
Zinc	.687	.283
Ammonia (as N)	.000	.000

(b) Subpart M—Blast, Reverberatory, or Rotary Furnace Wet Air Pollution Control.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead produced from smelting	
Antimony	5.038	2.245
Arsenic	3.628	1.488
Lead	.731	.339
Zinc	2.662	1.096
Ammonia (as N)	.000	.000

(c) Subpart M—Kettle Wet Air Pollution Control.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead produced from refining	
Antimony	.000	.000
Arsenic	.000	.000
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000

(d) Subpart M—Lead Paste Desulfurization.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead processed through desulfurization	
Antimony	.000	.000
Arsenic	.000	.000
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000

(e) Subpart M—Casting Contact Cooling.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead cast	
Antimony	.042	.019
Arsenic	.031	.013
Lead	.008	.003
Zinc	.022	.009
Ammonia (as N)	.000	.000

(f) Subpart M—Truck Wash.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead produced from smelting	
Antimony	.041	.018
Arsenic	.029	.012
Lead	.008	.003
Zinc	.021	.009
Ammonia (as N)	.000	.000

(g) Subpart M—Facility Washdown.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead produced from smelting	
Antimony	.000	.000
Arsenic	.000	.000
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000

(h) Subpart M—Battery Case Classification.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead scrap produced	
Antimony	.000	.000
Arsenic	.000	.000
Lead	.000	.000
Zinc	.000	.000
Ammonia (as N)	.000	.000

(i) Subpart M—Employee Handwash.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead produced from smelting	
Antimony	.052	.023
Arsenic	.038	.015
Lead	.008	.004
Zinc	.028	.011
Ammonia (as N)	.000	.000

(j) Subpart M—Employee Respirator Wash.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead produced from smelting	
Antimony	.085	.038
Arsenic	.061	.025

PSNS—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Lead	.012	.006
Zinc	.045	.018
Ammonia (as N)	.000	.000

(k) Subpart M—Laundering of Uniforms.

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Mg/kg (pounds per million pounds) of lead produced from smelting	
Antimony	.247	.110
Arsenic	.178	.073
Lead	.036	.017
Zinc	.131	.054
Ammonia (as N)	.000	.000

§ 421.137 [Reserved]

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