

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: Proposed regulation.

SUMMARY: EPA is proposing effluent limitations guidelines and standards under the Clean Water Act to limit effluent discharges to waters of the United States and the introduction of pollutants into publicly owned treatment works (POTW) from particular nonferrous metals manufacturing facilities. The Clean Water Act and a consent decree require EPA to propose and promulgate this regulation. The purpose of this action is to propose effluent limitations based on best practicable technology, best available technology and best conventional technology, new source performance standards based on best demonstrated technology, and pretreatment standards for existing and new indirect dischargers. After considering comments received in response to this proposal, EPA will promulgate a final rule.

DATES: Comments on this proposal must be submitted by April 18, 1983.

ADDRESSES: Send comments to: Mr. James R. Berlow, Effluent Guidelines Division (WH-552), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460, Attention: Nonferrous Metals Manufacturing Comments. Technical information and copies of technical documents may be obtained from Mr. James R. Berlow, Effluent Guidelines Division, U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460 or call 202/382-7126. The economic analysis may be obtained from Mr. John Kukulka, Economic Analysis Staff (WH-586), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460, or call 202/382-5388.

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

SUPPLEMENTARY INFORMATION:

Overview

This preamble describes the legal authority and background, the technical and economic bases, and other aspects of the proposed regulations. It also summarizes comments on a draft

technical document circulated in November 1979, and solicits comments on specific areas of interest. The abbreviations, acronyms, and other terms used in the Supplementary Information section are defined in Appendix A to this notice.

This proposed regulation are supported by three major documents available from EPA. 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 *General Development Document for Effluent Limitations Guidelines and Standards for the Nonferrous Metals Manufacturing Point Source Category* and the subcategory supplements. The Agency's economic analysis is found in *Economic Impact Analysis of Effluent Limitations Guidelines and Standards for the Nonferrous Metals Manufacturing Point Source Category*.

The supporting information and all comments on this proposal will be available for inspection and copying at the EPA Public Information Reference Unit, Room 2402 (Rear) (EPA Library). The EPA public information regulation (40 CFR Part 2) provides that a reasonable fee may be charged for copying.

The reporting or recordkeeping (information) provisions in this rule have been submitted for approval to the Office of Management and Budget (OMB) under Section 3504(h) of the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.* Any final rule will explain how its reporting or recordkeeping provisions respond to any OMB or public comments.

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I. Legal Authority

EPA is proposing the regulation described in this notice 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) ("the Act"). These regulations also are proposed 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 additional orders of August 25, 1982 and October 26, 1982.

II. Background

A. The Clean Water Act and the Settlement Agreement

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). By July 1, 1977, existing industrial dischargers were

required to achieve "effluent limitations requiring the application of the best practicable control technology currently available" ("BPT"), Section 301(b)(1)(A). By July 1, 1983, these dischargers were required to achieve "effluent limitations requiring the application of the best available technology economically achievable—which will result in reasonable further progress toward the national goal of eliminating the discharge of all pollutants" ("BAT"), Section 301(b)(2)(A). New industrial direct dischargers were required to comply with Section 306 new source performance standards ("NSPS"), based on best available demonstrated technology; and new and existing discharges to publicly owned treatment works ("POTW") were subject to pretreatment standards under Sections 307 (b) and (c) of the Act. The requirements for direct discharge were to be incorporated into National Pollutant Discharge Elimination System (NDPES) permits issued under Section 402 of the Act. Pretreatment standards were made enforceable directly against dischargers to POTW (indirect dischargers).

Although Section 402(a)(1) of the 1972 Act authorized the setting of requirements for direct discharges on a case-by-case basis, Congress intended that, for the most part, control requirements would be based on regulations promulgated by the Administrator of EPA. Section 304(b) of the Act required the Administrator to promulgate regulations providing guidelines for effluent limitations setting forth the degree of effluent reduction attainable through the application of BPT and BAT. Moreover, Section 304(c) and 306 of the Act required promulgation of regulations for NSPS, and Section 304(f), 307(b), and 307(c) required promulgation of regulations for pretreatment standards. In addition to these regulations for designated industry categories, Section 307(a) of the Act required the Administrator to promulgate effluent standards applicable to all dischargers of toxic pollutants. Finally, Section 501(a) of the Act authorized the Administrator to prescribe any additional regulations "necessary to carry out his functions" under the Act.

EPA was unable to promulgate many of these regulations by the dates contained in the Act. In 1976, EPA was sued by several environmental groups, and in settlement of this lawsuit, EPA and the plaintiffs executed a "Settlement Agreement" which was approved by the District Court. This Agreement required EPA to develop a

program and adhere to a schedule for promulgating for 21 major industries BAT effluent limitations guidelines, pretreatment standards, and new source performance standards for 65 "priority" pollutants and classes of pollutants. 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 additional orders of August 25, 1982 and October 26, 1982.

On December 27, 1977, the President signed into law the Clean Water Act of 1977. Although this law makes several important changes in the Federal water pollution control program; its most significant feature is its incorporation into the Act of several of the basic elements of the Settlement Agreement program for toxic pollution control. Sections 301(b)(2)(A) and 301(b)(2)(C) of the Act now require the achievement by July 1, 1984 of effluent limitations, requiring application of BAT for "toxic" pollutants, including the 65 "priority" pollutants and classes pollutants which Congress declared "toxic" under Section 307(a) of the Act. Likewise, EPA's programs for new source performance standards and pretreatment standards are now aimed principally at toxic pollutant controls. Moreover, to strengthen the toxics control program, Section 304(e) of the Act authorizes the Administrator to prescribe "best management practices" ("BMP") 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.

The 1977 Amendments added Section 301(b)(2)(E) to the Act establishing "best conventional pollutant control technology" (BCT) for discharges of conventional pollutants from existing industrial point sources. Conventional pollutants are those mentioned specifically in Section 304(a)(4) (biochemical oxygen demands, TSS coliform, and pH), and any additional pollutants defined by the Administrator as "conventional." (To date, the Agency has added one such pollutant, oil and grease, 44 FR 44501, July 30, 1979.)

BCT is not an additional limitation but replaces BAT for the control of conventional pollutants. In addition to other factors specified in Section 304(b)(4)(B), the Act requires that BCT limitations be assessed 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 for similar levels of reduction in their discharge 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 50372). 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 had argued that a second cost test was not required.)

On October 29, 1982, the Agency proposed a revised BCT methodology. 47 FR 49176. This methodology has been applied to each of the Subcategories and is discussed in Section XIII of this preamble.

For non-toxic, nonconventional pollutants, Sections 301(b)(2)(A) and (b)(2)(F) require achievement of BAT effluent limitations within three years after their establishment or July 1, 1984, whichever is later, but not later than July 1, 1987.

The purpose of this proposed regulation is to provide effluent limitations guidelines for BPT, BAT and BCT, and to establish NSPS, pretreatment standards for existing source, (PSES), and pretreatment standards for new sources (PSNS), under Sections 310, 304, 306, 307, and 501 of the Clean Water Act.

B. Prior EPA Regulations

EPA already has promulgated effluent limitations and standards pretreatment standards for certain nonferrous metals manufacturing subcategories. These regulations, and the technological basis are summarized below.

Primary Aluminum Subcategory. EPA has promulgated BPT, BAT, NSPS, and PSNS in this subcategory. 39 FR 12822 (March 26, 1974). BPT is based on lime precipitation and sedimentation technology. BAT is based on this technology and flow reduction; NSPS and PSNS are based on the same technology and additional flow reduction.

Secondary Aluminum Subcategory. Existing regulations in this subcategory cover BPT, BAT, NSPS, PSES and PSNS. See 39 FR 12822 (March 26, 1974) and 41 FR 54854 (December 15, 1976) (establishing pretreatment standards). BPT is based on lime precipitation and sedimentation with pH adjustment to control ammonia. BAT is no discharge of

wastewater pollutants, PSES is based on oil skimming, pH adjustment and ammonia air stripping, while NSPS and PSNS are based on lime precipitation and sedimentation and flow reduction. (Promulgated NSPS and PSNS are less stringent than BAT and PSES because the processes believed to be necessary to achieve zero discharge were not demonstrated in 1974 or 1976, but we believed they would be demonstrated by the time of the BAT and PSES compliance dates.)

Primary Copper Smelting. Existing regulations cover BPT and BAT. Current BPT, the most recently promulgated regulation, is no discharge of process wastewater pollutants subject to an exception for unlimited discharge of the volume of water falling within impoundments in excess of the 10-year, 24-hour storm (known as a catastrophic precipitation event) when a storm of at least that magnitude occurred. See 45 FR 44926 (July 2, 1980). Existing BAT, promulgated earlier (40 FR 8523 (February 27, 1975)), is presently less stringent than BPT, allowing as exemptions to zero discharge a similar unlimited discharge for stormwater (except the allowance is for a volume of wastewater in excess of a 25-year, 10-hour storm), and a further discharge during any calendar month equal in volume to the difference between precipitation on and evaporation from the impoundment during that month. This later discharge is subject to concentration-based limitations.

Primary Electrolytic Copper Refining. Existing regulations cover BPT and BAT. The BPT regulation for this subcategory allows a mass-based continuous discharge based on lime precipitation and sedimentation. 45 FR 44926 (July 2, 1980). The BAT regulation promulgated earlier (40 FR 8524 (December 15, 1976)) is impoundment rather than hardware-based, and establish a mass-based continuous discharge limitation, based on flow reduction, lime precipitation, sedimentation, and the same allowances for catastrophic stormwater discharge and net precipitation discharge described for primary copper smelting, above. (Refiners located in areas of net evaporation, however, cannot discharge process wastewaters, based on the use of solar evaporation. The monthly net precipitation and catastrophic discharges may be discharged.)

Secondary Copper. EPA has established BPT, BAT and PSES in this subcategory. BPT and BAT, based on the presence of impoundments (or cooling tower circuits), require no discharge of process wastewater pollutants with allowances for

catastrophic stormwater discharge and net precipitation discharge as described above when impoundments are used¹ instead of cooling tower circuits. See 40 FR 8526 (February 27, 1975). PSES, promulgated later (41 FR 54854 (December 15, 1976)) is based on lime precipitation and sedimentation.

Primary Lead. The existing BPT and BAT limitations in this subcategory are based on impoundments. See 40 FR 8527 (February 27, 1975). These limitations provide for no discharge of process wastewater pollutants, with exemptions for catastrophic stormwater and new precipitation discharge of acid plant blowdown (subject to mass limitations) and monthly net precipitation on impoundments.

Primary Zinc. We have promulgated BPT and BAT in this subcategory. See 40 FR 8528 (February 27, 1975). These limitations are based on lime precipitation and sedimentation technology for BPT, with flow reduction added for BAT.

Metallurgical Acid Plants. This subcategory was established in 1980, and presently includes only acid plants. (i.e., plants recovering by-product sulfuric acid from sulfur dioxide smelter air emissions) associated with primary copper smelting operations. See 45 FR 44926. Primary lead and zinc plants also have associated acid plants, but their discharges presently are covered under the primary lead and zinc subcategories. BPT for copper smelting acid plants is based on lime precipitation and sedimentation.

The Agency has not proposed or adopted regulations for primary columbium-tantalum, primary tungsten, secondary silver or secondary lead subcategories.

Table 1 indicates the regulations currently in place for phase I of the nonferrous metals manufacturing category.

We are proposing today to amend some of these existing regulations, but to leave others in place. As a general matter, we are not amending existing BPT regulations, the only exception being in the primary lead subcategory. We also are including zinc and lead acid plants within the metallurgical acid plant subcategory, to be subject to the existing BPT limitations.

We are proposing today to amend all existing BAT, NSPS, PSES and PSNS limitations and standards. Our reasons for all of these decisions are stated later in the preamble.

TABLE 1.—CURRENTLY PROMULGATED LIMITATIONS AND STANDARDS—NONFERROUS METALS MANUFACTURING

Subcategory	BPT	BAT	NSPS	PSES	PSNS
Primary aluminum.....	LS	LS, FR	LS, FR ¹		LS, FR ¹
Secondary aluminum.....	LS, pH	ND	LS, FR	OS, pH, AS	LS, FR
Primary copper smelting.....	ND ²	ND ^{2,3}			
Primary electrolytic copper refining.....	LS	LS, FR ²			
Secondary copper.....	ND ²	ND ^{2,3}		LS	
Primary lead.....	ND ^{2,3}	ND ^{2,3}			
Primary zinc.....	LS	LS, FR			
Metallurgical acid plants ⁴	LS				
Primary tungsten.....					
Primary columbium tantalum.....					
Secondary silver.....					
Secondary lead.....					

¹Includes additional flow reduction beyond BAT.

²Allows a discharge without limitation during a 10-year, 24-hour rainfall (or 25-year, 24-hour rainfalls at BAT) for stormwater falling on the wastewater cooling or settling pond.

³Allows a discharge, subject to concentration limitations, for a flow equal to the net monthly precipitation on the wastewater settling pond.

⁴Copper acid plants only; zinc and lead acid plants are currently covered in the primary zinc and primary lead subcategories.

LS=lime precipitation and sedimentation.

FR=flow reduction.

ND=no discharge.

OS=oil skimming.

pH=pH adjustment.

AS=ammonia air stripping.

C. Overview of the Category

The nonferrous metals manufacturing category includes plants producing primary metals from ore concentrates and recovering secondary metals from recycled metallic wastes (aluminum cans, lead batteries, etc.). 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 proposed 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 21 primary metals and metal groups, 15 secondary metals and metal groups and bauxite refining, will be considered separately and is scheduled for proposal in September, 1983. 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 XVII of this preamble). These metals were excluded from regulation either because the manufacturing processes do not use water or because they are regulated by toxics limitations and standards in other categories (ferroalloys and inorganic chemicals). EPA also has studied the segments of the nonferrous metals industry associated with forming or casting nonferrous metals. Proposed regulations for aluminum forming (47 FR 52626), copper forming (47 FR 51278), and metal molding and casting (47 FR 51512) were issued in November, 1982. The forming of metals other than aluminum and copper will be addressed in a proposed regulation for nonferrous metals forming that is scheduled for September, 1983.

There are 314 plants in the phase I subcategories which, according to EPA estimates, employ 61,000 people and annually generate raw wastes containing approximately 5 million kilograms of toxic pollutants. There are 76 (25 percent) direct dischargers which currently discharge 2 million kg/yr of toxic pollutants and there are 58 (18 percent) indirect dischargers which currently discharge an additional 76,000 kg/yr of toxics. There are 180 plants in this category (57 percent) that do not discharge process wastewater.

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 proposing discharge limitations standards for each of the wastewater sources identified below. The limitation for an individual plant would then be the sum of all limitations or standards 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-seven plants are direct dischargers and the remaining four 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 electrolytic cells used in the Hall-Heroult Process are called pots. These pots, ranging in size from 1.8 x 5.5 to 4.3 x 12.8 meters (6 x 18 to 14 x 42 feet), are made of cast iron and lined with carbon. This carbon lining serves as the cathode in the electrolytic circuit, collecting aluminum ions from the electrolyte. Large numbers of these pots (from 100 to 250 cells) are hooked electrically in series. This forms the potline, the basic production unit of the reduction plant. Potlines are generally contained in one or two long, ventilated buildings called potrooms. The electrolyte is a solution of cryolite, a double fluoride salt of calcium and aluminum. Alumina is periodically added to and dissolved in the electrolyte solution. The cells are heated to about 950 C, and when an electrical current is passed through the molten cryolite, the alumina is converted to aluminum ions. These ions then migrate to the cathode, where they are reduced to aluminum. The molten aluminum, because of its heavier weight, collects in the bottom of the pot, forming a layer beneath the cryolite solution.

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The electrolytic cells used in the Hall-Heroult Process are called pots. These pots, ranging in size from 1.8 x 5.5 to 4.3 x 12.8 meters (6 x 18 to 14 x 42 feet), are made of cast iron and lined with carbon. This carbon lining serves as the cathode in the electrolytic circuit, collecting aluminum ions from the electrolyte molten bath. Large numbers of these pots (from 100 to 250 cells) are hooked electrically in series. This forms the potline, the basic production unit of the reduction plant. Potlines are generally contained in one or two long, ventilated buildings called potrooms. The molten electrolyte bath is a solution of cryolite, a double fluoride salt of calcium and aluminum. Alumina is periodically added to and dissolved in the molten cryolite. The cells are heated to about 950 C, and when an electrical current is passed through the molten cryolite, the alumina is converted to aluminum ions. These ions then migrate to the cathode, where they are reduced to aluminum. The molten aluminum,

because of its heavier weight, collects in the bottom of the pot, forming a layer beneath the cryolite solution.

The anode is the electrical counterpart of the cathode in the electrolytic cell. The anode used in the primary aluminum industry is made from coal tar pitch and petroleum or metallurgical coke and when electrically connected is given a positive charge. This positive charge attracts negative ions from the cryolite solution, transferring the positive charge to the aluminum. This is the manner in which the positive aluminum ions, which are attracted to the negatively charged cathode, are formed. Additionally, the carbon anode reacts with by-product oxygen to form carbon monoxide and carbon dioxide. Thus, the anode is consumed by the process of charge transfer and must be replaced periodically. Potline cells are generally operated with currents of from 80,000 to 100,000 amperes. Anodes used in the Hall-Heroult Process are of two basic types: prebaked and Soderberg anodes. Fabrication of these anode types is initiated in the same manner. Coal tar pitch and ground coke are blended together to form a paste. Operations included in the paste plant are crushing, screening, calcining, and grinding and mixing. Anode preparation releases particulates, tars, oils, and hydrocarbons to the air.

When manufacturing prebaked anodes, the paste is formed into green (unbaked), free-standing anodes. These green anodes are then cast and baked in an anode bake plant housing a ring furnace or tunnel kiln. During baking, an electrical connector, a steel or ion electrode, is bonded to the anode. The prebaked anode is gradually consumed by the electrolysis and eventually becomes too short to be effective. The resulting anode "butts," as they are commonly referred to, are recycled for use in the paste plant and replaced by fresh anodes.

The alternative to the prebaked anode is the Soderberg anode. In the Soderberg process, the anode paste is used in the electrolytic cell without further processing. The paste is periodically fed into a rectangular steel compartment above the pot. The heat of the chemical reaction in the pot then bakes the paste, fusing the new material with the old anode. The tip of this anode projects through the steel shell into the electrolyte. As the tip is oxidized, constant replacement of the anode is possible. Two configurations exist in the aluminum industry using the Soderberg process: (1) The Horizontal Stud Soderberg (HSS) process and (2) the Vertical Stud Soderberg (VSS) process.

The HSS system uses horizontal studs or pins to support the anode body, while the VSS system uses vertical pins. In the horizontal Soderberg process, the holding pins are adjusted from the side of the pot, while in the vertical Soderberg process the pins are adjusted from the top.

It is essential for purity of the product aluminum and the structural integrity of the cell that the molten aluminum be isolated from the iron shell. If the pot was left unlined, the iron would react with the electrolytic bath, and an iron-aluminum alloy would be the result of the electrolysis. Therefore, a carbon liner is used. A service life of up to three years may be attained for a properly installed liner in a well-managed cell, but an average life of between two and three years is reported to be more common.

Upon failure of a liner, the cell is emptied, cooled, and removed from the cell room to a working area. By mechanical drilling or soaking in water, the shell is stripped of old lining material, which may be processed through a wet cryolite facility for recovery of fluoride values or simply set aside in a storage yard.

Potlining or cathode manufacture is sometimes preceded by the in-plant grinding of the anthracite in a wet ball mill. Subsequent filtration and settling process steps result in the production of a wastewater. Four primary aluminum plants reported the presence of this wastewater stream. Potline cells emit gases and oils. The molten aluminum collected in the bottom of the electrolytic pots is tapped and conveyed to holding furnaces for subsequent degassing and alloying. Degassing is performed by injecting chlorine gas (sometimes with nitrogen and carbon dioxide) into the molten metal to remove hydrogen. The addition of gas to the melt also mixes the aluminum to assure that all materials added concurrently for alloying are distributed evenly in the molten aluminum.

Casting is the final step at most reduction plants. Pigs and sows are cast in conventional molds (stationary casting), while direct chill (DC) and continuous rod casting may be used for other shapes. In DC casting, molten aluminum is poured into a bottomless water-cooled mold, and after surface solidification is completed. In continuous drops down through a series of water sprays into a water-filled pit where solidification is completed. In continuous rod casting, a ring mold is fitted into the edge of a rotating casting wheel. Molten aluminum is then poured into the mold and cools as the wheel/mold assembly rotates. After the wheel has rotated

about 180 degrees, the pliable aluminum bar is released. Contact cooling water is used for cooling of the molten aluminum after it is cast.

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

(1) *Anode paste wet air pollution control* wastewater results from wet scrubbers used to control process emissions from the paste plant; it contains toxic organics 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 water* is used to quench the anodes after they are formed; the wastewater contains suspended solids.

(4) *Cathode manufacturing* wastewater results from the manufacture of cathodes to be used in the electrolytic cells; the wastewater contains toxic organics and suspended solids.

(5) *Cathode reprocessing* wastewater results from the recovery of electrolytic solutions and the removal of the cathode lining; it contains toxic organics, cyanide, 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) *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.

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

(9) *Direct chill 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 55 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 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. Thirty-four of these facilities achieve zero discharge through evaporation and recycle. Eight plants are direct dischargers and 13 are indirect dischargers.

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

Scrap pretreatment involves preparing the raw material for further processing removing contaminants. There are three general methods of pretreating scrap: mechanical, hydrometallurgical, and pyrometallurgical, with the method used being dependent on the type of scrap. The mechanical method consists of shredding, classifying, baling, crushing and screening. Hydrometallurgical treatment involves leaching with water and pyrometallurgical processing requires burning or drying and sweating.

Residues, such as drosses, skimmings, and slags, are treated by both wet and dry methods. The wet process involves leaching with water to remove contaminants. Such as fluxing salts from the drosses and slags. The dry process consists of crushing, screening, and iron removal by magnetic separation. The smelting and refining step in secondary aluminum processing consists of five substeps: charging scrap to the furnace; addition of fluxing agents; addition of alloying agents; demagging or degassing; and skimming.

Scrap is charged to the furnace continuously or by batch. The molten charge is then fluxed. There are two general types of fluxes: cover fluxes that are used to reduce oxidation of the melt by air and solvent fluxes that react with contaminants such as nonmetallics, residues from burned coatings, and dirt to form insolubles which float on the surface of the melt as slag.

Next, alloying agents are added to the melt in varying amounts according to production specifications. Copper, silicon, manganese, magnesium or zinc are typical alloys added. Mixing the furnace contents is necessary to assure uniform composition. Nitrogen or other inert gases may be injected to aid in the mixing.

The next step, demagging is accomplished by chlorination. Chlorine gas is normally used although other chlorinating agents such as anhydrous aluminum chloride or chlorinated

organics are sometimes used. The chlorine gas is injected under pressure through tubes or lances into the molten aluminum. As the chlorine bubbles to the surface it reacts with the aluminum to form aluminum chloride, which then reacts with the magnesium to form magnesium chloride which floats to the surface and is skimmed off. Degassing is normally done by lancing the melt with nitrogen, chlorine, or mixtures of the two to remove dissolved hydrogen, oxygen, and moisture. Other techniques include the use of vibration, vacuum, and solidification with remelting.

In the skimming step, the dross or slag with its associated impurities is skimmed from the molten aluminum. The cooled slag is stored for shipment to a residue processor, recycled or discarded.

The molten aluminum is cast into ingots, billets, notched bars or shot. Cooling of direct chill cast aluminum is accomplished by a combination of contact and noncontact cooling water; air cooling is generally used to cool aluminum by stationary means.

The principal sources of wastewater in the secondary aluminum industry 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 of 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, chloride, fluoride and suspended solids characterize this wastewater.

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

Primary Copper Smelting

The primary copper smelting industry consists of 20 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 are two direct dischargers, no indirect dischargers, and 18 zero dischargers.

In smelting copper sulfide concentrates, six processes may be used. However, at several facilities these processes, discussed below, may not be used or combined in several ways. The processes used depend on the age of the facility and the raw materials.

Concentrated copper sulfide ore contains various impurities; however, the major impurity of the ore is iron sulfide. In the first step, roasting, the iron sulfide contained within the ore is converted to iron oxide and sulfur dioxide gas. Off-gases from this process are treated in a sulfuric acid plant to remove smelting furnace for separation of copper sulfide and iron oxide. In this process fluxing agents are added to form an iron silicate slag which floats to the top of the charge and is removed. Oftentimes two separate processes are not required so that roasting and smelting may take place in one furnace.

Copper matte, tapped from the smelting furnace, is composed of copper sulfides and iron sulfides not removed during the smelting operation. The copper matte is charged to a furnace where additional air and fluxing agents are added to remove any remaining iron sulfide or oxide. After the iron sulfides and oxides are removed, compressed air is blown through the charge to convert the copper sulfide to copper oxide and sulfur dioxide. After this conversion process, further purification of the copper is required to prevent the interference of impurities in refining processes or to improve physical characteristics such as ductility and conductivity. Fire refining is very similar to the conversion process in that compressed air is blown through the copper sulfide to copper oxide and sulfur dioxide. After this conversion process, further purification of the copper is required to prevent the interference of impurities in refining processes or to improve physical characteristics such as ductility and conductivity. Fire refining is very similar to the conversion process in that compressed air is blown through the molten copper. Impurities within the charge oxidize and rise to the surface and are skimmed off. Repeated iterations of oxidizing and skimming are performed until the copper has become completely oxidized. Reducing agents are then added to convert the copper oxide to copper, reducing the oxygen concentration to approximately 0.3 percent.

The copper recovered from the fire refining process is cast for further marketing. Depending on the intended use of the copper, it may be cast into shapes that can be formed, or cast into usable shapes for further refining.

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

(1) *Slag granulation* wastewater results from the conditioning of slag tapped from the furnaces. Wastewater from this operation contains impurities 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

The primary electrolytic copper refining industry consists of 15 refining and electrowinning facilities located along maritime centers and in the southwest near smelters. Four of these facilities are direct dischargers while 11 achieve zero discharge. The average age of these facilities is approximately 30 years, while 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.

At the refinery, anodes and starter sheets of electrolytic refined copper are suspended in solutions of sulfuric acid and copper sulfate. Through electrolysis, positive copper ions from the anode migrate through the copper sulfate-sulfuric acid medium and are deposited on the starter sheet which has become the cathode. To drive the reaction, an electric current is passed through each cell.

Impurities released into the electrolyte either go into solution or settle to the bottom of the tank. Electrolyte is continuously circulated through the system of cells with a small slip stream removed for purification.

After approximately two weeks when the cathodes reach a designated size,

generally 180 pounds, they are removed and rinsed. Another set of starter sheets is inserted with the anodes for another two week period. At the end of the second cycle, both the cathodes and anodes are removed. The anodes are not completely consumed, but if they were left in the cell they soon would break, falling into the cell and shortcircuiting it. Scrap anodes may be rinsed and then returned back to anode casting. The cathodes are either sold and shipped with no further modifications, or they are cast into wire bar, ingots, or billets for copper forming operations.

Processing the spent electrolyte is accomplished with various methods, but the most popular uses a two-stage process. In the first step, commonly referred to as electrowinning, copper is removed from solution by electrolysis in much the same way as was done in the tank house. The major difference is that an insoluble anode, such as lead or iron, is used to force the copper out of solution and plate onto a cathode. This process uses two to three liberator cells connected in a series. In the first cell, the cathode copper is of high purity with slight lead contamination and may be used with no additional refining. As the copper concentration in the electrolyte decreases, the purity of the copper cathode also decreases.

The spent electrolyte is now composed of nickel sulfate and sulfuric acid. Through evaporation, the decopperized solution is concentrated and then cooled. As the solution cools, nickel sulfate is precipitated leaving what is known as black acid. The acid is usually recycled back to the refining process, but it may be used for leaching operations or fertilizer manufacture.

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

(1) *Anode and cathode rinse water* results from the rinsing of anodes and cathodes when they are removed from the electrolytic cells. Characteristics of the rinse water include a low pH due to the sulfuric acid rinsed from the anodes or cathodes along with 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 subcategory is fairly well established; the average plant age falls between 30 and 40 years, somewhat older than the average for plants in primary copper. The average production of secondary copper plants is only about one-tenth of the average of plants in primary copper. 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.

Pretreatment consists basically of separating the raw materials into low-, intermediate-, and high-grade scrap and readying these materials for the next process they will undergo, depending on the desired end product. In the next step, smelting, the low-grade scrap is charged into either a blast or cupola furnace. Then, the pre-melted low-grade materials, intermediate-grade scrap, and high-grade scrap are refined or alloyed in reverberatory or rotary furnaces. The methodology of further refining or alloying varies with the scrap charged, the finished product, equipment available, and individual manufacturer preference. When the melt has attained the degree of purity required by product specifications, the metal is cast and cooled. A few secondary copper facilities practice electrolytic refining. Copper anodes are alternated with refined copper starter sheets in the electrolytic cell. Pure copper is deposited on the starter sheets, which serve as the cathode in the electrolytic reaction. The starter sheets, with deposited cathode copper, are periodically removed. The electrolyte, a solution of sulfuric acid and copper sulfate, is washed from the cathode copper. Casting of electrolytically refined copper is essentially the same as for fire-refined copper.

The principal sources of wastewater with the secondary copper subcategory 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) *Contact cooling* wastewater results when the water used in ingot or anode cooling is discharged without recycle. This stream is characterized by the presence of suspended solids and toxic metals.

(4) *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 is characterized by the presence of toxic metals.

Primary Lead

Only One of the seven plants in the primary lead subcategory is a direct discharger. All others (six) have achieved zero discharge. 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 prior to World War I, another in 1920, and the final two in the 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 five distinct steps as described below.

In the initial step, ore concentrates are sintered in a traveling grate furnace. This sintering operation which drives off sulfur a sinter of suitable size and strengths for the blast furnace and recover sulfur as sulfuric acid.

The second step is blast furnace reduction. In this process, sinter, fluxes, and coke are charged to a blast furnace. Lead bullion is tapped off the bottom while slag from the top of the furnace may be granulated with water or sent to a fuming furnace where zinc and other

metal impurities can be volatilized away.

Drossing is the next primary lead production step. Molten bullion is transferred to large, hemispherical drossing kettles, and the temperature is subsequently lowered to a point where lead oxides or impurities such as copper solidify. The solid scum or "dross" floats to the top and is removed by skimming. The drossed skim is charged to a reverberatory furnace where the melt again separates into layers. The top layer, slag is returned to the blast furnace, and speiss and matte, the intermediate layers, are sold to copper smelters. Lead is tapped from the bottom.

The fourth step, softening and refining, is performed to remove antimony and other specific impurities which may persist in the bullion. These processes are similar to drossing in that they involve efforts to "float" impurities to the top of the lead melt and then skim the scum away. This is accomplished through oxidation or by adding chemicals which combine with impurities. Antimony rich slag may be refined in furnaces to recover "hard" or antimonial lead.

Casting is the fifth production step. Refined, high purity lead bullion is cast into a variety of sizes and shapes. There is no process wastewater generated during casting. Cooling is accomplished using noncontact cooling water or air cooling.

The principal sources of wastewater in the primary lead subcategory 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 the fuming of 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 fumes. Toxic metal and suspended solids are presented 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 again 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. Again, 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.

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

Primary Zinc

There are seven primary zinc plants in the United States. The primary zinc industry is well established; the average plant age is about 50 years. The zinc industry is not confined to any particular geographic location. Four plants are located east of the Mississippi river, two plants are located in the southwest (Texas and Oklahoma), and one plant is located in the northwest. The average plant has a production of 100,000 to 200,000 tons per year. The production of three plants is less than 100,000 tons per year while the production of one plant is more than 200,000 tons per year. At present, five of the plants are direct dischargers 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.

In the pyrolytic process, the roasting calcine is sintered and then reduced to metallic zinc. Sintering agglomerates the calcine and drives off any residual sulfur. The sintered calcine is reduced to metallic zinc in vertical retort or electrothermic furnaces. The metallic zinc may be refined further by liquation or redistillation or cast into various shapes and sold.

In the electrolytic processes, zinc is leached from the calcine by a solvent comprised of sent electrolyte and sulfuric acid. Various impurities such as cadmium and copper are precipitated from the leachate. The purities zinc sulfate solution is then electrolyzed. In the electrolytic cells, zinc from the zinc sulfate solution (electrolyte) deposits on the cathodes. When the cathodes attain the desired thickness the zinc is stripped, melted, cast in various shapes and sold.

There are a number of by-products associated with the production of zinc. Cadmium and sulfuric acid are the two

major by-products. Currently, all seven zinc plants have sulfuric acid and cadmium recovery plants associated with them.

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

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

(2) *Leaching* wastewater results from leaching tank dischargers to prevent the buildup of dissolved solids) or the thickeners and filters associated with leaching. Leaching wastewater is characterized by the presence of toxic metals.

(3) *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.

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

(5) *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.

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

(7) *Cadmium plant* wastewater results from by-product 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

There are 22 metallurgical sulfuric acid plants in the United States. Of these, eight are direct dischargers, one is an indirect discharger and 13 achieve zero discharge. Eleven metallurgical sulfuric acid plants are located on-site with primary copper smelting plants, four are on-site at primary lead plants, and there is one on-site at each of the seven 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 two are zero discharge acid plants and are located in Idaho and Montana. Only one of the plants associated with zinc is a zero discharger. It is also the only zinc-related plant west of Texas. The other six zinc-related acid plants, five direct dischargers and one indirect discharger, 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 sulfur oxide emissions of pyrometallurgical operations. By producing acid, the acid plants not only clean the smelter emissions of many tons per day of sulfur oxides, but they also produce a marketable sulfuric acid product.

Prior to entering the acid plant, the off-gas stream from pyrometallurgical operations will usually undergo various pretreatment steps. The pretreatment steps include cooling, cleaning, conditioning (humidification), mist precipitation, drying and compression.

In the acid production section, a vanadium pentoxide catalyst converts the sulfur dioxide in smelter off-gases to sulfur trioxide, and the sulfur trioxide is absorbed into a sulfuric acid stream. The sulfur trioxide combines with water in the absorbing sulfuric acid (which, in effect, increases the strength of the contacting acid stream).

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,
- Bearing cooling,
- Compression,
- Steam generator,
- Box cooler, and
- Mist eliminator.

These wastewater sources are usually combined into a single wastewater stream—acid plant blowdown—which is mixed, a (treated and then recycled or discharged. Plants usually reported this discharge to EPA as a single flow. Therefore, we intend to consider this discharge as a single process.

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 eight primary tungsten plants in the United States, two are direct dischargers, three are indirect dischargers, and three are zero dischargers. Seven of the eight plants are located around the Great Lakes, and all, except one in California, are in areas of net precipitation. 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 discussed below.

The first step involves chemical separating impurities from tungsten ore concentrates with either an acidic or alkaline leaching process, dependent on the purity of the concentrates. Relatively high quality scheelite ores (CaWO_4) are leached with hot hydrochloric acid to produce tungstic acid, H_2WO_4 . Wolframite ores ($(\text{Fe}, \text{Mn})\text{WO}_4$) and lower purity scheelite ores are leached with an alkaline leaching agent to produce a sodium tungstate intermediate (Na_2WO_4).

The second step involves purifying the leaching products into another intermediate, ammonium paratungstate (APT). Calcium chloride is added to a sodium tungstate solution to precipitate chloric acid to produce tungstic acid. Tungstic acid, from either synthetic or natural scheelite leaching, is dissolved in ammonium hydroxide, and APT is crystallized out of solution. Some plants produce APT from Na_2WO_4 using a newer, liquid ion-exchange process instead of the traditional methods described above.

In the third step, dried APT is calcined in rotary furnaces to metal powder is then produced by the reduction of tungsten oxides in hydrogen filled, high temperature reduction furnaces.

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

(1) *Tungsten 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 HCl 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 stream contains toxic metals and suspended solids.

(4) *Ion-exchange raffinate* is a waste stream from the liquid are present in this stream due to the use of organic compounds as an ion-exchange median. This stream is also characterized by the presence of toxic metals and suspended solids.

(5) *CaWO₄ precipitation* wash water results from the precipitation of CaWO_4 from a sodium tungstate solution to which calcium chloride has been added. The resulting waste stream is characterized by the presence of calcium chloride and 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) *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.

(9) *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.

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. Only the plant in Oklahoma is in area of net evaporation; the remaining facilities are in net precipitation areas. EPA data show that average plant production is approximately 450 tons per year, and that all plants discharge wastewater. There are three direct dischargers, 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. Four basic operations from ore or slag to metal must be performed, as described below.

In the first step, the ore or slag is pulverized to approximately the consistency of talcum powder. Then, columbium and tantalum (along with some impurities) are leached from the powder by either hydrofluoric acid or by chlorine gas.

The second step, which involves separation and purification of the columbium and tantalum fluorides, is accomplished using solvent extraction. Methyl isobutyl ketone (MIBK) is the most commonly used solvent. Usually, a low normality feed stream is contacted with MIBK, whereupon tantalum salt of high purity is extracted. More hydrofluoric acid is then added to the aqueous phase (the columbium-laden stream) and is contacted with more fresh MIBK, extracting the columbium salt. Impurities remain in the raffinate waste stream, which is very highly acidic. The columbium and tantalum are then extracted from the MIBK into deionized water. The MIBK is recycled. This step also requires wet air pollution control equipment.

In the third step, the salts are precipitated, usually by the addition of potassium chloride or ammonia. Finally, the crystals are then filtered from the aqueous mother liquor (which is run to waste), then subjected to a water wash and dried.

Treatment of the ore or slag powder with chlorine gas at 500 to 1,000° C evolves the volatile pentachlorides of columbium, tantalum, as well as the chlorides of various other substances. These are removed by selective condensation and the columbium and tantalum chlorides are separated by distillation. This process is completely anhydrous and generates no wastewater streams. The process has been used in the past, but is not now in use on a commercial scale.

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

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

(2) *Solvent extraction raffinate* is a product of 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 the precipitation of pure metal salts from the aqueous phase by ammonia addition to form columbium and tantalum oxides, or 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, and potassium fluorides, and chlorides, for the respective processes.

(4) *Metal salt drying wet air pollution control* wastewater are produced as the precipitates are dried and calcined to yield purified salts. The solvents produced reflect the precipitation process employed.

(5) *Reduction of 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.

(6) *Reduction of 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.

(7) *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.

Secondary Silver

There are 44 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 (four) of secondary silver plants are direct dischargers. Of the remainder, 17 are indirect dischargers and 23 are zero dischargers. Fourteen plants process only photographic materials, 15 process only nonphotographic materials, and 16 process both types. The average plant age is between 15 and 24 years.

Over half of the 44 secondary silver plants that reported data, produce in excess of 100,000 troy ounces of silver per year; 12 of these plants produce over 1,000,000 troy ounces of silver per year.

Five 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.

In the most common method for recovering silver from film, the film is granulated and stripped of the emulsion using nitric acid. The waste film is removed by sedimentation and the silver precipitated from solution. Precipitation reagents commonly used are caustic soda (NaOH), and soda ash (Na₂CO₃). The silver precipitate is dewatered by gravity, filtered and dried. The dried cake is roasted in a reverberatory furnace and cast into ingots or Dore plates (electrodes). Dore plates are electrolytically refined on-site or shipped to other facilities. The refined silver is melted and recast as ingots.

Film processing solutions are processed similarly, using chemical precipitation, metallic replacement, or direct electrolytic refining methods. Photographic film may also be incinerated, and the silver-bearing ash roasted and refined.

Nonphotographic waste plating solutions are treated to precipitate the silver. The process consists of precipitation, filtration and washing, roasting, casting, refining, and recasting. Precipitation is usually accomplished by addition of sodium hypochlorite. Roasting, casting and electrolytic refining operations are identical to those used in photographic materials processing.

Silver scrap from electrical components is smelted in a reverberatory furnace to produce lead bullion, copper matte, and slag. The slag is smelted in a blast furnace and its constituents recycled. Lead bullion is discarded or further refined for other precious metals. The copper matted is crushed, ground, roasted, and leached. Leaching may be effected with nitric, sulfuric, or hydrochloric acid. The leaching agent either dissolves the base metals, leaving silver to be roasted and refined, or dissolves the silver which is precipitated from solution, roasted, and refined. High-purity sterling-silver scrap is frequently melted and recast without further refining.

Silver-rich sludges from waste plating solutions, stripping solutions, and photographic solutions are leached, and the silver recovered using processes described above. Leaching agents employed include nitric acid, sulfuric

acid and hydrochloric acid. The silver-rich solution that results is put through precipitation filtration, roasting, electrolytic refining, and casting steps to produce refined silver ingots.

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 has been stripped from photographic film. This effluent contains toxic organics and metals, as well as cyanide, phenols, suspended solids, and oil and grease.

(2) *Film stripping 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, phenols and suspended solids.

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

(4) *Precipitation and filtration of film stripping solution wet air pollution control* wastewater is produced from scrubbers employed on precipitation and filtration operations. This wastewater contains toxic organics and toxic metals.

(5) *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.

(6) *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.

(7) *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.

(8) *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.

(9) *Casting contact cooling* water is used in casting the silver into ingots or Dore plants. This wastewater contains toxic organics, toxic metals, ammonia,

cyanide, fluoride, phenols, suspended solids and oil and grease.

(10) *Casting wet air pollution control* wastewater is scrubber liquor from casting operations, and contains toxic organics and metals, phenols, cyanide, suspended solids and oil and grease.

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

(12) *Leaching 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.

(13) *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, fluoride, phenols, suspended solids, and oil and grease.

(14) *Precipitation and filtration wet air pollution control* wastewater results from the scrubbing of air emissions from precipitation and filtration operations. Toxic organics and metals, phenols, cyanide, suspended solids, and oil and grease are found in this wastewater.

Secondary Lead

Sixty-nine secondary lead plants presently operate in the United States, and are predominately located in or near major urban centers where most of the raw materials are readily available. Twenty-one plants (30 percent) are located west of the Mississippi River, and the remaining 48 percent are located in two bands east of the Mississippi, around the Great Lakes and in the South. Seventeen plants discharging to a POTW and 46 plants achieving zero discharge are found in all areas, while seven plants discharging directly to receiving waters are found in the East and South.

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 54 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 in 1976.

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

The scrap pretreatment methods used in the secondary lead industry are dependent on the raw materials. Scrap pretreatment for used batteries involves crushing or cutting to allow separation of the lead from the battery case. Lead scrap is processed through crushing of drosses and oversize scrap, and sweating of lead alloys. The general crushing operations reduce larger pieces of scrap to a suitable size using mechanical methods such as jaw crushers. Sweating involves charging lead alloy scrap to a furnace where the lead is separated by selective melting. The molten lead is collected and cast and the residue is removed from the furnace.

There are two types of furnaces used to smelt lead scrap, both of which produce different characteristics in the lead. A reverberatory furnace is used to produce a higher purity product known as soft lead. Processed scrap is charged to a reverberatory furnace and melted with the impurities allowed to rise to the top of the melt. The smelted lead is tapped from the bottom of the furnace for refining and the slag is skimmed from the top of the bath and further processed in a blast furnace.

In the blast furnace, slag from the reverberatory furnace, scrap lead, and iron form the raw materials for hard lead, or what is often called antimonial lead. Compressed air is blown through the alternating layers of scrap metal and coke allowing the coke to ignite and melt the charge. The iron added acts as a reducing agent to produce molten lead containing significant amounts of antimony.

Refining of the lead from the smelter is done in large kettles where fluxing agents are added to the molten charge. After agitation and slag skimming, a soft, high purity lead is produced. Certain desired physical characteristics are achieved by adding antimony, arsenic, copper, silver, and tin to form lead alloys. Finally, the refined lead or antimonial lead is cast into ingots for further processing and forming operations.

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

(1) *Battery cracking* produces a wastewater stream containing dissolved toxic metals, total suspended solids, and oil and grease. It is generated when the

electrolyte is drained from the battery case and when water is used to cool saws used to cut batteries.

(2) *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.

(3) *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.

(4) *Castling 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.

III. Scope of This Rulemaking and Summary of Methodology

This proposed regulation is a part of a new chapter in water pollution control requirements. The 1973-1976 round of rulemaking emphasized the achievement of best practicable technology (BPT) by July 1, 1977. In general, this technology level represented the average of the best existing performances of well-known technologies for control of familiar (or "classical") pollutants.

In this round of rulemakings EPA is emphasizing the achievement by July 1, 1984, of the best available technology economically achievable (BAT), which will result in reasonable further progress toward the discharge of all pollutants. In general, this technology level represents the very best economically achievable performance in any industrial category or subcategory. Moreover, as a result of the Clean Water Act of 1977, the emphasis of EPA's program has shifted from "classical" pollutants to the control of a lengthy list of toxic substances.

In developing the regulation, EPA studied the nonferrous metals manufacturing category to determine whether differences in raw materials, final products, manufacturing processes, equipment, age, and size of plants, water use, wastewater constituents, or other factors required the development of separate effluent limitations and standards for different segments (or subcategories) of the industry. This study included the identification of raw waste and treated effluent characteristics, including: the sources, and volume of water used, the processes employed, and the sources of pollutants and wastewaters. Sampling and analysis of specific waste streams enabled EPA to determine the presence

and concentration of toxic pollutants in wastewater discharges.

EPA also identified both actual and potential control and treatment technologies (including both in-process and end-of-process technologies). The Agency analyzed both historical and newly generated data on the performance, operational limitations, and reliability of these technologies. In addition, EPA considered the impacts of these technologies on air quality, solid waste generation, water scarcity, and energy requirements.

The Agency then estimated the costs of each control and treatment technology using cost equations developed by standard engineering analyses. EPA derived unit process costs for 145 discharging plants using data and characteristics (production and flow) applied to each treatment process (e.g., chemical precipitation, sedimentation, granular bed—multi-media filtration, etc.). These unit process costs were added to yield the total cost at each treatment level.

As a means of evaluating each technology option, the Agency developed estimates of the pollutant reduction benefits and the compliance costs associated with each option. Our methodologies are described below.

A. Pollutant Reduction Benefits. In calculating pollutant reduction benefits, we developed estimates for pollutant loadings in raw wastewater (by subcategory), for the mass of pollutants that would be discharged at each technology option, and for the mass of pollutants discharged currently.

Calculation of raw waste values varied depending upon whether the Agency was able to sample wastewater from unit operations within the subcategory. Where we sampled a unit operation (or sampled the same unit operation at different plants) and were able to obtain both analytical concentration data (mg/l) and production normalized flow values (liters of flow/kg of production), we computed the mass loading associated with the unit operation (expressed in mg/kg, i.e., pollutant concentration x production normalized flow), and took the mean of these mass loadings at every plant sampled.

After deriving this mean, we multiplied it by the subcategory-wide production associated with that unit operation at each plant (the production data are part of each plant's response to the data collection portfolio (dcp)—see Section IV below). The total represents estimated raw waste values for the subcategory from the unit operation. Summing raw waste values from each

unit operation in the subcategory gives the total for the subcategory.

If we sampled a unit operation and were able to determine analytical concentrations of pollutants, but were unable to determine flow, we used production normalized flow data from the dcp's to compute mass loadings and otherwise followed the same procedure.

If we were unable to sample a unit operation at any plant, we computed raw waste values by making an engineering judgment as to which sampled unit operations had wastewater of similar quality. We then took these analytical values and computed a mass limitation using production normalized flow information from the dcp's. These mass limitations then were summed to give total subcategory raw waste values for that unit operation.

In determining mass loadings associated with each technology option, our general procedure is to take the achievable concentrations associated with the option (mg/l) and compute mass loadings using the production normalized flow associated with that option (for example BAT regulatory flow). This mass (mg/kg of production) is then multiplied by the total production in the subcategory (from dcp's as before) to give total mass discharged.

We varied this procedure slightly in computing estimated BPT discharge in a subcategory where there is an existing BPT limitation. In this case, we took the mass limits from the BPT guidelines (for all pollutants limited at BPT) and multiplied these limits by the total subcategory production (from dcp's). (The assumption is that plants are discharging a volume equal to their BPT allowance times their production.) Where pollutants are not controlled by existing BPT, we used the achievable concentration for the associated technology proposed today, and multiplied these concentrations by the total end-of-pipe discharge of process wastewater for the subcategory (from dcp's). The total of both these calculations represents estimated mass loadings for the subcategory BPT discharge.

We used similar means to estimate current discharge. We first identified from dcp responses what treatment was in place. We then evaluated how well the technology was operated on a subcategory-wide basis, and assumed that pollutants will be removed at a rate of 80 percent of the achievable concentration proposed today at less well-operated plants, and will be removed at a 100 percent rate at well-

operated plants. We next identified the end-of-pipe discharge of process wastewater for each plant (also from dcp's). Multiplying these two values gave estimated current discharge per plant, which we then summed to give estimated current discharge levels.

B. Compliance Costs. In estimating subcategory-wide compliance costs our first step was to develop universally applicable cost curves, relating total costs associated with installation and operation of wastewater treatment technologies to the volume of plant process wastewater discharged. We next applied these curves on a per plant basis, plant's costs—both capital and operating and maintenance—being determined by what treatment it has in place and by its individual process wastewater discharge (from its dcp). The final step was to annualize the capital costs, and to sum the annualized capitalized costs and the operating and maintenance costs from all of the discharging plants, yielding the cost of compliance for the subcategory. These costs were used in assessing economic achievability (see Section XVIII below.)

IV. Data Gathering Efforts

The data gathering program is described briefly in Section III and in substantial detail in Section V of the General Development Document and the subcategory supplements. A data collection portfolio (dcp) was developed to collect information about the industry and was mailed out in 1977, under the authority of Section 308 of the Clean Water Act, to each company known or believed to perform smelting and refining of the metals discussed in Section III of this notice in the United States. Analytical data were collected from 46 sampled plants. Supplemental data were obtained from NPDES permit files and engineering studies on treatment technologies.

EPA reviewed and evaluated existing literature for background information to clarify and define various aspects of the nonferrous metals manufacturing category and to determine general characteristics and trends in production processes and wastewater treatment technology. Review of current literature continued throughout the development of these guidelines. We also reviewed earlier EPA development documents for particular nonferrous metals manufacturing subcategories.

The available information included a summary of the industry describing the production processes, the wastewater characteristics associated with the processes, recommended pollutant parameters requiring control; applicable end-of-pipe treatment technologies for

wastewaters; effluent characteristics resulting from this treatment, and a background bibliography. Also included in these studies were detailed production and sampling information for many plants.

Frequent contact has been maintained with industry personnel. Contributions from these sources were particularly useful for clarifying differences in production processes.

The nonferrous metals manufacturing plants were surveyed to gather information regarding plant size, age and production, the production processes used, and the quantity, treatment, and disposal of wastewater generated at these plants. This information was requested in data collection portfolios (dcp's) mailed to all companies known or believed to belong to the nonferrous metals manufacturing category. A listing of the companies comprising the nonferrous metals manufacturing industry (as classified by standard industrial code numbers) was compiled by consulting trade associations and the U.S. Bureau of Mines.

In all, dcp's were sent to 319 firms (416 facilities). In many cases, companies contacted were not actually members of the nonferrous metals manufacturing category as it is defined by the Agency. Where firms had operations at more than one location, a dcp was submitted for each plant.

If the dcp's were not returned, we collected information on production processes, sources of wastewater, and treatment technology at these plants by telephone survey. The information so gathered was validated by sending a copy of the information recorded to the party consulted. The information was assumed to be correct as recorded if no reply was received in 30 days. In total, information was collected from more than 95 percent of the industry either by mail or by telephone.

The dcp responses were interpreted individually, and the following data were documented for future reference and evaluation:

- Company name, plant address, and name of the contact listed in the dcp.
- Plant discharge status as direct (to surface water), indirect (to POTW), or zero discharge.
- Production process streams present at the plant, as well as associated flow rates; production rates; process capacities; operating hours, wastewater treatment, reuse, or disposal methods; and the quality and nature of process chemicals.
- Capital and annual treatment costs.

—Availability of pollutant monitoring data provided by the plant.

A separate data gathering effort was conducted to obtain plant by plant for economic and financial information. We developed questionnaires concerning the cost structure of the plants in the nonferrous metals manufacturing point source category and mailed them to every known plant in the industry (under authority of Section 308 of the Clean Water Act). These questionnaires covered capacity, production costs, financial data relating to sales, inventories, net working capital and net book value, and existing regulatory costs for the base year of 1976.

Twenty-four major corporations involved in mining, milling, smelting and refining of nonferrous and ferrous metals entered into an agreement with the EPA through the American Mining Congress. Eight of these companies are major nonferrous metals producers in the primary metals sector. This agreement ("third party agreement") covered the handling of the confidential information contained in the questionnaire. EPA agreed to let the industry use a third party data aggregation contractor to assemble the questionnaire on a coded basis into a confidential data base. This data base was made available to the economic contractor on a restricted basis under the terms of the agreement and, when combined with the questionnaire returned directly to EPA, provided a plant specific data base for use in the study. The third party agreement was used by the producers in the primary copper, lead, zinc, tungsten and columbium-tantalum subcategories. The response rate for questionnaires in the primary subcategories was greater than 90 percent for the primary copper, lead, and zinc subcategories, and 50 percent in the tungsten and columbium-tantalum subcategories.

Companies in the primary aluminum subcategory worked through the Aluminum Association to reach a separate agreement with EPA concerning the aluminum questionnaires. EPA and these companies agreed to use model plants instead of the plant-specific questionnaires to assess economic achievability. The aluminum companies agreed to review and comment on the model plants developed by the economic contractor. EPA agreed to let the companies submit partially completed questionnaires covering employment and pollution control information. However, the portion of the questionnaire dealing with information contained in the model plants was not

required to be filled out. The model plants and partially completed questionnaires had 100 percent industry coverage.

Plants in the secondary metals subcategories submitted their questionnaires to the EPA and were covered by the Agency's standard confidentiality procedures. Response rates in the secondary metals subcategories were approximately 50 percent of the production for secondary aluminum, less than 20 percent for secondary copper, approximately 25 percent for secondary lead, and approximately 30 percent for secondary silver.

V. Sampling and Analytical Program

The sampling and analysis program for this rulemaking concentrated on the toxic pollutants designated in the Clean Water Act. However, we sampled and analyzed nonferrous metals wastewaters for conventional and nonconventional pollutants as well as inorganic and organic toxic pollutants. The Agency has not promulgated analytical methods for many of the organic toxic pollutants under Section 304(h) of the Act, although a number of these methods have been proposed (44 FR 69464 (December 3, 1979); 44 FR 75028 (December 18, 1979)). Additional information on the development of sampling and analysis methods for toxic organic pollutants is contained in the preamble to the proposed regulations for the Leather Tanning Point Source Category, 40 CFR Part 425 (44 FR 38749 (July 2, 1979)).

Information gathered in the date collection portfolios was used to select sites for wastewater sampling for each subcategory. The plants sampled were selected to be representative of the industry. Considerations included how well each facility represented the subcategory as indicated by available data, potential problems in meeting technology-based standards, differences in production processes used, and wastewater treatment in place.

After selection of the plants to be sampled, each plant was contacted by telephone, and a letter of notification was sent to each plant as to when a visit would be expected. These inquiries led to acquisition of facility information necessary for efficient on-site sampling. The information resulted in selection of the sources of wastewater to be sampled at each plant. The sample points included, but were not limited to, untreated and treated discharges, process wastewater, and partially treated wastewater.

During this program, 36 nonferrous metals manufacturing plants were

sampled by the technical contractor and 10 nonferrous metals manufacturing plants were sampled by other contractors or by EPA regional personnel, for a total of 46 plants.

Wastewater samples were collected in two phases: screening and verification. The first phase, screen sampling, was to identify which toxic pollutants were present in the wastewaters from production of the various metals. Screening samples were analyzed for 128 of the 129 toxic pollutants and other pollutants deemed appropriate. (Because the analytical standard for TCDD was judged to be too hazardous to be made generally available, samples were never analyzed for this pollutant. There is no reason to expect that TCDD would be present in nonferrous metals manufacturing wastewater.) A total of 10 plants were selected for screen sampling. At least one plant in every subcategory was sampled during the screening phase, with some plants providing data for two or more subcategories. Two plants were sometimes screen sampled within a subcategory because the production processes were different. For example, both pyrolytic and electrolytic plants were screen sampled in the primary zinc industry.

The second phase of sampling, verification sampling, was used to determine whether the pollutants identified by screen sampling are present throughout a subcategory, and if so, at what concentrations. The samples gathered under the verification sampling were analyzed only for those pollutants selected from the screening results.

To reduce the volume of data handled, avoid unnecessary expense, and direct the scope of the sampling program, a number of the pollutants analyzed for during the screen sampling were not analyzed for during the verification sampling. Three sources of information were used for selecting the pollutants for the verification phase of the study: the pollutants that industry believes or knows are present in their wastewater, the screen sampling analyses, and the pollutants the Agency believes should be present after studying the processes and materials used by the industry. If a pollutant was not detected during screen sampling, and if industry and the Agency did not believe it would likely be present in the wastewater after studying the processes and materials used, verification analyses for that pollutant were not run. EPA collected this information in the following manner.

The 129 toxic pollutants were listed in each dcp and each facility was asked to indicate for each particular pollutant

whether it was: "Known to be Present" (KTBP), "Believed to be Present" (BTBP), "Believed to be Absent" (BTBA), or "Known to be Absent" (KTBA). If the pollutant had been analyzed for and detected, the facility was to indicate KTPB, if analyzed for and not detected, KTBA. If the pollutant had not been analyzed, but might be present in the wastewater, the facility was to indicate BTBP it could not be present, BTBA. The reported results are tabulated in Section V of each of the subcategory supplements.

Wherever possible, each sample of an individual raw waste stream, a combined waste stream or a treated effluent was collected by an automatic time series compositor during sampling periods as long as 24 hours. Where automatic compositing was not possible, grab samples were taken and composited manually.

EPA used the analytical techniques described in *Sampling and Analysis Procedures for Screening of Industrial Effluents for Priority Pollutants*, revised in April 1977. A very similar method is found among those proposed on December 3, 1979.

VI. Industry Subcategorization

In developing this regulation, it was necessary to determine whether different effluent limitations and standards were appropriate for different segments (subcategories) of the industry. The major factors considered in identifying subcategories included: waste characteristics, basic material used, 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, non-water quality characteristics, and unique plant characteristics.

The Agency set forth a subcategorization scheme based on manufacturing processes in its first proposed regulation for this category on November 30, 1973. EPA stated that manufacturing operations and treatability of wastewaters were considered to be the most significant factors affecting the manner in which the category would be regulated. The proposed regulation on November 30, 1973 (38 FR 33170) established three subcategories, bauxite refining, primary aluminum smelting and secondary aluminum smelting in 40 CFR Part 421. These same subcategories were retained in the final rule promulgated on April 8, 1974 (39 FR 12822).

On February 27, 1975, EPA amended 40 CFR Part 421 by adding five new

subcategories, primary copper smelting, primary copper refining, secondary copper, primary lead and primary zinc (40 FR 8514). Again, the manufacturing processes were considered to be the most significant factor in subcategorizing the industry.

On July 2, 1980, EPA modified the subcategorization set forth in the interim final regulation from February 27, 1975 for BPT. The primary copper smelting subcategory was retained. The primary copper refining subcategory which originally included only refineries not on-site with primary copper smelters was changed to the primary copper electrolytic refining subcategory. This new subcategory included all electrolytic refining operations, whether or not they are on-site with a smelter. (45 FR 44926) In addition, EPA added a new subcategory for metallurgical acid plants associated with primary copper smelters. The new subcategory was added because we believed that establishing separate limitations for these three subcategories would ensure that the maximum feasible BPT pollutant reduction could be accomplished for each plant.

The subcategorization scheme is again modified by today's notice. We again considered raw materials, final products, manufacturing processes, geographical location, plant size and age, wastewater characteristics, non-water quality environmental impacts, energy costs, and solid waste generation. Our conclusion, as before, is that—with the exception of the metallurgical acid plants subcategory—subcategorization should be based on manufacturing process alone. The proposed BAT effluent limitations guidelines for primary copper smelting, primary copper electrolytic refining, and metallurgical acid plants use the identical subcategorization as was used in the promulgated BPT. Also, metallurgical acid plants associated (i.e., on-site) with primary lead or primary zinc smelters will be considered a part of the metallurgical acid plants subcategory created for primary copper metallurgical acid plants on July 2, 1980 (45 FR 44926) (see Section VIII—New Subcategorizations). Finally, the proposed regulation set forth below will amend 40 CFR Part 421—Nonferrous Metals Manufacturing Point Source Category, by adding effluent limitations guidelines, new source performance standards and pretreatment standards for the primary tungsten subcategory (subpart I) primary columbium-tantalum subcategory (subpart K), secondary silver subcategory (subpart L), and

secondary lead subcategory (subpart M).

VII. Available Wastewater Control and Treatment Technology

A. Control Technologies Considered

The control and treatment technologies available for this category include both in-process and end-of-pipe treatments. These technologies were considered appropriate for the treatment of nonferrous metals manufacturing wastewater and formed the basis of the regulatory options. These control and treatment technologies are discussed in greater detail in Section VII of the General Development Document. The applicability of each of the technologies to specific sources of wastewater is discussed in the subcategory supplements.

In-process treatment includes a variety of water flow reduction steps and major process changes. The following in-process treatments are considered for this proposal:

Recycle. Recycling of processing water is the practice of treating and returning water to be used again for the same purpose. Total recycle can be achieved (in theory) through the use of reverse osmosis. In establishing PSES for secondary copper, EPA considered complete recycle and reuse of process wastewater after treatment with lime precipitation, and sedimentation to remove suspended solids and metals. EPA also considered partial recycle of process water by using cooling towers and holding tanks. In doing so, we considered that it may be necessary to discharge a bleed stream to purge dissolved and suspended solids that tend to accumulate in the system.

End-of-pipe treatment includes modules used to reduce pollutant concentrations prior to discharge. The following end-of-pipe treatments are considered for this proposal:

Chemical Precipitation. Chemical precipitation generally involves adjusting the pH and adding a flocculation agent to precipitate out of solution metal ions (e.g., copper) and certain anions (e.g., fluoride). The chemical commonly associated with this treatment is lime.

Sedimentation. Sedimentation is a process which removes solid particles from a liquid matrix by gravitational force. This is done by reducing the velocity of the feed stream in a large volume tank or lagoon so that gravitational settling can occur. This treatment when combined with chemical precipitation is frequently referred to as lime and settle treatment.

Ammonia Steam Stripping. Steam may be used to remove ammonia from process wastewater. Generally, the steam is introduced into a separation column countercurrent to the process wastewater. The ammonia is absorbed into the steam. In some instances it may be necessary to add an additional stripping stage in which the pH of the wastewater is elevated in order to remove certain types of ammonia compounds.

Cyanide Oxidation or Precipitation. With the addition of oxidizing agents or complexing agents cyanide can either be oxidized or complexed. Cyanide can also be precipitated out of solution using ferrous or zinc sulfate. Cyanide precipitation is the more effective technology for removal of cyanide complexed with metals such as iron.

Oil Skimming. Oil and other materials with a specific gravity less than water often float unassisted to the surface of the wastewater. Skimming removes these floating wastes usually in a tank designed to allow floating debris to rise while the water flows to an outlet located below the floating layer. A variety of devices are used to remove the floating layer from the surface.

Carbon Adsorption. The use of activated carbon to remove dissolved organics is one of the most efficient organic removal processes available. The carbon removes contaminants from water by the process of adsorption or the attraction and accumulation of one substance on the surface of another. Activated carbon preferentially adsorbs organic compounds and because of this selectivity is particularly effective in removing organic compounds from aqueous solution.

Activated Alumina. Activated alumina may be used as an end-of-pipe treatment process to further reduce concentrations of arsenic and fluoride below those in the effluent from a chemical precipitation and sedimentation system.

Multimedia Filtration. Gravity mixed-media filtration may be used as an end-of-pipe polishing step to reduce concentrations of toxic metals. Rapid sand or pressure filters perform as well and may be used interchangeably with gravity mixed media filters.

Reverse osmosis was considered for the purpose of achieving zero discharge of process wastewater; however, the Agency ultimately rejected this technology because it was determined that its performance for this specific purpose was not adequately demonstrated in this category nor was it clearly transferable from another category. Activated alumina was also

considered; however, this technology was rejected because it too was not demonstrated in this category nor was it clearly transferable to nonferrous wastewater.

B. Status of In-Place Technology

Current wastewater treatment practices in the nonferrous metals manufacturing category range from no treatment to treatment with chemical precipitation, sedimentation and filtration. Of the 134 discharging plants, 61 plants have treatment to remove metals and suspended solids, four have technologies for oil removal, six practice ammonia stripping and 22 practice end-of-pipe filtration. The remainder of the dischargers did not report any treatment for their nonferrous metals manufacturing wastewaters.

Recycle using treatment of lime precipitation and sedimentation is practiced at 20 plants. Three plants use filtration while two other plants use ammonia stripping prior to recycling process water.

C. Control and Treatment Options

EPA considered the following treatment and control options as the basis for BPT, BAT, BCT, NSPS, PSES, and PSNS for facilities within the nonferrous metals manufacturing category:

Option A—End-of-pipe treatment consisting of lime precipitation and sedimentation, and preliminary treatment, where necessary, consisting of oil skimming, cyanide precipitation, and ammonia steam stripping. This combination of technology reduces toxic metals and conventional and nonconventional pollutant.

Option B—Option B uses the same end-of-pipe treatment as Option A (lime precipitation and sedimentation) preceded by flow reduction of process wastewater through the use of cooling towers for contact cooling water and holding tanks for all other process wastewater subject to recycle.

Option C—Option C uses the same in-process flow reduction as Option B and adds polishing filtration to the end-of-pipe treatment included in Options A and B (preliminary treatment, lime precipitation, sedimentation and filtration). This result in a further reduction of toxic metals and TSS.

Option D—Option D uses the in-plant flow reductions and end-of-pipe treatment in Option C and adds treatment of isolated waste streams with activated carbon adsorption for removal of toxic organics and activated alumina for reduction of fluorides and arsenic concentrations.

Option E—Option E consists of Option C flow reduction and end-of-pipe technology plus activated carbon adsorption applied to the total plant discharge as a polishing step to reduce toxic organic concentrations.

Option F—Option F consists of Option C flow reduction and end-of-pipe technology plus reverse osmosis treatment to attain complete recycle of all process wastewater.

VIII. Substantive Changes From Prior Regulations

The regulation proposed today contain several substantive changes to regulations proposed and promulgated previously.

A. New Subcategorizations. As discussed in Section VI of this preamble, EPA is proposing to include metallurgical acid plants associated (i.e., on-site) with primary lead or primary zinc smelters as a part of the metallurgical acid plants subcategory created for primary copper metallurgical acid plants on July 2, 1980 (45 FR 44926). All these plants would accordingly have identical effluent limitations and standards. In making this determination, the Agency considered the way in which acid plants are operated when associated with the primary smelters and the characteristics of the wastewater generated by each type of acid plant. Our conclusion is that these processes, rate of process discharge, and wastewater matrices are essentially identical justifying a single subcategory for all acid plants.

Metallurgical acid plants are constructed on-site with primary copper, lead and zinc smelters to treat the smelter emissions, remove the sulfur dioxide, and produce sulfuric acid as a marketable by-product. Although two basic technologies, single contact and double contact, are used in the industry, the Agency found no predominance of either technology in place in plants of the three metal types. Nor was there any significant observable difference in the amount of water discharged from plants using the two technologies.

The processes are also similar in terms of waste streams generated. Wastewaters are typically combined in all three types of acid plants into a single waste stream (acid plant blowdown). Principal streams going into the blowdown (compressor condensate, blowdown from acid plant scrubbing, mist precipitation, mist elimination, and steam generation) are common to all three types of plants. Rate of wastewater discharge from plants associated with all three metals also is similar, as shown by a comparison of mean discharge rates: 2,237 1/kg of 100

percent acid produced (primary copper smelting), 3,754 1/kg of 100 percent acid produced (primary zinc smelting), and 3,844 1/kg of 100 percent acid produced (primary lead smelting). (The mean values for copper and lead smelting exclude one plant in each subcategory with abnormally high wastewater flow.)

The wastewater matrices from all three types of acid plants also are similar. The Agency reviewed the analytical data that were obtained in sampling programs described in Section V and compared the characteristics of untreated acid plant blowdown from plants associated with each of the three primary metals considered. There were similar concentrations (i.e., in the same order of magnitude) of antimony, arsenic, cadmium, chromium, mercury, selenium, and silver among the three. The lead concentrations were significantly higher in the blowdown from lead acid plants than from copper and zinc plants. The same was true for copper and zinc in acid plants associated with their manufacture. However, all of these metals were present at concentrations that are treatable to the same effluent concentration upon application of chemical precipitation and sedimentation or chemical precipitation, sedimentation and multimedia filtration, and are within the range used in calculating treatment effectiveness for these technologies.

Therefore, in light of these essential similarities of process, wastewater flow and composition, we have chosen to include all acid plants in a single subcategory.

B. Building Blocks. In our prior regulations covering nonferrous metals manufacturing subcategories, we generally regulated plants as a single source of wastewater without regard to the specific manufacturing processes contributing to wastewater flow.

The regulations proposed today use the so-called building block approach, whereby EPA considers both end-of-pipe treatment technologies and process changes and controls within the plant prior to discharge to a common end-of-pipe treatment system. This approach is preferable because it allows regulations to be tailored to reflect particular circumstances. (This examination, of course, is mandated by the Clean Water Act. See, e.g., Sections 304(b)(2)(A) and 306(a)(1).) As a result, the proposed regulation identifies principal process steps that discharge wastewater, determines what wastewater flows (and in some cases, pollutant concentrations) are permissible for this indigenous

operation, and establishes a mass-based limitation or standard for each such step ("building block"). These limitations (or standards) then are added together to give the permissible mass discharge for the entire process.

Under the building block approach proposed today, to determine the allowable discharge from a point source a discharger must first identify the specific process sources that comprise that discharge. He should then multiply the limitations or standards (mg/kkg) for each wastewater present in the plant, by the production of that source (kkg), in the units specified, to yield the mass discharge from each source. The mass from all of the sources should then be added to yield the maximum for any one day and the maximum monthly averages for that discharge point. Waste streams (both process and nonprocess) not identified in this preamble may be regulated on a case-by-case basis by the permit writer pursuant to the authority granted in Section 402.

We stress that a plant is to receive a discharge allowance for a particular building block *only if it is actually operating that particular process*. The plant need not be discharging wastewater from the process to receive the allowance, however. Thus, if the regulation contains a discharge allowance for wet scrubber effluent and a particular plant has dry scrubbers, it cannot include a discharge allowance for wet scrubbers as part of its aggregate limitation. On the other hand, if it has wet scrubbers and discharges less than the allowable limit (or does not discharge from the scrubbers), it would receive the full regulatory allowance. In this way, the building block approach recognizes and accommodates the fact that not all plants use identical steps in manufacturing a given metal.

C. Building Block Approach Applied to Integrated Facilities. There are several facilities within this category that have integrated manufacturing operations; that is, they combine wastewater from smelting and refining operations, which are part of this point source category, with wastewater from other manufacturing operations which are not a part of this category, and treat the combined stream prior to discharge.

Indirect dischargers that are integrated facilities are subject to standards as specified by the "combined waste stream formula" set forth at 40 CFR 403.8(e). In establishing direct discharger permit requirements for integrated facilities subject to effluent guidelines that are mass-based for each category, the permit writer can apply the same building block approach discussed

above, simply aggregating each allowable discharge.

The building block approach is only to be used when the individual discharger combines wastewater from various processes and co-treats the wastewater before discharge through a single discharge pipe. The building block approach allows the determination of appropriate effluent limitations for the discharge point by combining appropriate limitations based upon the various processes that contribute wastewater to the discharge point. EPA does not intend to establish a "water bubble" for nonferrous metals manufacturing and related facilities and will not allow the trading of limitations or allowances from various process wastewaters that are discharged through separate discharge points.

In establishing limitations for integrated facilities for which a portion of the plant is covered by concentration-based limitations, the permit writer can determine the appropriate mass limitations for the entire facility or point source. The portion of the wastewater covered by this category receives mass limitations according to the building block methodology described above. The permit writer must then determine an appropriate flow for the portion of the facility subject to concentration-based limitations and multiply it by the concentration limitations to yield mass limitations. The mass limitations applicable to the discharge are obtained by summing these two sets of mass limitations. (Additional discussion and examples are found in the General Development Document).

D. Stormwater. In the preambles of previously promulgated regulations for primary copper smelting, primary copper electrolytic refining, primary zinc, primary lead, and secondary copper subcategories, we have discussed the treatment of stormwater to achieve BPT and BAT limitations when it is commingled with process wastewater prior to discharge. This discussion has led to some confusion as to whether stormwater runoff at these plants should be considered process wastewater and a discharge allowance provided. In our previous discussions of this subject it was not EPA's intent to make a determination as to the appropriateness of a discharge allowance for stormwater runoff at these plants. Instead, we were notifying the public that stormwater, like any nonprocess water, is considered process wastewater when it is mixed with process wastewater prior to discharge. Therefore, NPDES regulations require that it be treated pursuant to permit requirements. At some plants, stormwater runoff may contribute

significantly to pollutant loadings. However, the Agency is not proposing effluent limitations guidelines and standards for stormwater runoff because the flow and pollutant generation are site-specific and cannot be related to actual production.

We are soliciting comment on the need to add specific relief in the final regulation for this category for plants that presently combine stormwater and process wastewater prior to end-of-pipe treatment. As a general matter, however, we do not consider such relief appropriate unless data are submitted that prove that:

(1) Stormwater is sufficiently contaminated to warrant treatment;

(2) Contamination of stormwater cannot be eliminated by good housekeeping or best management practices; and

(3) Treatment of contaminated stormwater in the process wastewater system is justified technically and economically (i.e., contaminated stormwater cannot be segregated).

E. Catastrophic Precipitation Event Allowances and Allowances for Net Precipitation. Certain existing regulations for nonferrous metal subcategories—namely BPT regulations in secondary copper and primary lead, and BAT regulations in primary copper smelting, primary copper electrolytic refining, secondary copper, and primary lead—are based on use of settling impoundments as BPT or BAT. Facilities in these subcategories are subject to a zero discharge requirement; however, facilities meeting certain design capacity requirements could discharge, regardless of effluent quality, a volume of water falling within the impoundment in excess of the 10-year, 24-hour storm, when a storm of at least that magnitude occurred. Further, they can discharge once per month, subject to concentration-based effluent limitations, a volume of water equal to the difference between precipitation and evaporation in that month.

The Agency began to revise some of these impoundment-based regulations in 1980 for primary copper smelting and electrolytic refining BPT, and today is proposing to revise others. The revised regulations are based on mechanical end-of-pipe treatment using hardware (viz. lime precipitation and sedimentation technology using clarifiers). By eliminating impoundments, we have eliminated the need for a net precipitation allowance and (subject to an exception discussed below) stormwater discharge.

We generally are reluctant to issue limitations based on impoundments for a number of reasons:

- Discharge from impoundments can be as a "slug", allowing potentially heavy and damaging pollutant loadings to be discharged all at once;
- Impoundments allow dilution of heavily contaminated process wastewaters with relatively cleaner process streams;
- Net precipitation limitations are hard to calculate because of periodic shifts between net precipitation and net evaporation;
- Impoundments pose a risk of groundwater contamination; and
- Impoundment-based regulations effectively require the Agency to specify impoundment design.

(See generally 45 FR at 44926 (July 2, 1980), revising impoundment-based regulations in the primary copper smelting and electrolytic refining subcategories.) In addition, plants within these subcategories have, in many cases, already installed hardware-based lime precipitation and sedimentation technology, so that these technologies are now BPT or BAT for these subcategories.

In light of these considerations, we are not including an allowance for net precipitation for BAT, NSPS, PSES, and PSNS for these subcategories because these guidelines and standards are not based on settling and evaporation

impoundments. We also are eliminating the allowance for BPT in the primary lead subcategory, because we are revising BPT in this subcategory and revised BPT will be based on lime precipitation and sedimentation technology, not impoundments.

In addition, we are not including an allowance for stormwater discharge at BAT, NSPS, PSES and PSNS (and BPT for primary lead), except where the proposed limitation is based on use of a cooling impoundment. This exception applies for BAT in the primary copper smelting and secondary copper subcategories, where for direct dischargers cooling impoundments for contact cooling water are a common alternative to cooling towers. (We are eliminating the allowance at NSPS because new plants can be constructed exclusively with cooling towers.) As with all such allowances, it applies only to the volume of water falling within the impoundment area (see 45 FR 44928 July 2, 1980). (There is, however, no allowance for net precipitation from these cooling impoundments because they require much smaller surface areas than the settling and evaporative impoundments for which such discharge was allowed.) Table 2 summarizes existing and proposed regulations regarding the catastrophic stormwater and net precipitation allowances.

We recognize that this approach to catastrophic rainfalls varies from the

approach used for the ore mining and dressing category (47 FR 54603 December 3, 1982). In that regulation EPA required only that impoundments be designed and operated so as to contain a 10-year, 24-hour storm, while this proposed regulation requires that no discharge from the impoundment may occur except when a 10-year, 24-hour (or 25-year, 24-hour for BAT) storm occurs. We believe this difference is justified by the fact that the nonferrous metals manufacturing allowance applies only to water falling on the surface of the impoundment while the ore mining allowance applies to stormwater drainage from various processing locations at the ore mine and mill. The relative surface area of a nonferrous manufacturing impoundment is a small fraction of the area drained at an ore mine and mill. Therefore, the quantity of stormwater that must be contained at a nonferrous plant impoundment is much smaller, making containment of the stormwater under the provisions of this proposed regulation achievable. The Agency is not reaching any conclusions as to the need to capture and treat surface runoff at any nonferrous metals manufacturing plant. We believe that such decisions are site-specific and are best handled based on the judgment of individual permit writers.

TABLE 2.—STORMWATER/PRECIPITATION ALLOWANCES

Subcategory	Existing regulations			
	BPT		BAT	
	Catastrophic storm	Net precipitation	Catastrophic storm	Net precipitation
Primary copper smelting.....	Yes.....	No.....	Yes.....	Yes.....
Primary copper electrolytic refining.....	No.....	No.....	Yes.....	Yes.....
Secondary copper.....	Yes.....	Yes.....	Yes.....	Yes.....
Primary lead.....	Yes.....	Yes.....	Yes.....	Yes.....

Subcategory	Proposed regulations					
	BPT		BAT		NSPS	
	Catastrophic storm	Net precipitation	Catastrophic storm	Net precipitation	Catastrophic storm	Net precipitation
Primary copper smelting.....			Yes.....	No.....	No.....	No.....
Primary copper electrolytic refining.....			No.....	No.....	No.....	No.....
Secondary copper.....			Yes.....	No.....	No.....	No.....
Primary lead.....	No.....	No.....	No.....	No.....	No.....	No.....

Subcategory	Proposed regulations			
	PSES		PSNS	
	Catastrophic storm	Net precipitation	Catastrophic storm	Net precipitation
Primary copper smelting.....	(*).....		No.....	No.....
Primary copper electrolytic refining.....	(*).....		No.....	No.....
Secondary copper.....	No.....	No.....	No.....	No.....

Subcategory	Proposed regulations			
	PSES		PSNS	
	Catastrophic storm	Net precipitation	Catastrophic storm	Net precipitation
Primary lead.....	(*)		No.....	No.....

Yes=Regulation contains this allowance.
 No=Regulation does not contain this allowance.
 * =No existing indirect dischargers.

IX. Summary of Generic Issues

EPA has identified several issues that are generic to many of the subcategories and to the limitations and standards proposed in this proposed regulation. These issues are discussed in this section, rather than in the discussion of each particular subcategory.

A. Data Bases to Determine Achievable Concentrations and Variability Factors for Hydroxide Precipitation-Sedimentation and for Filtration. As discussed in Section VII, chemical precipitation-sedimentation and filtration were considered as a part of various treatment options for BPT, BAT, BCT, NSPS, PSES and PSNS. The methods of determining achievable concentrations and variability factors used to compute monthly average and daily maximum concentrations are discussed for these technologies below.

Hydroxide Precipitation-Sedimentation. In considering the performance achievable using hydroxide (usually lime) precipitation-sedimentation of metals with and without polishing filtration, EPA evaluated data from nonferrous metals plants and plants in other categories with similar wastewater. The data base we selected for lime precipitation and sedimentation (lime and settle) without filtration is the so-called combined metals data base. This data is a composite of data for nine pollutants from wastewaters treated by lime and settle technology drawn from EPA sampling and analysis of copper and aluminum forming, battery manufacturing, porcelain enameling and coil coating. These wastewaters are similar to nonferrous metals manufacturing wastewater in all material respects because they contain comparable concentrations of dissolved metals.

We regard the combined metals data base as the best available measure for establishing the concentrations attainable with hydroxide precipitation and sedimentation. Our determination is based on the similarity of the raw wastewaters as generally determined by statistical analysis for homogeneity (a separate study of statistical homogeneity of these wastewaters is part of the record of this rulemaking), the larger number of plants used (21

plants versus six nonferrous metals plants available), and the larger number of data points available for each pollutant. The larger quantity of data in the combined metals data base, as well as a greater variety of influent concentrations, enhances the Agency's ability to estimate long term performance and variability through statistical analysis.

We view the use of the combined metals data base as appropriate for nonferrous metals manufacturing plants for the following reasons:

(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 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. We also do not believe any interfering properties (such as chelating agents) exist in nonferrous metals manufacturing wastewater that would interfere with metal precipitation and so prevent attaining concentrations calculated from the combined metals data base.

It should be noted, however, that our statistical analysis indicate that the raw wastewater matrix in nonferrous metals manufacturing contains higher concentrations of lead and cadmium than the raw wastewater of plants used for the combined metals data base. Because the precipitation (and ultimate removal by sedimentation) of these metals is directly related to their solubility, we believe that the differences in raw waste concentrations, while statistically significant, are not large enough to impact the achievable concentrations following treatment. We solicit comment on this judgment, as well as data demonstrating the need for less stringent concentrations for lead and cadmium because of the higher raw wastewater concentrations of these pollutants.

(2) **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 long-term mean effluent concentrations equal to or better than the combined metals data base for five of six metals and TSS. The mean lead concentration for the nonferrous plants is only 0.01 mg/l greater than the mean for the combined metals plants of 0.12 mg/l. We do not consider this difference to be significant, especially in the context of compliance with all other pollutant performances.

We also compared the combined metals data base long-term mean performance with long-term mean lime and settle performance from an additional nonferrous plant for which we have extensive (over 100 data points) self-monitoring. This plant met or bettered the combined metals data base limits for all pollutants monitored (cadmium, zinc, and TSS).

(3) **Previous Regulations:** BPT limitations based on more stringent concentrations than those calculated from the combined metals data base have been promulgated for cadmium, copper, lead, and zinc in copper refining and metallurgical acid plants (July 2, 1980, 45 FR 44926). We believe that plants achieving these more stringent limitations will not encounter any difficulty in achieving limitations based on the combined metals data base.

We also are proposing limits based on this technology for certain pollutants not included in the combined metals data base. Treatability limits for these pollutants are calculated either from nonferrous metals manufacturing data (for arsenic, selenium, silver, and antimony) or—for aluminum and fluoride—from categories with wastewaters similar to nonferrous metals manufacturing (aluminum from aluminum forming data and fluoride from electrical components manufacturing data). Chapter VII of the General Development Document

provides a more detailed discussion of these performance calculations. In general, however, we are using these data bases because they represent the best available performance data on removal of these metals from wastewater similar to nonferrous metals wastewater.

The mean of concentrations from nonferrous plants with well operated lime precipitation and sedimentation that the Agency sampled indicates that the plants are meeting the limits for all of these pollutants except for arsenic and selenium. We believe the proposed limitations for these metals are achievable, however, because they are based on permit data from nonferrous metal plants including one of the six plants with treatment sampled by EPA.

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 applies variability factors calculated 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. In fact, the use of the 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.

For pollutants for which there were no data relating to filtration effectiveness, 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. The same rate of removal should apply for other toxic metals and for cyanide because filtration removes precipitated toxic metals and cyanide without preference.

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. Although the one nonferrous plant samples only supplied data for cadmium, zinc, and TSS, its attainment of the limitations calculated from the extensive porcelain enameling data suggests the ability to attain the other limitations because of the nonpreferential nature of toxic metal removal by filters.

We solicit comment on our use of the combined data base for nonferrous metals manufacturing. We specifically request submission of additional data, including both raw waste and treated waste data, from nonferrous metals manufacturing plants using properly operated lime and settle and lime, settle and filtration systems.

There is one exception to this discussion. In those subcategories where we are not altering existing BPT requirements—primary aluminum, secondary aluminum, primary zinc, primary copper electrolytic refining and metallurgical acid plants—those limitations necessarily continue to be based on subcategory-specific data. It is not logical to write new BPT limits for these plants because permit writers will include BAT limitations (and not new BPT limitations) in the next generation of permits for these plants. BAT limitations for all of these subcategories will, of course, be based on the data base for polishing filtration discussed above.

B. Mass-Based Standards vs. Concentration-Based Standards for PSES and PSNS. In proposing PSES and PSNS, we considered whether to propose exclusively mass-based standards, or to allow POTWs the alternative of concentration- or mass-based standards. Mass-based standards ensure that limitations are achieved by means of pollutant removal rather than by dilution. They are particularly important when a limitation is based upon flow reduction because pollutant limitations associated with the flow reduction cannot be measured any way but as a reduction of mass discharged. Mass-based standards, however, are harder to implement because POTWs face increased difficulties in monitoring. POTWs also must develop specific limits for each plant based on the unit operations present and the production occurring in each operation.

We have resolved these competing considerations by proposing mass-based

standards exclusively where the PSES and PSNS treatment options include significant flow reductions or where significant pollutant discharge reductions are attributable to flow reductions. This is the case here for the secondary lead, primary tungsten, and primary columbium-tantalum subcategories. The flow reductions over estimated current flows in these subcategories are 7.8 percent in the secondary lead subcategory (with estimated annual removals associated with reduced flow of 205 kg of toxic pollutants and 1,527 kg of nonconventional pollutants over current removals of these pollutants), 32.8 percent in primary tungsten (with estimated annual removals attributable to reduced flow of 42 kg toxic pollutants and 26,047 kg of nonconventional pollutants), and 16.1 percent in primary columbium-tantalum (with estimated annual removals attributable to reduced flow of 10,405 kg toxic pollutants and 59,018 kg of nonconventional pollutants). We believe the incremental pollutant removals associated with flow reduction are significant enough to warrant mass-based standards exclusively in these subcategories (for both PSES and PSNS).

In the secondary silver subcategory we also are proposing mass-based PSES without alternative concentration-based standards although the flow reduction for the entire subcategory is not great. However, several plants grossly exceed the flow basis of PSES. Mass-based limits are needed to ensure that these plants reduce their water usage. We likewise are proposing mass-based PSNS in this subcategory because PSNS for secondary silver is based on 90 percent flow reduction of raw wastewater by recycle, and new plants would lack incentive to achieve these reductions without a mass-based standard.

In the secondary aluminum subcategory, however, flow reduction over current discharge rates is minimal (0.2 percent). PSES for this subcategory consequently contains alternative mass-based and concentration-based standards. We are not proposing alternative mass- and concentration-based PSNS subcategories, however, since PSNS includes significant flow reductions for each subcategory (90 percent flow reduction of direct chill casting wastewater).

C. pH. In those subcategories where we are first proposing BPT, and in the one subcategory where we are modifying existing BPT, we are proposing pH limitations of 7.5 to 10. These levels vary somewhat from the pH limitations of 6 to 9 in existing BPT

for other nonferrous metal subcategories. We are proposing the higher ranges to allow for proper performance of the lime precipitation and sedimentation technology. This technology generally requires a wastewater pH of 8.8 to 9.3 (depending on wastewater compositions) so as to achieve optimum precipitation of some metals.

We are not proposing to amend the pH standards in existing BPT regulations in the nonferrous metals category. We are, however, making this change for proposed BCT (in all cases where we are regulating pH), so that the next generation of permits should all contain the revised pH limitation. (Since no cost is associated with achieving pH levels of 7.5 to 10, this level is clearly appropriate to BCT.)

D. Frequency of Sampling to Demonstrate Compliance With 30-Day Average Limitations. The proposed regulation establishes monthly average limitations that are based on the average of 10 consecutive sampling days (not necessarily consecutive calendar days). The 10-day average value was selected as the minimum number of consecutive samples which need to be averaged to arrive at a stable slope on a statistically based curve relating one-day and 30-day average values and it approximates the most frequent monitoring requirements of direct discharge permits. The monthly average numbers shown in the regulation are to be used by plants with combined waste streams that use the "combined waste stream formula" set forth at 40 CFR 403.6(e) and by permit writers in writing direct discharge permits.

E. Compliance Date for PSES. It is our tentative intention that the date for compliance with PSES be three years from the regulation's final promulgation date. Few indirect dischargers in this category have installed and are properly operating the treatment technology for PSES. In addition, the readjustment of internal processing conditions to achieve reduced wastewater flows may require further time above installation of end-of-pipe treatment equipment. Many plants in this and other industries also will be installing the treatment equipment suggested as model technologies for this regulation which may result in delays in engineering, ordering, installing, and operating this equipment. Under these circumstances, we think that three years is the appropriate compliance date under Section 307(b)(1) of the Act. We invite comment on the appropriateness of the compliance date.

F. Recycle of Wet Scrubber and Contact Cooling Wastewater. We are

proposing as BAT and PSES for most subcategories that 90 percent of the wet air pollution control and contact cooling wastewater be recycled (we have proposed a higher rate for certain subcategories where reported rates of recycle are even higher). Water is used in wet air pollution control systems to capture particulate matter or fumes evolved during manufacturing. Cooling water is used to remove excess heat from cast metal products.

We observed extensive recycle of these streams throughout the industry. Indeed, some plants reported 100 percent recycle of process water from these operations. The Agency believes, however, that most plants may have to discharge a portion of the recirculating flow to prevent the excessive buildup of dissolved solids. The Agency believes based on the data submitted in dcp's that through operation with a discharge of 10 percent of the recirculating flow, contact cooling water and scrubber water can be reused while controlling scale formation, equipment corrosion and maintaining product quality.

Existing practice supports our selection of a 90 percent recycle rate. Twenty-nine of 61 aluminum smelting and forming plants practice greater than 90 percent recycle of the direct chill casting contact cooling water. Two of the five aluminum smelters practicing continuous rod casting recycle 90 percent or more of their contact cooling water. Four of eight primary aluminum plants using wet air pollution control on anode bake ovens, five of 11 plants using wet scrubbers on potlines, and three of eight plants using wet scrubbers for potrooms recycle 90 percent or more of their scrubber water.

Five of 10 primary copper plants currently recycle 90 percent or more of their casting contact cooling water. Two of three primary zinc plants with leaching scrubbers recycle 90 percent or more. Two of five primary tungsten plants with scrubbers on reduction furnaces practice 90 percent or greater recycle. Six of seven secondary silver plants with furnace scrubbers currently recycle 90 percent or more of the scrubber water.

G. Cost of Compliance at Integrated Facilities. As discussed in Section VIII (Building Block Approach Applied to Integrated Facilities), integrated facilities subject both to this proposed regulation and to regulations for other point source categories must install technology and modify processes so as to comply with mass limitations calculated using the building block approach. In estimating the cost of compliance with this proposed regulation, we did not include any

specific costs associated with integrated facilities.

We believe this approach is justified for plants not currently providing BPT or BAT because we have included costs for separate treatment of wastewater in calculating costs associated with each regulation. Costs associated with segregation of the combined waste streams (i.e. additional piping) are not normally significant compared to the cost of the treatment equipment.

We have assumed that the co-treated wastewaters are compatible and that this proposed regulation will not require segregation and separate treatment of these wastewaters.

We solicit comment on these assumptions. We also request cost data from plants that have experienced costs or that have developed cost estimates that reflect specific costs associated with integrated facilities.

X. Best Practicable Technology (BPT) Effluent Limitations

The factors considered in defining best practicable control technology currently available (BPT) include the total cost of applying technology in... relation to the effluent reduction benefits derived, the age of equipment and facilities involved, the processes employed, non-water quality environmental impacts (including energy requirements), and other factors the Administrator considers appropriate. In general, the BPT level represents the average of the best existing performances of plants of various ages, sizes, processes or other common characteristics. Where existing performance is uniformly inadequate, BPT may be transferred from a different subcategory or category. Limitations based on transfer technology must be supported by a conclusion that the technology is, indeed, transferable and a reasonable prediction that it will be capable of achieving the prescribed effluent limits. See *Tanners' Council of America v. Train*, 540 F. 2d 1188 (4th Cir. 1976). BPT focuses on end-of-pipe treatment rather than process changes or internal controls, except where such are common industry practice.

The cost-benefit inquiry for BPT is a limited balancing, committed to EPA's discretion, which does not require the Agency to quantify benefits in monetary terms. See, e.g. *American Iron and Steel Institute v. EPA*, 523 F. 2d 1627 (3rd Cir. 1975). In balancing costs in relation to effluent reduction benefits, EPA considers the volume and nature of existing discharges, the volume and nature of discharges expected after application of BPT, the general

environmental effects of the pollutants, and the cost and economic impacts of the required pollution control level. The Act does not require or permit consideration of water quality problems attributable to particular point sources or industries, or water quality improvements in particular water quality bodies. Accordingly, water quality considerations were not the basis for selecting the proposed BPT. See *Weyerhaeuser Company v. Costle*, 590 F. 2d 1011 (D.C. Cir. 1978).

In developing the proposed BPT limitations, the Agency considered the amount of water used per unit production in each waste stream. These data were used to determine the average (mean) water discharge for each subcategory operation. Aberrant flows were excluded from mean calculations. Since the proposed BPT limitations were based on the average water discharge, plants with greater than average discharge flows may have to implement some method of flow reduction in order to achieve the effluent limits of BPT.

Next, we evaluated the appropriate treatment technology for BPT treatment. The proposed BPT level treatment for each subcategory was based on the average of the best existing performance currently demonstrated throughout that subcategory. As stated above, BPT was based on end-of-pipe treatment technologies except in those instances where a process change or internal control is common practice in the subcategory. As an example, of the nine plants in the secondary lead subcategory that use wet air pollution control on kettle refining operations, six discharge no process wastewater through complete recycle, two recycle greater than 90 percent of the water used and one completely reuses this water elsewhere in the plant. We are proposing zero discharge from this stream because complete recycle or reuse is so widely demonstrated for this waste stream.

The effluent concentrations resulting from the application of the proposed model BPT technology are identical for all wastewater streams; however, the mass limitations vary for each waste stream depending on the regulatory flow. The BPT limitation were calculated by multiplying the effluent concentrations achievable by the selected option technology by the regulatory flow established for each waste stream.

Where we already have promulgated BPT, we are (with one exception) not proposing to alter these existing limitations. We think this would be unnecessary since by the time any limitations were finalized, permits

would be modified to reflect new BAT limitations, due to the imminence of the 1984 BAT compliance date. We therefore are leaving unaltered existing BPT limitations for the primary aluminum, secondary aluminum, primary copper smelting, primary electrolytic copper refining, secondary copper, primary zinc, and metallurgical acid plants subcategories. We are modifying existing BPT in the primary lead subcategory, as explained in more detail below, only because it appears that the existing zero discharge limitation fails to provide a needed allowance for certain process wastewater streams.

All of these existing BPT regulations (except primary copper smelting) are based on lime precipitation and sedimentation technology. However, the achievable concentration limits for this technology used in the regulations are not derived from the combined data base (see Section VIII above), and so differ from those proposed today as BPT in other subcategories. This difference disappears at BAT, where all limits for this technology reflect the combined metals data base. Thus, any seeming anomaly is very short-lived.

We also realize that our modification of the metallurgical acid plants subcategory to include primary zinc acid plants, without modifying BPT for the primary zinc subcategory to delete the acid plant allowance provided, will create the potential for double counting of the BPT acid plant allowance at primary zinc plants. This is not our intention. Instead, we believe that existing permits at these plants will be modified to reflect the BAT requirements where there is no such double counting. Therefore, this apparent inconsistency should not have any actual effect on existing permits.

To fulfill our statutory obligation, we are proposing BPT in those subcategories we have not addressed previously, namely primary columbium-tantalum, primary tungsten, secondary silver and secondary lead. We also are proposing that lead and zinc metallurgical acid plants be subject to existing limits already promulgated for copper metallurgical acid plants. Our basis for these decisions, and the basis for our proposed modification of BPT in the primary lead subcategory, are explained below.

Primary Lead

EPA promulgated BPT effluent limitations guidelines for the primary lead subcategory on February 27, 1975 under Subpart G of 40 CFR Part 421. The promulgated BPT is based on the complete recycle and reuse of slag

granulation wastewater (or dry slag dumping), dry air scrubbing, and treatment and impoundment subject to allowances for net precipitation based on lime precipitation and sedimentation and catastrophic precipitation discharges without limitation of acid plant blowdown. Acid plant blowdown is now included in the metallurgical acid plants subcategory (see Section VIII—New Subcategorizations). The remaining operations were not provided discharge allowances, suggesting that BPT for those operations should be zero discharge.

However, new information has become available to the Agency that supports the need for discharge of wastewater from slag granulation, an operation previously considered and included in the promulgated zero discharge regulations. Our information in 1975 led us to believe that slag granulation is a net water consuming operating and, therefore, we found no justification for a discharge allowance. Our data show that one plant uses an ore with a lead content that makes it feasible to recycle blast furnace slag into the sintering machine to recover the remaining lead content. After studying this further, we found that there may be an accumulation of dissolved salts in recycled slag granulation wastewater. Accumulation of dissolved salts, particularly sodium salts, in the recycle water and ultimately in the recycled slag is detrimental to the sintering process chemistry. For this reason, we are modifying the promulgated BPT for this subcategory to allow a discharge to prevent the accumulation of solids in slag granulation water circuits.

Lead refineries not on-site with lead smelters were not included in the applicability of the promulgated BPT. At the time of promulgation, we noted that the single off-site lead refinery did not discharge any process wastewater off-site and was not subject to the interim final limitations. After studying the refining processes further, the Agency believes there is no technical reason that on-site and off-site refineries should be regulated differently. Consequently, we are modifying the applicability of the regulations proposed in today's notice so that it includes all refining operations. In doing so we are including the same limitations and standards for hard lead refining blast furnace slag granulation and wet air pollution control to be applied using the building block approach discussed above.

The technology basis of the limitations will be identical to that used in the promulgated BPT for the net precipitation allowance-lime

precipitation and sedimentation. Although the only direct discharging plant now has lime precipitation, sedimentation and filtration in place, we are reluctant to revise the technology basis of a regulation retroactively.

The data base used to establish concentrations for the limitations in the promulgated BPT was based solely on acid plant data. As stated above, we regard the combined metals data base as a superior measure of performance of lime precipitation and sedimentation on nonferrous metals wastewaters, and therefore we are using these limits in today's proposal. We also note that there are no costs associated with meeting these limitations because treatment already is in place.

The pollutants selected for specific limitation are lead, zinc, TSS and pH. These pollutants (except for pH) were selected because they were present in the largest quantities in the raw wastewater. We selected pH for limitation because of the potential for acidic discharges from this subcategory.

Metallurgical Acid Plants

As previously discussed in Section VIII, "Significant Changes to Prior Regulations," BPT for primary copper acid plants was promulgated on July 2, 1980 (45 FR 44926). This existing BPT regulation is being expanded to include primary zinc and primary lead acid plants. The BPT effluent mass limitations for primary zinc and primary lead acid plants are identical to those for primary copper acid plants. As noted above, this is because the Agency collected data on primary zinc and primary lead acid plants and found that the acid manufacturing process, wastewater discharge flow rates and pollutants present in the raw wastewater were essentially the same as those found at primary copper acid plants.

The existing BPT effluent mass limitations are based on lime precipitation and sedimentation treatment technology. The pollutants limited by the existing BPT are cadmium, copper, lead, zinc, TSS and pH. There is no cost associated with expanding the current BPT regulation to include primary zinc and primary lead acid plants because all of the direct discharging plants in the metallurgical acid plants subcategory currently have BPT technology in-place.

Primary Tungsten

We are proposing BPT requirements for the primary tungsten subcategory, since BPT has not yet been promulgated. The technology basis for the BPT limitations is lime precipitation and

sedimentation technology to remove metals and solids from combined wastewaters and to control pH, and ammonia steam stripping to remove ammonia. These technologies already are in place at both of the direct dischargers in the subcategory. The pollutants specifically proposed for regulation at BPT are lead, selenium, zinc, ammonia, TSS and pH.

Proposed limitations for ammonia steam stripping are based on data from a well-operated plant in the iron and steel manufacturing point source category. We believe that the iron and steel subcategory data provide the best basis for determination of ammonia steam stripping performance because the paired influent and effluent data were collected by EPA sampling personnel from a plant with well-operated technology. This technology should achieve similar removals in both primary tungsten and iron and steel because raw wastewater ammonia concentrations are in the same order of magnitude and no interfering agents are present in primary tungsten that would interfere with this solubility-limited process.

Implementation of the proposed BPT limitations will remove annually an estimated 12 kg of toxic metals, 12,700 kg of ammonia, and 7,100 kg of TSS over estimated current discharge (no toxic organics would be removed). Removals from raw wastewater are an estimated 3,560 kg of toxic metals, 741,470 kg of ammonia, and 2,658,600 kg of TSS. We project no capital or annual cost for achieving proposed BPT because the technology already is in place at both discharging facilities.

More stringent technology options were not selected for BPT since they require in-process changes or end-of-pipe technologies less widely practiced in the subcategory, and, therefore, are more appropriately considered under BAT.

Primary Columbium-Tantalum

We are proposing BPT requirements for the primary columbium-tantalum subcategory, since BPT has not yet been promulgated. EPA is proposing BPT effluent mass limitations based on lime precipitation and sedimentation to control toxic metals, TSS, pH and fluoride, and preliminary treatment with steam stripping to reduce ammonia concentrations. These technologies are currently in place at all three of the direct dischargers in the primary columbium-tantalum subcategory. The pollutants specifically proposed for regulation at BPT are lead, zinc, ammonia, fluoride, TSS and pH.

The proposed limitations are based on concentrations for the lime precipitation and sedimentation technology taken from the combined data base discussed earlier. Proposed limitations for ammonia steam stripping are based on the same iron and steel sampling data described. We believe this technology will perform at the same level in the primary columbium-tantalum subcategory as in iron and steel because ammonia is present at the same order of magnitude in primary columbium-tantalum wastewater, and there are no interfering agents in the wastewater.

BPT will result in the removal of an estimated 850 kg of toxic pollutants and 263 kg of conventional pollutants per year from current discharge levels. There is no cost associated with compliance with the proposed BPT mass limitations because the technology is already in place at all three of the direct discharging plants in the primary columbium-tantalum subcategory.

More stringent technology options were not selected since they require in-process changes or end-of-pipe technologies which are less widely practiced by the industry and, therefore, are more appropriately considered under BAT.

Secondary Silver

EPA is proposing BPT requirements for the secondary silver subcategory because BPT requirements for this subcategory have not previously been promulgated. The proposed BPT effluent mass limitations are based on lime precipitation and sedimentation to remove toxic metals, pH, TSS, and pretreatment with steam stripping to reduce ammonia concentrations. This technology is currently in place at two of the four direct discharges in the secondary silver subcategory. 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 proposed limitations are based on concentrations for the lime precipitation and sedimentation technology taken from the combined data base discussed earlier. Proposed limitations for ammonia steam stripping are based on data from a well-operated plant in the iron and steel manufacturing point source category. We believe that the iron and steel subcategory data provide the best basis for determination of ammonia steam stripping performance because the paired influent and effluent data were collected by EPA sampling personnel from a plant with well-operated technology. This technology

should achieve similar removals in both secondary silver and iron and steel because raw wastewater ammonia concentrations are in the same order of magnitude and no interfering agents are present in secondary silver that would interfere with this solubility-limited process.

The proposed BPT will result in the removal of an estimated 230 kg of toxic pollutants and 578,350 kg of ammonia per year from estimated current discharge levels. The estimated capital investment cost of BPT is \$124,000 and the estimated annual cost is \$263,000. These costs represent wastewater treatment equipment not currently in place.

We do not project any plant closures or unemployment, and price impacts are expected to be less than 1 percent. The Agency has determined, therefore, that the reduction benefits associated with compliance justify the costs.

More stringent options were not selected for BPT because they involve in-process changes or end-of-pipe treatment technologies which are less widely practiced by the industry and, therefore, are more appropriately considered under BAT. However, we are considering a BPT limitation for cyanide based on cyanide precipitation. Although our plant sampling data do not show that cyanide is present in treatable concentrations, our analysis of the processes used to recover silver from spent plating solutions indicates that cyanide could be present at concentrations higher than we found in the sampled plants. Therefore, we are soliciting data from secondary silver plants to demonstrate whether our existing data base is representative of cyanide concentrations in raw wastewater in this subcategory. If the data received support a conclusion that cyanide is present at treatable concentrations, then we will consider including limitations for cyanide based on cyanide precipitation. These limitations are presented in the subcategory supplement to the Development Document (see Section II—Recommendations).

Secondary Lead

EPA is proposing BPT requirements for the secondary lead subcategory because BPT requirements for this subcategory have not previously been promulgated. The proposed BPT effluent mass limitations are based on lime precipitation and sedimentation to remove toxic metals and total suspended solids (TSS), and to control pH. This technology is currently in place at five of the seven direct discharging plants in the secondary lead

subcategory. The pollutants and pollutant parameters controlled at BPT are antimony, arsenic, lead, zinc, TSS and pH. The proposed limitations are based on concentrations for the lime precipitation and sedimentation technology taken from the combined data base discussed earlier. We are proposing that there shall be no discharge of ammonia from secondary lead plants. The only source generating ammonia, kettle smelting, is not given a regulatory flow allowance because we are proposing dry scrubbing as BPT for this process (see general discussion at the beginning of this section).

BPT will result in the removal of an estimated 1,105 kg of toxic pollutants and 40,500 kg of conventional pollutants per year from current discharge levels. The estimated capital investment cost of BPT is \$470,000 and the estimated annual cost is \$228,000. These costs are in 1978 dollars and represent wastewater treatment equipment not currently in place.

We project no closures or unemployment as a result of compliance with these limitations, and price impacts are expected of less than \$0.01 per lb. The Agency finds therefore, that the effluent reduction benefits associated with compliance justify these costs.

More stringent options were not selected for BPT because they involve in-process changes or end-of-pipe treatment technologies which are less widely practiced by the industry and, therefore, are more appropriately considered under BAT.

XI. Best Available Technology (BAT) Effluent Limitations

The factors considered in assessing best available technology economically achievable (BAT) include the age of equipment and facilities involved, the process employed, process changes, nonwater quality environmental impacts (including energy requirements) and the costs of applying such technology (Section 304(b) (2)(B) of the Clean Water Act). At a minimum, the BAT technology level represents the best economically achievable performance of plants of various ages, sizes, processes or other shared characteristics. As with BPT, where the Agency has found the existing performance to be uniformly inadequate, BAT may be transferred from a different subcategory or category. BAT may include feasible process changes or internal controls, even when not in common industry practice.

The required assessment of BAT "considers" costs, but does not require a balancing of costs against effluent reduction benefits (see *Weyerhaeuser v. Costle, supra*). In developing the

proposed BAT, however, EPA has given substantial weight to the reasonableness of cost. The Agency has considered the volume and nature of discharges expected after application of BAT, the general environmental effects of the pollutants, and the costs and economic impacts of the required pollution control levels.

Despite this expanded consideration of costs, the primary determinant of BAT is still effluent reduction capability. As a result of the Clean Water Act of 1977, the achievement of BAT has become the principal national means of controlling toxic water pollution.

The Agency has evaluated six major sets of technology options, set out in Section VII, that might be considered BAT level technology. Each of these options would substantially reduce the discharge of toxic pollutants. These options are described in detail in Section X of the General Development Document.

We have considered reverse osmosis for the purpose of achieving zero discharge and activated alumina to reduce concentrations of arsenic and fluoride for BAT in this category. We ultimately rejected these technologies because they are not demonstrated in the nonferrous metals manufacturing category and are not clearly transferable. In addition, these technologies significantly increase the compliance costs, are difficult to operate and do not appear to result in significant pollutant removals.

We also considered dry scrubbing as an in-process modification in BAT. This technology, however, was not sufficiently demonstrated for nonferrous metals manufacturing. There were exceptions; dry scrubbing on kettle smelting, in secondary lead, for example, was so widely demonstrated that we are proposing dry scrubbing as BPT. The emissions from many of the manufacturing processes were found to contain hot particulate matter, acidic fumes. Emissions of this nature would tend to cause operational problems. The materials of construction would also be prohibitively expensive. Finally, we rejected dry scrubbing because the retrofit costs associated with implementation of this technology would also be prohibitively expensive.

As a means of evaluating the economic achievability of each of these options, the Agency developed estimates of the compliance costs. An estimate of capital and annual costs for the six BAT options was prepared for each subcategory as an aid in choosing the best BAT options. All costs are expressed in 1978 dollars.

The cost methodology has been described in detail in Section VIII. For most treatment technologies, standard cost literature sources were used for module capital and annual costs. Data from several sources were combined to yield average or typical costs as a function of flow or other characteristic design parameters. In a small number of modules, the technical literature was reviewed to identify the key design criteria, which were then used as a basis for vendor contacts. The resulting costs for individual pieces of equipment were combined to yield module costs. In either case, the cost data were coupled with flow data from each plant to established system costs for each facility.

Primary Aluminum

The BAT option proposed is flow reduction, lime precipitation, sedimentation, and filtration for control of toxic metals and fluoride; cyanide precipitation and filtration; and activated carbon adsorption preliminary treatment for toxic organics removal. Flow reduction—based on recycle of scrubber wastewater and casting contact cooling water—is widely demonstrated within the subcategory, with 17 of 27 dischargers presently practicing some form of recycle. The proposed level of flow reduction from each unit operation is demonstrated within the subcategory. Lime precipitation and sedimentation, likewise, is widely practiced (this technology is in place at 13 plants) and is the technology basis for existing BPT. One primary aluminum plant presently uses filters. Activated carbon and cyanide precipitation technologies are not presently in use in the subcategory, but are transferable from other subcategories or from benchscale data.

The pollutants specifically proposed for regulation under BAT are benzo(a)pyrene, antimony, cyanide, nickel, aluminum and fluoride. These pollutants were selected because they were present in the largest quantities in the raw wastewater.

Implementation of the proposed BAT would remove annually an estimated 1,592,676 kg/yr of toxic pollutants; 471,908 kg/yr of toxic metals, 1,056,728 kg/yr of toxic organics, and 64,040 kg/yr of cyanide from raw wastewater. In addition, it would remove an estimated 8,841,865 kg/yr of nonconventional pollutants. This represents estimated removals of 1,213,584 kg/yr toxic pollutants (including all of the toxic organics removed) and 1,389,551 kg/yr nonconventional pollutants above BPT removal levels. It also represents significant estimated removals over the

intermediate BAT option considered but not selected (the same technology but without filtration and activated carbon): 1,062,012 kg/yr of toxic pollutants and 295,254 kg/yr of nonconventional pollutants. Filtration thus serves as an important polishing step in proposed BAT.

We believe this technology is economically achievable. The estimated capital cost of proposed BAT is \$34.85 million (1978 dollars) and the annualized cost is \$18.71 million (1978 dollars). We project no plant closures or unemployment, and reduction in margin of less than \$0.25/ton as a result of compliance. The estimated capital cost for achieving the intermediate option is \$24.96 million, and \$15.63 million annual cost. We also project no significant impacts from achieving this option.

There are several issues regarding where the point of compliance and monitoring should be for this subcategory. Some commenters to a draft version of this proposal suggested that plants would have to reduce toxic pollutants below the detectable limit to meet the mass limitations at the end of pipe (because the same toxic pollutants are not present in every process wastestream and so some dilution occurs when wastestreams are commingled). We do not believe this to be true for any pollutants other than toxic organics. The standards for these other pollutants assume combined treatment of process wastewaters, and the mass limitation is the concentration basis of the technology (always above the analytical detection limit) times the allowable flow from every unit process actually operated at the plant, whether or not the pollutant is present in wastewater from each particular operation. Under this approach, it is not possible for a regulatory mass limitation at an end-of-pipe discharge point to be below the detection limit.

There is a distinct possibility, however, that plants may be able to meet the limits for toxic organics through dilution unless the compliance point is at-the-source, rather than end-of-pipe. Again this is because the organic pollutants are present in wastewater from only certain unit operations, and are present at concentrations that could be reduced below analytical detection levels after commingling with other process wastewaters.

We believe it important that this not occur. The strong policy of the Act is that pollutants be removed, not diluted. In addition, the Agency's Carcinogen Assessment Group has concluded that these pollutants possess substantial

evidence of carcinogenicity, and their human health ambient water quality levels are extremely low.

We therefore are proposing to require that the limitations on toxic organics in this subcategory be imposed on the internal waste streams containing these pollutants prior to mixing with other process wastewaters ("at-the-source"). Compliance monitoring also would be applied to these internal waste streams. The Agency may impose such a limitation "where permit effluent limitations . . . imposed at the point of discharge are impractical or infeasible." 40 CFR 122.63(i). This is the case here, as explained above. Indeed, the Agency gave as an example of a situation justifying an upstream effluent limitation, the circumstance "where the wastes at the point of discharge are so diluted as to make monitoring impracticable. . . ." 44 FR at 32909 (June 7, 1979).

We believe this requirement is technically feasible. In fact, the model BAT treatment includes preliminary treatment with activated carbon to reduce concentrations of toxic organics. This technology is applied only to those wastestreams containing these pollutants. When assessing BAT compliance costs, we included the cost of segregating the organic-laden waste streams to allow preliminary treatment and compliance monitoring. A sampling point following the activated carbon pretreatment is the most logical choice to ensure compliance. Plants that do not have any of the five process waste streams (potline, potroom, anode bake plant, and anode paste plant scrubbing or cathode reprocessing) containing the toxic organics would not need to comply with this requirement; in fact, under the building block approach, their permits would not contain limitations for toxic organics unless discharged from another source within the plant. We solicit comments on this approach.

As an alternative, plants may segregate those waste streams containing toxic organics and treat and discharge them separately or choose to treat all wastewaters with carbon following central treatment for other pollutants. These alternatives are far more costly than upstream preliminary treatment and monitoring, however, and we do not expect that plants will pursue them.

Two of the technologies in the proposed BAT treatment train—carbon adsorption and cyanide precipitation—are being transferred to the primary aluminum subcategory because existing treatment does not effectively remove toxic organic pollutants and cyanide.

Carbon adsorption pretreatment is directed at better control of discharges from wet air emission scrubbing associated with anode paste plants, anode bake plants, potlines and potrooms, as well as from cathode reprocessing operations. (As an alternative method of controlling these discharges, a plant could install a dry alumina air scrubber to institute 100 percent recycle of wet scrubbing discharges.) The discharges contain large amounts of toxic organics (polynuclear aromatic hydrocarbons) that do not appear to be effectively removed by existing treatment in the subcategory. Activated carbon technology is a demonstrated control technology for polynuclear aromatic hydrocarbons in the iron and steel cokemaking subcategory. In addition, adsorption is demonstrated in bench-scale studies on POTW wastewater spiked with polynuclear aromatic hydrocarbons (Petrasck, A.C., Kugelman, L.J., Austern, B.M., Pressley, T.A., Winslow, L.A. and R.A. Wise, Fate of Toxic Organic Compounds in Wastewater Treatment Plants, Unpublished, December, 1981).

We are proposing an achievable concentration of 10 ug/1 of benzo(a)pyrene, the level from the bench-scale study. Although we promulgated a somewhat higher achievable concentration (50 ug/1) in the iron and steel category, we believe the 10 ug/1 limitation is more appropriate for primary aluminum wastewaters because concentrations of phenols, and oil and grease in the iron and steel raw wastewaters are an order of magnitude higher than the primary aluminum raw matrix and these pollutants would interfere with organics removal. We solicit comment on the appropriate achievable concentration level.

We also solicit comment as to the possibility of incidental removal of polynuclear aromatic hydrocarbon by lime precipitation and sedimentation, with and without polishing filtration. These toxicants have low solubilities, suggesting the possibility of incidental removal. Our sampling data, however, fail to demonstrate that incidental removal is occurring.

The second transferred technology—cyanide precipitation—is directed at control of free and complexed cyanides in waste streams within the primary aluminum subcategory that result from use of coke and pitch in the electrolytic reduction process. These waste streams collectively discharge approximately 121,000 Kg/yr of cyanide. The achievable concentration level is

transferred from three well-operated coil coating plants. The Agency believes this technology, and the achievable concentration limits, are transferable to the primary aluminum subcategory because raw wastewater cyanide concentrations (prior to dilution with waste streams without cyanide) are of the same order of magnitude in both categories. Further, no pollutants were identified in primary aluminum wastewater that would interfere with the operation or performance of this technology. (We also note that the limit for cyanide in the proposed regulation reflects further removals from filtration following cyanide precipitation preliminary treatment. For the derivations of these limitations, see Chapter VII of the General Development Document.)

Secondary Aluminum

We are proposing to amend existing effluent limitations guidelines for the secondary aluminum subcategory. The promulgated BAT prohibits the discharge of process wastewater. However, new information has become available to the Agency that supports the need for discharge of wastewater from chlorine demagging, an operation considered and included in the promulgated zero discharge regulation. Three dry processes existed at the time of promulgation: The Durham process, the Alcoa process, and the Teller process. The Agency believed that each of these processes were sufficiently well demonstrated to be installed and become operational by 1984, the compliance date for BAT. Consequently, we found no justification for a discharge allowance associated with this waste stream. Our new information shows that the technologies are not sufficiently demonstrated nor are they applicable to plants on a nationwide basis. For this reason, we are modifying the promulgated BAT. The proposed BAT is based on the use of wet scrubbing on chlorine demagging operations.

Information also has become available to the Agency that supports the need for discharge of wastewater from direct chill casting, an operation neither considered nor included in the promulgated BAT regulation. Direct chill casting is a relatively new process and companies have been installing this technology into their plants over the past five years. We have considered the process as a part of this rulemaking and are proposing effluent limitations that allow a discharge.

The technology basis for BAT is also modified. We are proposing lime precipitation, sedimentation and filtration, along with ammonia steam

stripping preliminary treatment as the technological basis for BAT. Lime precipitation and sedimentation, and ammonia steam stripping are demonstrated technologies in this subcategory. The proposed limitations are based on achievable concentrations from two porcelain enameling plants and one nonferrous metals plant and variability factors from the combined data base (see Section IX above), and (for ammonia) achievable concentrations transferred from the iron and steel category.

The pollutants specifically proposed for regulation under BAT are lead, zinc, aluminum and ammonia. Estimated removals by the proposed BAT treatment technology are 903 kg/yr of toxic pollutants and 541 kg/yr of nonconventional pollutants from raw wastewater, and 17 kg/yr of toxic pollutants and 46 kg/yr of nonconventional pollutants over estimated BPT discharge. Our proposed BAT is economically achievable. The estimated capital cost of achieving BAT is \$1.6 million and the estimated annualized cost is \$1.35 million. We also project no plant closures or unemployment. Price changes are not expected to exceed 0.01 \$/ton of aluminum product, as a result with this option. Since filtration removes additional toxic and nonconventional pollutants, and is economically achievable, we are including it as part of proposed BAT. Filtration also adds to the treatment system reliability by making it less susceptible to operator error and to sudden changes in raw wastewater flows and concentrations.

We also are modifying the technology basis for regulating ammonia in this subcategory, as well as the achievable concentrations for ammonia removal. The technology basis for the control of ammonia under existing BPT is pH adjustment of the intake water. We are modifying BAT to include steam stripping to reduce ammonia concentrations. Air stripping is an effective technology for reducing ammonia concentrations; however, the Agency is reluctant to retain limitations and standards based on the use of air stripping because we believe that this technology reduces ammonium concentrations by simply transferring pollutants from one media (water) to another (air). Steam stripping reduces ammonia concentrations by stripping the ammonia from the wastewater with steam. The ammonia is concentrated in the steam phase and may be condensed, collected, and sold as a by-product or disposed of offsite.

Primary Copper Smelting

We are proposing to amend promulgated BAT in this subcategory to conform BAT to promulgated BPT. As discussed in Section III above, promulgated BPT is zero discharge, subject to an unlimited discharge allowance for stormwater from a 10-year, 24-hour storm falling on a cooling impoundment. Promulgated BAT includes this 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 proposing to eliminate this later allowance, for the same reasons we eliminated it at BPT. See 45 Fed. Reg. 44926, July 2, 1980, and Section VIII above. There are no costs associated with this proposal since the discharge allowance already is eliminated at BPT.

Primary Electrolytic Copper Refining

EPA is proposing alternative BAT effluent mass limitations for the primary electrolytic copper refining subcategory. Alternative A is based on the existing BPT—lime precipitation and sedimentation—with additional reduction in pollutant discharge achieved through in-process wastewater flow reduction. Alternative B is equivalent to Alternative A with the addition of filtration as an effluent polishing step. Wastewater flow reduction is based on increased recycle of spent electrolyte, anode rinse water and casting contact cooling water, and is demonstrated in the subcategory for each of these unit operations. One of the four direct discharging plants in the primary electrolytic copper refining subcategory currently practices filtration of wastewater.

The pollutants specifically limited under BAT are copper, lead and nickel; the three toxic metals present in the largest quantities in primary electrolytic copper refining raw wastewaters. Alternative A would remove an estimated 2,691 kg of toxic metals over the estimated BPT discharge. The estimated capital cost for achieving this option is \$0.328 million, and the estimated annualized costs is \$0.239 million.

Application of the proposed BAT Alternative B would remove annually an estimated 52,507 kg of toxic metals. This proposed alternative will result in the removal of an estimated 2,864 kg of toxic metals above the estimated BPT discharge level. The estimated capital investment cost of this proposed BAT is \$0.487 million and the estimated annualized cost is \$0.290 million. We

project no plant closures or unemployment. Price changes of less than 0.05 percent are expected as a result of compliance.

As stated on more detail in Section XVIII, below, we are concerned that this subcategory is presently undergoing adverse structural economic changes that may affect its ability to achieve economically the limitations based upon filtration. At the same time, filtration is demonstrated in the subcategory, removes additional toxic pollutants, and appears economically achievable based on our existing economic impact analyses. Because these recent economic changes may not be fully reflected in our analyses, however, and in order to receive the most responsive type of public comment, we are proposing alternative BAT limitations for this subcategory.

Secondary Copper

We are proposing to amend promulgated BAT in this subcategory to eliminate the discharge allowance for net precipitation on impoundments. See Section VIII above. There is no significant cost associated with this amendment, since we considered costs of achieving this change—namely costs for cooling towers—when promulgating BPT in 1975. See 40 FR 8517 (February 27 1975). The installation of cooling towers eliminates the need for cooling ponds used by some plants in this subcategory, and, therefore, the need for an allowance for net precipitation on those ponds.

Primary Lead

We are proposing to amend existing BAT for this subcategory. The amended BAT is based on lime precipitation, sedimentation, and filtration, along with in-process flow reduction. As discussed in the section on BPT for this subcategory, we have included a flow allowance to prevent the accumulation of solids in slag granulation water circuits. Since the only direct discharger in the subcategory has this technology presently in place, the technology is clearly demonstrated and economically achievable. The pollutants specifically limited are lead and zinc. These were found in the greatest quantities in the raw wastewater.

Primary Zinc

We are proposing to amend the existing BAT regulation in this subcategory. Amended BAT would be based on BPT (lime precipitation and sedimentation) with additional reduction in pollutant discharge achieved through inprocess wastewater flow reduction and the use of filtration

as an effluent polishing step.

Wastewater flow reduction is based on increased recycle of casting scrubber water and casting contact cooling water. Filtration is currently in place at two of the five direct discharging plants in the primary zinc subcategory.

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

Application of the proposed BAT effluent mass limitations will result in the removal of an estimated 5,390 kg/yr of toxic pollutants above the estimated BPT discharge rate. The estimated capital investment cost of the proposed BAT is \$2.57 million and the estimated annualized cost is \$1.63 million. The intermediate BAT option, lime precipitation and sedimentation and flow reduction, would remove 1,798 kg/yr of toxic pollutants above the estimated BPT removal rate. Costs of this intermediate option are \$0.228 million (capital cost) and \$0.047 million (annual cost).

Either option appears to be economically achievable. We project no plant closures or unemployment and reduction in margin of \$1 to \$1.38 million per year from the intermediate and proposed options.

We are proposing the filtration option because it is demonstrated in the subcategory and results in removal of 3,590 kg/yr of toxic pollutants above the intermediate option.

Metallurgical Acid Plants

The Agency is proposing BAT effluent mass limitations for metallurgical acid plants based on BPT 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 increased recycle of acid plant scrubber liquor and is demonstrated by existing acid plants associated with all three of the primary metal types. Filtration is currently demonstrated at three of the eight direct discharging plants in the metallurgical acid plants subcategory.

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

Application of the proposed BAT mass limitations will result in the removal of 2,919 kg of toxic pollutants per year above estimated current discharge rates. The estimated capital investment cost of proposed BAT is

\$3.55 million and the annualized cost is \$2.18 million.

We considered as an intermediate option the proposed BAT option without filters. This option removes an estimated 1,168 kg/yr of toxic pollutants above estimated current discharge levels. The estimated capital cost of this option is \$1.42 million and the annualized cost is \$0.93 million.

We are proposing filtration as part of BAT because this technology is demonstrated in the subcategory, results in removal of an additional 1,751 kg/yr of toxic pollutants over the intermediate option, and is economically achievable. We project no plant closures or unemployment resulting from compliance with either the intermediate and proposed option. In addition, filtration adds reliability to the treatment system by making it less susceptible to operator error and to sudden changes in raw wastewater flows and concentrations.

Primary Tungsten

Our proposed BAT limitations for this subcategory are based on the BPT technology (lime precipitation and sedimentation), in-process wastewater reduction, and filtration. Flow reductions are based on 90 percent recycle of scrubber effluent, a rate surpassed by three of the eight existing plants. Filters also are presently utilized by three plants in the subcategory.

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

Implementation of the proposed BAT limitations would remove annually an estimated 3,689 kg of toxic metals from raw wastewater which is 139 kg of toxic metals over the current discharge. Since both discharging plants have filtration in place, these removals are solely a result of the flow reduction measures proposed. No additional ammonia is removed at BAT, nor are any toxic organics removed. The proposed BAT represents a 22 percent incremental toxics removal over BPT, and 89 percent total toxics removal from raw waste. Estimated capital cost for achieving proposed BAT is \$447 million, and annualized cost is \$193 million.

We believe both the proposed BAT economically achievable. We project no plant closures or unemployment, and prices are expected to change by only 1.5 cents per pound of tungsten produced.

Primary Columbium-Tantalum

For BAT, EPA is proposing mass limitations based on BPT (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. Wastewater flow reduction is based on increased recycle of scrubber liquors associated with three sources: concentrate digestion scrubber, solvent extraction scrubber, and metal salt drying scrubber. Filtration is currently in place at one of the three direct discharging plants in the primary columbium-tantalum subcategory. These flow reductions are demonstrated in the subcategory for each of these unit operations.

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.

Application of the proposed BAT would remove 145,735 kg of toxic metals and 1,286,879 kg of nonconventionals annually. The proposed BAT will result in the removal of 285 kg/yr of toxic pollutants and 2,424 kg/yr of nonconventionals over the estimated BPT discharge. The estimated capital investment cost of BAT is \$797,000 and the estimated annual cost is \$396,000.

We considered as an intermediate option, the proposed BAT option without filtration. This option removes 156 kg/yr of toxic pollutants, and 785 kg/yr of nonconventionals over estimated BPT discharge, at estimated capital cost of \$0.086 million and annual cost of \$0.013 million. We rejected this option because filtration removes additional pollutants (an estimated 129 kg/yr of toxic pollutants and 1,575 kg/yr of fluoride) and appears to be economically achievable. We project no closures or unemployment, and reduction in margin of less than \$0.31/lb. Filtration is also demonstrated in the subcategory. In addition, filtration adds reliability to the treatment system by making it less susceptible to operator error and to sudden changes in raw wastewater flows and concentrations.

Secondary Silver

For BAT, EPA is proposing alternative effluent mass limitations for the secondary silver subcategory. Alternative A is based in BPT (lime precipitation and sedimentation and ammonia steam stripping) with additional reduction in pollutant discharge achieved through in-process wastewater flow reduction. Alternative

B is equivalent to Alternative A with the addition of filtration as an effluent polishing step. Wastewater flow reduction is based on increased recycle of leaching scrubber water, furnace scrubber water and casting contact cooling water. Flow reduction is demonstrated for each of these unit operations in the subcategory. Filtration is currently in place at one of the four direct discharging plants in the secondary silver subcategory, and all four of the plants practice some form of flow reduction.

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.

Alternative A would remove an estimated 54 kg of toxic metals over the estimated BPT discharge. The estimated capital cost for achieving this option is \$0.184 million; the annualized cost is \$0.278 million.

Application of the proposed BAT Alternative B would remove 27,163 kg of toxic metals and 578,429 kg of ammonia annually. This proposed alternative will result in the removal of 92 kg of toxic pollutants per year above the estimated BPT discharge. The estimated capital investment cost of the proposed BAT is \$0.206 million and the annualized cost is \$0.345 million.

As stated in more detail in Section XVIII, below, we are concerned that this subcategory may be undergoing structural economic changes not anticipated in our analysis, and that our economic analysis does not adequately reflect ability of the tolling segment of the industry to achieve economically proposed limitations based upon filtration. Filtration is, however, demonstrated in the subcategory, removes additional toxic pollutants, and appears economically achievable based on our existing economic analysis. Because of our uncertainty, and in order to receive the most responsive type of public comment, we are proposing alternative BAT limitations for this subcategory.

As discussed in Section X, BPT, we are considering limitation of cyanide (under either of the alternatives) based on cyanide precipitation technology. Although our plant sampling data do not show that cyanide is present in treatable concentrations, our analysis of the processes used to recover silver from spent plating solutions indicates that cyanide could be present at concentrations higher than we found in the sampled plants. We are soliciting other raw wastewater data to

demonstrate whether our existing data base is representative. In the event that we do receive data showing that cyanide is present in treatable concentrations, the selection of end-of-pipe filtration takes on greater environmental significance. Our data show that filtration would result in an additional 33 percent reduction beyond that achieved by cyanide precipitation (see Section VII of the General Development Document).

Secondary Lead

For BAT, EPA is proposing alternative effluent mass limitations for the secondary lead subcategory. Alternative A is based on BPT (lime precipitation and sedimentation) with additional reduction in pollutant discharge achieved through in-process wastewater flow reduction. Wastewater flow reduction is based on increased recycle of smelter scrubber water and cating contact cooling water, and reducing the amount of water used for battery cracking. These flow reductions are all demonstrated in the subcategory. Alternative B is based on Alternative A plus filtration. Filtration is currently in place at two of the seven direct discharging plants in the secondary lead subcategory.

As stated in more detail in Section XVIII below, we are concerned that this subcategory is presently undergoing adverse structural economic changes that may affect its ability to achieve economically the limitations based upon filtration. At the same time, filtration is widely demonstrated in the subcategory, removes additional toxic pollutants, and appears economically achievable based on our existing economic analyses. Because these recent economic changes may not be fully reflected in our analyses, however, and in order to receive the most responsive public comment, we are proposing alternative BAT limitations for this subcategory.

The pollutants specifically limited under BAT are antimony, arsenic, lead, and zinc. These pollutants were selected since they were present in the largest quantities in raw wastewater. These flow reductions are all demonstrated in the subcategory. We are proposing that there shall be no discharge of ammonia from secondary lead plants because the only source generating ammonia, kettle smelting, is not given a regulatory flow allowance (see Section X-BPT). Alternative A would remove an estimated 118 kg of toxic metals over the estimated BPT discharge. The estimated capital cost for this option is \$0.470 million; the annualized cost is \$0.228 million.

Implementation of Alternative B would remove 14,602 kg of toxic metals and 495 kg of ammonia annually from raw wastewaters. Alternative B effluent mass limitations will result in the removal of 250 kg of toxic pollutants above the estimated BPT discharge. The estimated capital investment cost of Alternative B is \$2.12 million and the estimated annual cost is \$1.36 million.

XII. New Source Performance Standards (NSPS)

The basis for new source performance standards (NSPS) under Section 306 of the Act is the best available demonstrated technology. New plants have the opportunity to design and use the best and most efficient nonferrous metals manufacturing processes and wastewater treatment technologies, without facing the added costs and restrictions encountered in retrofitting an existing plant. Therefore, Congress directed EPA to consider the best demonstrated process changes, in-plant controls, and end-of-pipe treatment technologies which reduce pollution to the maximum extent feasible.

The Agency has considered six major sets of technology options which might be applied at the BDT level discussed in Section XII. Each of these options would substantially reduce the discharge of toxic pollutants. These options are described in detail in Section X of the General Development Document. The option selected for each subcategory and the underlying rationale are presented below.

Primary Aluminum

We are proposing NSPS that are based on BAT plus additional flow reduction. This flow reduction can be achieved by the use of dry air pollution scrubbing on potlines, anode bake plants, and anode paste plants and elimination of potroom and degassing scrubber discharges. Potroom scrubbing discharges are eliminated by design of efficient potline scrubbing (eliminating potroom scrubbing completely) or 100 percent recycle (with blowdown recycled to casting). Degassing scrubbers are limited by replacing chlorine degassing with inert gases.

These flow reductions are demonstrated at existing plants, but are not included in BAT because they might involve substantial retrofit costs at other existing plants. However, new plants can include these reductions in plant design at no significant additional cost. Dry scrubbing also prevents the contamination of scrubbing discharges with toxic organics, eliminating the need for activated carbon pretreatment included in the proposed BAT to control

these toxic organics except for plants discharging wastewater from cathode reprocessing.

The Agency does not believe that the proposed NSPS will provide a barrier to entry for new facilities. In fact, installation of dry scrubbing instead of wet scrubbing in new facilities reduces the cost of end-of-pipe treatment by reducing the overall volume of wastewater discharged and eliminates the need for activated carbon pretreatment proposed for BAT except for process wastewater from cathode reprocessing.

Secondary Aluminum

EPA promulgated NSPS for the secondary aluminum subcategory on April 8, 1974 as part of Subpart C of 40 CFR Part 421. The promulgated NSPS prohibits the discharge of process wastewater except for an allowance, if determined to be necessary, which allows the discharge of process wastewater from chlorine demagging. In this respect, promulgated NSPS was less stringent than promulgated BAT. The Agency did this recognizing that NSPS became effective on the date of promulgation and we did not believe that the dry chlorine demagging processes were appropriate for BAT with its compliance date being 10 years later.

We now are proposing to modify the promulgated NSPS to allow for a discharge from chlorine demagging and direct chill casting. The discharge allowances are identical to those proposed for BAT. The technology basis is also identical to that of the proposed BAT: lime precipitation, sedimentation and filtration.

Reverse osmosis, as noted above, is not demonstrated and is not clearly transferable to nonferrous metals manufacturing wastewater. The Agency also does not believe that new plants could achieve and additional flow reduction for chlorine demagging and direct chill casting beyond that proposed for BAT.

Primary Copper Smelting

EPA is proposing that NSPS for the primary copper smelting subcategory be zero discharge. It is our view that new smelting facilities can be constructed using cooling towers to cool and recirculate casting contact cooling water and slag granulation wastewater instead of large volume cooling impoundments. This technology is also in place in this subcategory. Thus, this proposal eliminates the allowance for the catastrophic precipitation discharge allowed at BAT. The costs associated

with construction and operation of a cooling tower system are not significantly greater than those for cooling impoundments and as such, the Agency does not believe that the proposed NSPS will constitute a barrier for entry of new facilities.

Primary Electrolytic Copper Refining

EPA is proposing NSPS for this subcategory equal to BAT with filtration. Review of the industry indicates that no additional demonstrated technologies exist that improve on this BAT technology. Reverse osmosis, as noted above, is not demonstrated and is not clearly transferable to nonferrous metals manufacturing wastewater. The Agency also does not believe that new plants could achieve any additional flow reduction beyond that proposed for BAT.

Secondary Copper

EPA is proposing that NSPS for the secondary copper subcategory be equal to zero discharge. We thus are eliminating the allowance for catastrophic stormwater discharge provided at BAT. It is our belief that new sources can be constructed with cooling towers exclusively, and that the cost of cooling towers instead of cooling impoundments, is minimal. Some existing plants use cooling towers rather than cooling impoundments. Therefore, we believe that NSPS, as defined, does not constitute a barrier to entry for new plants.

Primary Lead

We are proposing NSPS that prohibits the discharge of all process wastewater from primary lead smelting. Zero discharge can be achieved by the complete recycle and reuse of slag granulation wastewater or through slag dumping. Elimination of discharge from slag granulation is demonstrated in six of the seven existing plants, but it is not included at BAT because it would involve substantial retrofit costs for the one existing discharger (installation of a modified sintering machine—see the discussion of BPT and BAT for this subcategory). New plants can include elimination of the discharge from the slag granulation process in the plant design at no significant additional cost. Therefore, we believe NSPS does not present any barrier to entry for new plants.

Primary Zinc

EPA is proposing that NSPS for the primary zinc subcategory be equal to BAT. Review of the industry indicates that no new demonstrated technologies

exist that improve on BAT technology. Reverse osmosis, as noted above, is not demonstrated in this subcategory and is not clearly transferable to nonferrous metals manufacturing wastewater.

Dry scrubbing is not demonstrated for controlling emissions from zinc reduction furnaces, leaching and product casting. The nature of these emissions (acidic fumes, hot particulate matter) technically precludes the use of dry scrubbers. Therefore, we are including an allowance from this source at NSPS equivalent to that proposed for BAT. We do not believe that new plants could achieve any additional flow reduction beyond that proposed for BAT.

Metallurgical Acid Plants

EPA is proposing that NSPS for the metallurgical acid plants subcategory be equal to BAT. Review of the industry indicates that no new demonstrated technologies exist that improve on BAT technology. Reverse osmosis, as noted above, is not demonstrated in this subcategory and is not clearly transferable to nonferrous metals manufacturing wastewater. The Agency also does not believe that new plants could achieve any additional flow reduction beyond that proposed for BAT.

Primary Tungsten

We are proposing that NSPS be equal to BAT. Our review of the industry indicates that no new demonstrated technologies that improve on BAT technology exist. Reverse osmosis, as noted above, is not demonstrated in this subcategory and is not clearly transferable to nonferrous metals manufacturing wastewater.

Dry scrubbing is not demonstrated for controlling emissions from acid leaching, APT conversion to oxides and tungsten reduction furnaces. The nature of these emissions (acid fumes, hot particulate matter) technically precludes the use of dry scrubbers. Therefore, we are including an allowance from this source at NSPS equivalent to that proposed for BAT. We also do not believe that new plants could achieve any additional flow reduction beyond the 90 percent scrubber effluent recycle proposed for BAT.

Primary Columbium-Tantalum

EPA is proposing that NSPS for the primary columbium-tantalum subcategory be equal to BAT. Review of the industry indicates that no new demonstrated technologies that improve on BAT technology exist. Reverse osmosis, as noted above, is not demonstrated in this subcategory and is

not clearly transferable to nonferrous metals manufacturing wastewater.

Dry scrubbing is not demonstrated for controlling emissions from concentration digestion, metal salt drying and salt to metal reduction. The nature of these emissions (acidic fumes, hot particulate matter) technically precludes the use of dry scrubbers. Therefore, we are including an allowance for these sources at NSPS equivalent to that proposed for BAT. The Agency also does not believe that new plants could achieve any additional flow reduction beyond that proposed for BAT.

Secondary Silver

EPA is proposing that NSPS for the secondary silver subcategory be equal to BAT with filtration. Review of the industry that no new demonstrated technologies that improve on this BAT technology exist. Reverse osmosis, as noted above, is not demonstrated in this subcategory and is not clearly transferable to nonferrous metals manufacturing wastewater.

Dry scrubbing is not demonstrated for controlling emissions from film stripping, precipitation and filtration of film stripping solutions, precipitation and filtration of photographic solutions, reduction furnaces, leaching and precipitation and filtration. The nature of these emissions (acidic fumes, hot particulate matter) technically precludes the use of dry scrubbers. Therefore, we are including an allowance for these sources at NSPS equivalent to that proposed for BAT. The Agency does not believe that new plants could achieve any additional flow reduction beyond that proposed for BAT.

Secondary Lead

EPA is proposing that NSPS for the secondary lead subcategory be equal to BAT with filtration. Review of the industry indicates that no new demonstrated technologies that improve on this BAT technology exist. Reverse osmosis as noted above is not demonstrated in this subcategory and is not clearly transferable to nonferrous metals manufacturing wastewater.

Dry scrubbing is demonstrated for controlling emissions from Kettle smelting. In fact, it is applied so widely throughout this subcategory that we selected dry scrubbing as the best practicable control technology currently available for kettle smelting. Dry scrubbing, however, is not demonstrated for controlling emissions from blast and reverberatory furnaces, and the nature of these emissions (hot particulate matter) precluded the use of dry

scrubbing. Therefore, we are including an allowance for these sources at NSPS equivalent to that proposed for BAT. The Agency also does not believe that new plants could achieve any additional flow reduction beyond that proposed for BAT.

XIII. Pretreatment Standards for Existing Sources (PSES)

Section 307(b) of the Act requires EPA to promulgate pretreatment standards for existing sources (PSES) to prevent the discharge to 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 proposing pretreatment standards, the Agency examines 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, the Agency compares the percentage of a pollutant removed by a well-operated POTW achieving secondary treatment 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).)

This definition of pass through satisfies two competing objectives set by Congress: (1) That standards for indirect dischargers be equivalent to standards for direct dischargers, while at the same time, (2) that the treatment capability and performance of the POTW be recognized and taken into account in regulating the discharge of pollutants from indirect dischargers.

The Agency compares percentage removal rather than the mass or concentration of pollutants discharged because the latter would not take into account the mass of pollutants discharged to the POTW from non-industrial sources nor the dilution of the

pollutants in the POTW effluent to lower concentrations due to the addition of large amounts of non-industrial wastewater.

There were no data concerning POTW removals for arsenic, antimony and selenium to compare with our estimates of in-plant treatment. We have assumed that these toxic metals pass through a POTW because they are soluble in water and are not degradable in this proposed regulation; however, we formally solicit comments and data on whether these pollutants do pass through POTW and on actual POTW removal performance.

As explained in Section IX previously, EPA is proposing mass-based PSES for five of seven subcategories to ensure that the effluent reduction achieved by the flow reduction is realized. An explanation of our decision to include alternative concentration standards is described below for each subcategory.

We have considered and rejected reverse osmosis and activated alumina technology for PSES in this subcategory. Reverse osmosis and activated alumina are not demonstrated in the nonferrous metals manufacturing category and are not clearly transferable. In addition, these technologies significantly increase the costs, are difficult to operate and do not appear to result in significant pollutant removals.

Primary Aluminum Smelting

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

Secondary Aluminum

We are proposing PSES equal to BAT for this subcategory. (In doing so, we are proposing to amend existing PSES.) It is necessary to propose PSES to prevent pass through of lead, zinc and ammonia. These toxic pollutants are removed by well-operated POTW on an average of 53 percent (lead—40 percent and zinc—65 percent), while BAT technology removes approximately 95 percent. 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. Depending on the size of the POTW and the volume of and pretreatment provided for these wastewaters, operating problems may not be experienced at the POTW because of dilution. Nonetheless, the ammonia discharged to the POTW will pass through untreated.

The technology basis for PSES thus is lime precipitation and sedimentation, ammonia steam stripping, wastewater flow reduction and filtration. The achievable concentration for ammonia steam stripping is based on iron and steel manufacturing category data, as explained in our discussion of BAT. Flow reduction is based on the same zero discharge of scrubber effluent for scrap drying wet air pollution control which is equivalent to the flow basis of BAT. Only one indirect discharger uses a wet system to control air emissions from scrap drying, and it does not practice any recycle for this system. Ammonia steam stripping and lime precipitation and sedimentation, and filter technologies are presently demonstrated in the subcategory.

Existing PSES is based on oil skimming, ammonia air stripping, and pH control. We previously selected oil and grease for control under PSES since it was detected in casting contact cooling water at concentrations in excess of 100 mg/l. Oil and grease concentrations of 100 mg/l are known to cause interference to the POTW operation. However, we are not controlling either oil and grease or pH because these conventional pollutants are normally compatible with POTW operation. Individual POTW's may control these pollutants under authority of 40 CFR Part 403 when necessary to prevent site-specific problems.

We are proposing ammonia steam stripping instead of ammonia air stripping (see Section XI under Secondary Aluminum). As we stated above, we regard steam stripping as the superior type of technology because it does not transfer a pollutant from one media to another.

Implementation of the proposed PSES limitations would remove annually an estimated 1,214 kg of toxic pollutants over estimated current discharge. Removals over estimated raw discharge are approximately 1,214 kg of toxic pollutants. Capital cost for achieving proposed PSES is \$2.4 million, and an annual cost of \$1.6 million. No closures or unemployment are projected as a result of compliance, and price impacts are projected to be less than \$.01/ton. The proposed PSES consequently appears to be economically achievable.

The intermediate option we considered for PSES is BAT equivalent technology without filters. This option removes an estimated 1,185.9 kg of toxic pollutants over estimated current discharge. We estimate that the capital cost of this technology is \$2.2 million, and an annual cost of \$1.5 million.

The Agency is proposing alternative concentration-based standards in this subcategory for the reasons discussed in Section IX B above.

Primary Copper Smelting

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

Secondary Copper

EPA promulgated PSES for the secondary copper subcategory on December 15, 1976 (41 FR 48650). The promulgated PSES allows a continuous discharge of process wastewater subject to specific limitations based on treatment with lime precipitation and sedimentation. Proposed BAT (and promulgated BPT) for this subcategory is also based on lime precipitation and sedimentation, with cooling towers and holding tanks to achieve no discharge of process wastewater. The proposed PSES will prevent pass-through of copper, chromium, lead, nickel and zinc. We therefore are proposing to modify PSES to make it equivalent to BAT. Implementation of the proposed PSES would remove annually an estimated 4,837 kg of toxic pollutants over estimated current discharge. Removals over estimated raw discharge are approximately 4,837 kg of toxic pollutants.

It is our belief that the costs associated with installation and operation of cooling towers and holding tanks for indirect dischargers will be insignificant. In addition, costs for cooling towers and holding tanks were considered during the 1976 PSES rulemaking. At that time we concluded that the additional cost was not significant.

Primary Lead

We are not proposing pretreatment standards for existing sources for the primary lead subcategory since there are no existing indirect dischargers.

Primary Zinc

We are not proposing pretreatment standards for existing sources for the primary zinc subcategory since there are no existing indirect dischargers.

Metallurgical Acid Plants

We are not proposing PSES for metallurgical acid plants. There is only one existing indirect discharger, and its estimated current mass discharge is less than the level that would be achieved by indirect dischargers with BAT-equivalent technology (lime precipitation and sedimentation, flow reduction, and filtration). Consequently, we believe that the amount of pollutants discharged by this plant are too insignificant to justify developing PSES, within the meaning of paragraph 8(b)(ii) of the Settlement Agreement.

Primary Tungsten

We are proposing PSES equal to BAT for this subcategory. It is necessary to propose PSES to prevent pass-through of lead, selenium, zinc and ammonia. These toxic pollutants are removed by a well-operated POTW at an average of 40 percent (lead—40 percent, zinc—65 percent, and ammonia—0 percent), while BAT technology removes approximately 98 percent.

The technology basis for PSES thus is lime precipitation and sedimentation, ammonia steam stripping, wastewater flow reduction and filtration. The achievable concentration for ammonia steam stripping is based on iron and steel manufacturing category data, as explained in the discussion of BPT and BAT for this subcategory. Flow reduction is based on 90 percent recycle of scrubber effluent that is the flow basis of BAT. This flow rate is achieved by one of the three indirect dischargers in the subcategory, and filters are demonstrated at one indirect discharger.

Implementation of the proposed PSES limitations would remove annually an estimated 130 kg of toxic pollutants over estimated current discharge, and an estimated 79,500 kg of ammonia. Removals over estimated raw discharge are approximately 4,075 kg of toxic pollutants and 79,530 kg of ammonia. Capital cost for achieving proposed PSES is \$333 million, and annual cost of \$329 million. We project no closures, unemployment or price impacts as a result of complying with this standard.

The intermediate option we considered for PSES is BAT equivalent technology without filters. This option removes an estimated 77 kg of toxic pollutants over estimated current discharge. We estimate that capital cost of this technology is \$572 million, and annual cost \$222 million.

We are proposing filtration and recycle as part of PSES in order to avoid pass-through. In addition, filtration is demonstrated in the subcategory (including one of three indirect

dischargers), and will not result in adverse economic impacts.

Primary Columbium-Tantalum

We are proposing PSES equal to BAT for this subcategory. It is necessary to propose PSES to prevent pass-through of lead, zinc and ammonia. These toxic pollutants are removed by well operated POTW at an average of 52 percent (fluoride—100 percent, lead—40 percent, zinc—65 percent, and ammonia—0 percent), while BAT technology removes approximately 99 percent.

The technology basis for PSES thus is lime precipitation and sedimentation, ammonia steam stripping, wastewater flow reduction and filtration. The achievable concentration for ammonia steam stripping is based on iron and steel manufacturing category data, as explained in our discussion of BPT and BAT for this subcategory. Flow reduction is based on 90 percent recycle of scrubber effluent that is the flow basis of BAT. This flow rate is achieved by both indirect dischargers in the subcategory, and filters are demonstrated at direct dischargers in this subcategory.

Implementation of the proposed PSES limitations would remove annually an estimated 1,601 kg of toxic pollutants over estimated current discharge, and an estimated 185,600 kg of ammonia. Removals over estimated raw discharge are approximately 64,890 kg of toxic pollutants and 8,808 kg of ammonia. Capital cost for achieving proposed PSES is \$2.47 million, and annual cost of \$1.41 million. We project no closures or unemployment and price increases of less than \$0.20/lb resulting from compliance.

The intermediate option we considered for PSES is BAT equivalent technology without filters. This option removes an estimated 1,513 kg of toxic pollutants over estimated current discharge. We estimate that capital cost of this technology is \$2.19 million, and annual cost \$1.35 million.

Secondary Silver

We are proposing alternative PSES equal to proposed BAT with and without polishing filtration for this subcategory for the reasons explained in our discussion of BAT for this subcategory. PSES prevents pass-through of copper, zinc and ammonia. These toxic pollutants are removed in a well-operated POTW on an average of 49 percent (copper—58 percent, and zinc—65 percent, and ammonia—0 percent), while BAT technology removes approximately 99 percent.

The technology basis for PSES Alternative A is ammonia steam stripping lime precipitation and sedimentation, preceded by wastewater flow reduction. Alternative B is equivalent to Alternative A with the addition of end-of-pipe polishing filtration. The achievable concentration for ammonia steam stripping is based on iron and steel manufacturing category data. Flow reduction is based on 99 percent recycle of scrubber effluent and 90 percent recycle of contact cooling water that is used as the flow basis of BAT. These flow rates are achieved by 11 of the 17 indirect dischargers in the subcategory, and filters are demonstrated at two indirect dischargers.

Alternative A removes an estimated 1,500 kg of toxic pollutants over estimated current discharge. We estimate that capital cost of this technology is \$1.03 million, and annual cost \$958 million.

Implementation of the proposed PSES Alternative B would remove annually an estimated 1,561 kg of toxic pollutants over estimated current discharge, and an estimated 149,300 kg of ammonia. Removals over estimated raw discharge are approximately 9,792 kg of toxic pollutants and 149,300 kg of ammonia. Capital cost for achieving proposed PSES Alternative B is \$1.14 million, with an annual cost of \$1.07 million.

We project two closures as a result of complying with Alternative A and an additional closure with Alternative B. We have considered and rejected the idea of tailoring the regulation to modify pretreatment standards for plants this size and smaller. Our reasons are given in Section XVIII below, in our detailed discussion of economic achievability.

Secondary Lead

We are proposing alternative PSES equal to proposed BAT for this subcategory. It is necessary to propose PSES to prevent pass-through of antimony, arsenic, lead, and zinc. These toxic pollutants are removed by well-operated POTW at an average of 48 percent (lead—40 percent, and zinc—65 percent), while BAT technology removes approximately 99 percent.

The technology basis for PSES Alternative A is lime precipitation and sedimentation preceded by wastewater flow reduction. Alternative B is equivalent to Alternative A with the addition of end-of-pipe polishing filtration. Flow reduction is based on 90 percent recycle of scrubber effluent and casting contact cooling water that is the flow basis of BAT. This flow rate is achieved by two of the 16 indirect dischargers in the subcategory, and

filters are demonstrated at five dischargers.

PSES Alternative A, is BAT equivalent technology without filters and this option removes an estimated 2,470 kg of toxic pollutants over estimated current discharge. We estimate that capital cost of this technology is \$1.49 million, with annual cost \$0.56 million.

Implementation of the proposed Alternative B PSES would remove annually an estimated 2,625 kg of toxic pollutants over estimated current discharge. Removals over estimated raw discharge are approximately 17,290 kg of toxic pollutants. Capital cost for achieving proposed PSES Alternative B is \$3.04 million, with an annual cost of \$1.94 million.

XIV. Pretreatment Standards for New Sources (PSNS)

Section 307(c) of the Act requires EPA to promulgate pretreatment standards for new sources (PSNS) at the same time that it promulgates NSPS. New indirect dischargers will produce wastes having the same pass through problems as described for existing dischargers. In selecting the technology basis for PSNS, the Agency compares the toxic pollutant removal achieved by a well-operated POTW to that achieved by a direct discharger meeting NSPS. New indirect dischargers, like new direct dischargers, have the opportunity to incorporate the best available demonstrated technologies including process changes, in-plant controls, and end-of-pipe treatment technologies, and to use plant site selection to ensure adequate treatment system installation.

We are proposing only mass-based PSNS for all subcategories to assure that the identified flow reduction technologies are considered in new plant designs. (See discussion in Section IX).

Primary Aluminum

The technology basis for proposed PSNS is identical to NSPS. We are proposing limitations for antimony, cyanide and nickel 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. The removal of antimony has not been established. Since the pollutant is not degraded and is soluble in water, we are assuming pass-through. We solicit comment on the pass-through of antimony in POTW's.

Aluminum is not limited because in its hydroxide form is used by POTW as a flocculant aid in the settling and removal of suspended solids. As such, aluminum in limited quantities does not

pass through or interfere with POTW; rather it is a necessary aid to its operation. Reverse osmosis, the only technology available to further reduce flow, is neither demonstrated nor clearly transferable to nonferrous metal manufacturing wastewaters. Because PSNS does not increase costs compared to PSES or BAT, we do not believe that PSNS will prevent entry of new plants.

Secondary Aluminum

The technology basis for proposed 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. (See Section XIII of the Secondary Aluminum Supplement.)

Primary Copper Smelting

The technology basis for proposed PSNS is identical to NSPS (and BAT), which is zero discharge of all process wastewater pollutants, with no allowance for catastrophic stormwater discharge. New indirect dischargers will be constructed with cooling towers, not cooling impoundments, since they will be located near POTWs, suggesting that they will be near heavily populated areas where land is scarce making the cost of acquiring land to install an impoundment relatively high. Thus, 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.

Primary Copper Electrolytic Refining

The technology basis for proposed PSNS is identical to 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. This discharge is minimized through the use of 90 percent recycle in a cooling tower circuit. No additional flow reduction for new sources is feasible in our view, because the only other available flow reduction technology, reverse osmosis, is not demonstrated or clearly transferable for this subcategory. (See Section XII of the Primary Copper Electrolytic Refining Supplement.) PSNS prevents the pass-through of copper, lead, nickel, and zinc, which are the regulated pollutants. A well operated POTW will only remove

these pollutants at an average of 57 percent (copper—58 percent, lead—48 percent, and zinc—65 percent). Because PSNS does not increase costs compared to NSPS, we do not believe PSNS will prevent the entry of new plants.

Secondary Copper

The technology basis for proposed PSNS is identical to NSPS, PSES, and BAT, which is zero discharge of all process wastewater (including no allowance for catastrophic stormwater discharges). 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 proposed PSNS is identical to NSPS. We know of no demonstrated technology that provides better pollutant removal than BAT technology, because all process wastewater discharge is eliminated at PSNS. (See Section XII of the Primary Lead Supplement.) PSNS prevents the pass-through of lead and zinc. As explained in NSPS, the elimination of all wastewater discharges 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 proposed PSNS is identical to NSPS and BAT. 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. The discharges are based on 90 percent recycle (see Section IX—Recycle of Wet Scrubber and Contact-Cooling Water). No additional flow reduction for new sources is feasible in our view because the only other available flow reduction technology, reverse osmosis, is not demonstrated nor is it clearly transferable for this subcategory. (See Section XII of the Primary Zinc Supplement.) PSNS prevents the pass-through of cadmium, copper, lead and zinc. Since PSNS does not include any cost above BAT or PSES, we do not believe it will prevent the entry of new plants.

Metallurgical Acid Plants

The technology basis for proposed PSNS is identical to NSPS and BAT. PSNS prevents the pass-through of arsenic, cadmium, copper, lead and zinc,

which are the regulated pollutants. A well operated POTW will provide only an average of 52 percent removal (cadmium—38 percent, copper—58 percent, lead—48 percent, and zinc—65 percent). The removal of arsenic by a well-operated POTW has not been established. Since the pollutant is not degraded and is soluble in water, we are assuming pass-through of arsenic in POTW. We solicit comment on this assumption. We know of no demonstrated technology that provides better pollutant removal than BAT and NSPS technology. The acid plant blowdown allowance at BAT and NSPS is based on 90 percent recycle. The Agency believes that no additional flow reduction is feasible for new sources because the only other available flow reduction technology, reverse osmosis, is not demonstrated nor is it clearly transferable for this subcategory (see Section IX—Recycle of Wet Scrubber and Contact Cooling Water). (See also Section XII of the Metallurgical Acid Plants Supplement.) 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 proposed 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 cooling towers to recycle contact cooling water and sedimentation basins for wet scrubbing wastewater. The discharges are based on 90 percent recycle of these waste streams (see Section IX—Recycle of Wet Scrubber and Contact Cooling Water). No additional flow reduction for new sources is feasible in our view because the only other flow reduction technology, reverse osmosis, is not demonstrated nor is it clearly transferable for this subcategory. (See Section XII of the Primary Tungsten Supplement.) The only other end-of-pipe technology, activated carbon, does not significantly reduce toxic pollutant discharges while increasing costs ten-fold. 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 proposed 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 cooling towers to recycle contact cooling water and sedimentation basins for wet scrubbing wastewater. The discharges are based on 90 percent recycle of these waste streams (see Section IX—Recycle of Wet Scrubber and Contact Cooling Water). No additional flow reduction for new sources is feasible in our view because the only other available flow reduction technology, reverse osmosis, is not demonstrated nor is it clearly transferable for this subcategory. (See Section XII of the Primary Columbium-Tantalum Supplement.) 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 proposed 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 PSES technology. The PSES 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. The discharges are based on 90 percent recycle of those waste streams (see Section IX—Recycle of Wet Scrubber and Contact Cooling Water). No additional flow reduction for new sources is feasible in our view because the only other available flow reduction technology, reverse osmosis, is not demonstrated nor is it clearly transferable to this subcategory. (See Section XII of the Secondary Silver Supplement.) Because PSNS does not include any additional costs compared to NSPS, we do not believe it will prevent the entry of new plants.

Secondary Lead

The technology basis for proposed 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 PSES technology. The PSES 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. The discharges are based on 90 percent recycle of these

waste streams (see Section IX—Recycle of Wet Scrubber and Contact Cooling Water). No additional flow reduction for new sources is feasible in our view because the only other available flow reduction technology, reverse osmosis, is not demonstrated for this subcategory. (See Section XII of the Secondary Lead Supplement.) Because PSNS does not include any additional costs compared to NSPS, we do not believe it will prevent the entry of new plants.

XV. 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. Biochemical oxygen demand, coliform, oil and grease (O&G), and pH have been designated as conventional pollutants (see 44 FR 44501).

BCT is not an additional limitation, but replaces BAT for the control of conventional pollutants. In addition to the other factors specified in Section 304(b)(4)(B), the Act requires that limitations for conventional pollutants be assessed in light of a two-part cost-reasonableness test. On October 29, 1982, the Agency proposed a revised methodology for carrying out BCT analyses (47 FR 49176). The purpose of the proposal was to correct errors in the BCT methodology originally established in 1977.

Part 1 of the proposed BCT test requires that the cost and level of reduction of conventional pollutants by industrial dischargers be compared with the cost and level of reduction to remove the same type of pollutants by publicly-owned treatment works (POTW). The POTW comparison figure has been calculated by evaluating the change in costs and removals between secondary treatment (30 mg/l BOD and 30 mg/l TSS) and advanced secondary treatment (10 mg/l BOD and 10 mg/l TSS). The difference in cost is divided by the difference in pounds of conventional pollutants removed, resulting in an estimate of the "dollar per pound" of pollutant removed, that is used as a benchmark value. The proposed POTW test benchmark is \$0.27 per pound (1976 dollars).

Part 2 of the BCT test requires that the cost and level of reduction of conventional pollutants by industrial dischargers be evaluated internally to the industry. In order to develop a benchmark that assesses a reasonable relationship between cost and removal, EPA has developed an industry cost

ratio which compares the dollars per pound of conventional pollutant removed in going from primary to secondary treatment levels with that of going from secondary to more advanced treatment levels. The basis of costs for the calculation of this ratio are the costs incurred by a POTW. EPA used these costs because they reflect the treatment technologies most commonly used to remove conventional pollutants from wastewater; the treatment levels associated with them compare readily to the levels considered for industrial dischargers; and the costs are the most reliable for the treatment levels under consideration. The proposed industry subcategory benchmark is 1.42. If the industry figure for a subcategory is less than or equal to 1.43, the subcategory passes the BCT test.

The Agency usually considers two conventional pollutants in the cost test, TSS and an oxygen-demanding pollutant. Although both substances by EPA (see 44 FR 50733), only the one accounting for the greatest removal was selected in the cost analysis to conform to procedures used POTW costs. Oil and grease is used rather than BOD₅ in cost analysis performed for nonferrous metals manufacturing waste streams in this category.

BPT is the base for evaluating limitations on conventional pollutants i.e., it is assumed that BPT is already in place). The test evaluates the cost and removals associated with treatment and controls in addition to that specified as BPT.

If the conventional pollutant removal cost of the candidate BCT is less than the POTW cost, Part 1 of the cost-reasonableness test is passed and Part 2 (the internal industry test) of the cost-reasonableness test must be performed. If the internal industry test is passed, then a BCT limitation is promulgated equivalent to the candidate BCT level. If all candidate BCT technologies fail both parts of the cost-reasonableness test, the BCT requirements for conventional pollutants are equal to BPT.

The BCT test was performed on the 10 subcategories with direct dischargers. The results are summarized in Appendix B. All of the 10 subcategories failed Part 1 of the test for both the proposed BAT and intermediate options, eliminating the need for testing in Part 2. Consequently, BCT is equivalent to BPT in all subcategories.

XVI. Regulated Pollutants

The basis upon which the controlled pollutants were selected as well as the general nature and environmental effects of these pollutants, is set out in Sections V, VI, IX and X of the General

Development Document and each of the subcategories supplements. Some of these pollutants are designed as toxic under Section 307(a) of the Act. Three pollutants have been deleted from the list of 129. These are dichlorodifluoromethane, trichlorofluoromethane 46 FR 2266 (January 8, 1981) and bis(chloromethyl) ether 46 FR 10723 (February 4, 1981).

The pollutants selected for regulation are listed by subcategory in Appendix C.

XVII. Pollutants and Subcategories Not Regulated

The Settlement Agreement contains provisions authorizing the exclusion from regulation, in certain instances, of toxic pollutants and industry subcategories.

A. Exclusion of Pollutants

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 D of this notice by subcategory.

Paragraph 8(a)(iii) also allows the Administrator to exclude from regulation toxic pollutants detected in amounts too small to be effectively reduced by technologies known to the Administrator. Appendix E 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. Appendix F to this notice lists the toxic pollutants in each subcategory present in amounts which are too small to be effectively reduced by technologies and which, therefore, are excluded from regulation.

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 G to this notice lists for each subcategory the toxic pollutants which were detected in the effluents of only one plant, 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 H lists those toxic pollutants which will be

effectively controlled by the BAT limitations and pretreatment standards, even though they are not specifically regulated. Appendix H lists those toxic organic pollutants which are not regulated at BAT because they are effectively controlled by BPT limitations.

Paragraph 8(a)(iii) also allows the Administrator to exclude from regulation toxic pollutants detected but only in trace amounts and which are neither causing nor likely to cause toxic effects. Appendix I lists those pollutants excluded under this provision.

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

B. Exclusion of Subcategories

As explained in Section II-C, above, EPA executed an affidavit on May 10, 1979, excluding six primary and five secondary metal subcategories from regulation under Paragraph 8(a)(iv) of the Settlement Agreement. The subcategories were:

- Primary Arsenic
- Primary Antimony
- Primary Barium
- Primary Bismuth
- Primary Calcium
- Primary Tin
- Secondary Beryllium
- Secondary Cadmium
- Secondary Molybdenum
- Secondary Tantalum
- Secondary Babbitt

The Agency is excluding the following subcategories from pretreatment standards for existing sources under provisions of Paragraph 8(a)(iv) because there are no facilities discharging wastewater to POTW. They are:

- Primary Aluminum
- Primary Copper Smelting
- Primary Copper Electrolytic Refining
- Primary Lead

The Agency is excluding metallurgical acid plants from pretreatment for existing sources under provisions of Paragraph 8(b)(ii) because the single indirect discharger discharges pollutants in amounts that are not significant enough to warrant a national pretreatment standard.

XVIII. Cost and Economic Impacts

Executive Order 12291 requires EPA and other agencies to perform regulatory impact analyses of major rules. Major rules impose an annual cost to the economy of \$100 million or more, cause major price increases to the consumer or

cause significant adverse effects on competition, employment, investment, productivity or the balance of trade. Our analysis indicates that the proposed regulation for the nonferrous smelting and refining industry is not a major rule since it has none of these impacts, and therefore does not require a formal regulatory impact analysis.

The economic assessment for this proposed regulation is presented in the *Economic Impact Analysis of Proposed Effluent Standards and Limitations for the Nonferrous Smelting and Refining Industry*, EPA 440/2-82-002. This report details the investment and annual costs for the industry and for each metal type covered by the proposed regulation. Compliance costs are based on engineering estimates of incremental capital requirements above the water pollution control equipment already in place. The report assesses the impact of effluent control costs associated with each regulatory option in terms of price changes, production changes, plant closures, employment effects, and balance of trade effects.

In addition, EPA has conducted an analysis of the incremental removal cost per pound equivalent for each of the proposed technology-based options. A pound equivalent is calculated by multiplying the number of pounds of pollutant discharged 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 equivalent" gives relatively more weight to removal of more toxic pollutants. Thus, for a given expenditure, the cost per pound equivalent removed would be lower when a highly toxic pollutant is removed than if a less toxic pollutant is removed. This analysis, entitled "Cost Effectiveness Analysis for the Nonferrous Metals Manufacturing Industry," is included in the record of this rulemaking. EPA invites comments on the methodology used in this analysis.

The Agency predicts that in 1984 there will be 147 nonferrous smelting or refining "wet plants" (49 percent of all plants) producing a process wastewater, of which 82 will discharge into navigable waters, and 65 plants will discharge into publicly owned treatment works (POTWs). One hundred and fifty-three plants will have eliminated their discharge of process wastewater.

The economic analysis projects total capital and annual costs for both scenarios proposed by this regulation. The total capital cost for existing plants to comply with the more stringent

scenario will be \$73.4 million, with annual costs of \$43.3 million including interest and depreciation. These costs are expressed in 1982 dollars. These costs expressed in 1978 dollars would be \$54.75 million for total investment costs and \$32.32 million for annual costs, including interest and depreciation. Total capital costs for existing plants under the less stringent scenario will be \$69.09 million with annual cost of \$39.68 million including interest and depreciation expressed in 1982 dollars. These same costs expressed in 1978 dollars would be \$51.55 for total investment and \$29.61 million for annual costs including interest and depreciation. All costs presented in Section XVIII of this proposed regulation are expressed in 1982 dollars, while the other sections of this notice use 1978 dollars.

As a result of compliance with this regulation, three plant closures (all indirect dischargers) with total unemployment of approximately 45 workers may result. These figures for closures and unemployment represent less than one half of 1 percent of the total population of plants and employment anticipated to be in the nonferrous smelting and refining industry in 1985. These closures are expected to occur from PSES. No additional closures are expected as a result of compliance with recommended BAT technologies. Price increases in either scenario are not expected to exceed 0.5 percent with production decreases of less than 0.5 percent. No balance of trade effects are expected.

To further measure the economic impacts, we subcategorized the nonferrous metals industry by metal type, and assessed possible economic impacts on a plant-by-plant basis in each subcategory. Ten separate metal subcategories were used, six in the primary and four in the secondary subcategories. (For purposes of our economic analysis, we treated primary copper smelters, refiners, and acid plants located at the same site as one economic subcategory, since they are a single economic entity. Similarly, primary lead and zinc smelters and associated acid plants are one economic subcategory.) In view of the number of subcategories and their differing sizes, we developed varying methodological approaches for different subcategories on the basis of perceived impact, significance of the subcategory to the economy and data availability. We note that in assessing economic impacts under these methodologies, we used higher compliance costs reflecting more

costly and stringent options than those we are proposing today.

For the primary aluminum subcategory, the analytical approach utilized publicly available production and financial data to develop four separate "models" representing different segments of the aluminum smelting industry: old prebake smelters, new prebake smelters, old Soderberg smelters and new Soderberg smelters. These four models were developed by the Agency in conjunction with the Aluminum Association in the fall of 1978. These models represent medium sized plants with a capacity of 160,000 tons per year. The impact analysis was conducted on two levels: an industry-wide screening analysis and a more detailed plant-specific cash flow analysis for any plant that appeared, after screening, to incur high impacts. The screening analysis compared plant-specific compliance costs to the projected 1985 baseline population of plants to their anticipated 1985 revenue. If compliance costs for any plant exceeded 5 percent of revenue the plant was considered to be seriously impacted and was evaluated accordingly.

The 5 percent point was chosen because the average operating margin to aluminum companies over the 1972 to 1977 period was 14.6 percent of sales, including all production levels. Production costs for smelting are estimated to account for 30 percent of total production costs. Based on industry financial behavior over the 1972 to 1977 period we believe this compliance cost for just the smelting portion of a plant, if greater than 5 percent, would begin to impact the existing financial structure of the plant and thus warrant further analysis.

For the primary copper, lead and zinc subcategories a plant-by-plant screening analysis was also conducted on the projected 1985 baseline comparing the cost of compliance with their expected revenues. If the cost of compliance exceeded 5 percent of expected revenues the plant was considered to be seriously impacted and was the subject of a plant-specific cash flow analysis. The 5 percent point was chosen because the Agency found that for the primary copper, lead and zinc companies over the 1970 to 1977 period the average operating margin on sales ranged between 13 percent and 20 percent, while production costs ranged between 25 percent and 37 percent of total cost. Based on industry financial behavior over this period, the Agency believes that if compliance costs exceed 5 percent of revenues for the smelting and refining segments, impacts would occur

on the current financial structure of the plant and thus warrant further analysis. In addition to this screening analysis, we determined relevant economic impacts for the primary copper, lead and zinc subcategories by developing econometric models to assess the industry, market structure and pricing behavior to determine prices, production, consumption and balance of trade effects for the 1985 baseline year.

For the secondary metal subcategories, we used a three-step plant-by-plant approach to determine economic impacts. A screening analysis was conducted on the baseline population comparing plant-specific total net revenues before and after compliance to the industry-wide average gross (before tax) profitability rate for secondary producers. If the results of the screening indicated a wide variation in impact on the average gross throughout the subcategory, plants with compliance costs exceeding the median value for the subcategory were considered to be impacted and subject to a plant specific analysis. To calculate the adjustments in price production, employment and balance of trade effects, an econometric model using a comparative statistics analysis technique was used. The model used the price quantity relationships observed in the base year, 1978, and assumed they represented the conditions expected to exist in 1985. Using these assumptions and long run supply and demand elasticities for each metal subcategory, the model was able to show the results on specific market indicators after implementation of pollution control requirements.

Because of the small number of plants in the columbium-tantalum and tungsten subcategories, we conducted a plant-by-plant impact analysis. The first step determined the probable response by the industries to the costs imposed by the new limitations and standards. The second step determined the relevant economic impacts. After examining the metal trade, product demand and historical pricing behavior of both columbium-tantalum and tungsten processors, the Agency concluded that the most feasible option available to both columbium-tantalum and tungsten was to increase prices by an amount equal to the total environmental costs divided by total production. The Agency found that price increases of less than 1 percent for columbium-tantalum and price increases of between 1 and 2 percent for tungsten would occur. The Agency believes that domestic demand is likely to be totally price inelastic over this small change and, therefore,

believes that an additional closure analysis was unnecessary.

The Agency recognizes that it is unlikely that the projected 1985 sales and revenue figures for industries in each category will reach the levels originally predicted in the current Economic Impact Analysis. Therefore, the Agency has conducted a sensitivity analysis using lower prices, production, and revenue figures which reflect a revised expectation of future economic conditions in the market by 1985. The sensitivity analysis assumed that real prices would remain constant at the 1981 level over the 1983 to 1985 period. Production was assumed to decrease 3 percent between 1981 and 1982 and grow 1 percent in 1983 and 4 percent between 1984 and 1985. These projections assume that these subcategories of the nonferrous metals industry will not attain at the same level of growth predicted by the Administration for the entire economy. These revised economic figures were then compared to the compliance costs of the options we are proposing today. However, under this analysis, the projected economic impacts are not expected to be appreciably different than those originally predicted. Thus, revenue and price changes are still expected to remain less than 1 percent for all subcategories except secondary silver, which is expected to have revenue changes of approximately 2.5 percent. This reduction in revenue is not expected to cause significant alterations in the structure of the industry or reduce overall plant revenues to the point of forcing closure. (This sensitivity analysis is included in the Economic Impact Analysis for these proposed regulations.)

During the period between proposal and promulgation of this regulation the Agency will be collecting new data from public and industry sources so as to revise its projected baseline economic conditions in light of the persistence and severity of the current economic recession.

Work Plan for Analytical Update

Using the same methodological approach outlined in the Economic Impact Analysis, the Agency intends to reevaluate the impacts of the proposed requirements on the projected baseline, in a manner that more fully incorporates this current recession and its effect on future growth, production, prices and profitability. The Agency is outlining below the steps it intends to take regarding its methodology and data collection.

I. Basecase Projection

The current base case assessment predicted conditions for 1985 from the year 1978. The current regulations are not expected to be promulgated until January 1984. The first objective is to project economic conditions for 1985 and beyond, incorporating the present recession and reduced expectations for growth in the next two to three years. This will be accomplished by conducting a microeconomic analysis on each sector of the nonferrous industry evaluating and collecting new data on:

- Structural changes in the industry
- Current and future production
- Pricing policy and prices
- Closures of plants between 1978–1982 and expectations for new openings and closures beyond 1982
- Demand elasticities
- Profitability projections
- Import/export market
- Capital structural projections:
 - (a) Industry depreciation averages
 - (b) Level of debt payments
 - (c) Capital structure
 - (d) Lending markets

II. Screening

Currently each industry subcategory has a screening trigger point based on financial criteria developed using historical financial data from 1970–1977. When this point is breached by the plant screening analysis, the affected plant is then subject to an individual discounted cash flow analysis. The incorporation of 1978–1982 data will increase the data base and more accurately define an appropriate trigger point. Where there is significant unspecificity about certain economic factors, a sensitivity analysis around these factors will be performed.

III. Financial Analysis

The current individual plant analysis consists of a discounted cash flow analysis and a liquidity/capital availability analysis to determine whether it will close due to implementation of proposed requirements. The main source of data for this analysis are the firm's 308 surveys presently available to the Agency. We are requesting that those plants who have not returned their 308 surveys do so at this time so that they can be incorporated in the new analysis. The plant specific information obtained from the 308 surveys will be updated based on our microeconomic projections. The discounted cash flow and liquidity/capital availability analysis will be rerun using the updated 308 results to determine closures.

IV. Individual Case Analysis

Three industry subcategories have been selected for more detailed economic analysis. Plants representing various levels of financial health in the secondary lead, secondary silver, and primary cooper electrolytic refining industry subcategories will be identified and studied in detail. Each plant's 308 survey will be updated based on new data obtained in the assessment of the baseline, and individual plant visits will be conducted to discuss each's expectations for future growth, production, prices and profits. These studies will be used to verify the projections being made regarding the baseline and to support the assessment conducted on each industry sector.

V. Data Collection

Each area of the methodology outlined above will require current data from each industry subcategory. The Agency is seeking the cooperation of all trade groups and associations representing manufacturers in each nonferrous subcategory. We are in constant contact with trade associations representing the primary producers, but contact with trade groups representing smaller producers in the secondary subcategories has been more difficult. The Agency intends to contact these groups and work closely with them to strengthen our data base and financial profiles. Information obtained from these groups will be combined with other public data sources to conduct the new analyses of each subcategory, the case studies and finally any plant-by-plant analysis that is necessary. These adjustments will form the basis for the new 1985 baseline conditions upon which the economic impacts of the present compliance costs will be assessed. More detailed conclusions of our present analysis are presented below.

BPT

New BPT limitations are proposed for four new subcategories: primary columbium-tantalum, tungsten, secondary lead, and secondary silver. We are amending existing BPT limitations for the primary lead and metallurgical acid plants (applicability only) subcategories. Investment costs for these proposed limitations are \$13.94 million with total annual costs of \$7.97 million including interest and depreciation. No plant closures or unemployment were expected while price changes are expected to be less than 1 percent with production changing by less than 1 percent. No balance of payment effects are expected.

BAT

New BAT regulations are proposed for primary columbium-tantalum, and tungsten; secondary silver and lead; and metallurgical acid plants. Modifications to existing BAT are proposed for primary aluminum, copper smelting, copper electrolytic refining, lead and zinc; and secondary aluminum and copper. The costs for these regulations are expected to be \$60.25 million for investment and \$34.37 million for annual costs including interest and depreciation. Compliance with the less stringent option proposed for the primary copper electrolytic refining, secondary lead refining and secondary silver subcategories will result in total costs for this regulation to be \$58.20 million in investment costs and \$32.73 million in annual costs including interest and depreciation. No closures or unemployment are expected as a result of compliance with either these regulations. Price changes from each option are expected to increase by no more than 0.25 percent in any metal category with overall production changes to decrease by less than 1 percent.

PSES

New PSES are being proposed for six new subcategories, secondary lead, primary tungsten, primary columbium-tantalum, secondary silver, and metallurgical acid plants with modification of PSES for secondary aluminum and secondary copper. The costs for this regulation are expected to be \$13.11 million in investment and \$8.94 million in annual costs including interest and depreciation. As a result of compliance with this regulation, three plant closures and the loss of employment for approximately 45 workers in the secondary silver subcategory may result. Compliance with the less stringent option proposed for the secondary lead refining and secondary silver subcategories will result in total costs for this regulation to be \$58.20 million in investment costs and \$32.73 million in annual costs including interest and depreciation. As a result of compliance with this scenario three plant closures and 45 job losses will also occur. Prices for both scenarios are expected to increase by no more than 1 percent in any metal category with overall production changes to decrease by less than 1 percent.

NSPS/PSNS

New NSPS and PSNS are being proposed for 10 subcategories and modifications of promulgated NSPS and PSNS for primary and secondary

aluminum. The technology basis for both NSPS and PSNS is BAT except in three subcategories that include additional flow reductions. The additional flow reductions are based on dry air pollution scrubbing and 100 percent recycle of all other wastewater discharges (except for casting cooling) in primary aluminum, dry air pollution scrubbing and installation of dry slag conditioning for primary lead and dry air pollution scrubbing for secondary lead. There is no expected incremental cost for this regulation above BAT and therefore the Agency expects that no economic impacts will occur as a result of implementation of these standard in any new source.

The Agency believes that these regulations as proposed are economically achievable and pose no significant economic effects on any subcategory within the nonferrous metals manufacturing category. The Agency is, however, concerned that in three subcategories present economic conditions are changing the structure and composition of the market to the point where previously-held assumptions regarding business behavior and profitability must be reevaluated. These subcategories are: Secondary silver, secondary lead and primary copper electrolytic refining.

The Agency is concerned that significant changes in the secondary silver subcategory have occurred due to the tremendous fluctuation of silver prices over the past few years. The major assumption in the present economic analysis assumes that all processing plants assume ownership of the metal. Toll processors were assumed to operate in the same manner as the processors who owned the silver. The Agency believes that this assumption may not fully characterize the possible economic distinctions between these two segments of the market. Recent data analysis indicate that, in fact, many tollers are becoming more active in the silver market through speculation, obtaining ownership of scrap for processing and selling the silver on the open market. We are also aware that changes have occurred with regard to the traditional tolling fee structure. Firms appear to be moving away from flat rate fees per troy oz. refined to a percentage fee based on the current price of the metal. With the occurrence of these types of changes and the relative ease of entry into this sector, the Agency is seeking ways to more accurately characterize this changing subcategory. The Agency is considering the formation of a separate subcategory for toll operations and seeks comments,

both technical and economic, on the viability of this approach.

With regard to the projected closures in the secondary silver subcategory, the Agency has also considered proposing less stringent requirements applicable to small plants than to large plants, including an exemption for small plants affected by this regulation. We are not proposing different requirements for small facilities, because small secondary silver facilities, as a class, will not incur significant or disproportionate economic impacts as a result of complying with the regulation. Thus, plants of the same or smaller size as the three potential closure candidates would not incur significant impacts. In addition, the three plants that are potential closures use disproportionate amounts of wastewater (in one case, 10 times the PSES regulatory flow) and account for 70 percent of the toxic pollutants discharged to POTWs by this subcategory. Therefore, we do not believe that a size cutoff is justified. The Agency, however, solicits specific comments together with technical and financial supporting documentation to support or reject differing regulations for large and small secondary silver plants.

Although the current impact analysis of the secondary lead subcategory does not predict any closures, the Agency is concerned about the long run market shifts which are affecting the structure and composition of this subcategory. The major changes affecting the secondary lead market are an overall stagnant demand, and a major shift by battery manufacturers to low-antimony maintenance free (MF) batteries. The change to MF batteries reduces profits, and also places the secondary producers in direct competition with primary producers in the marketing of pure lead. Because a majority of the secondary lead subcategory is involved in some aspect of battery manufacture, through the production of antimonial lead, the long run effects of this shift to low antimonial lead batteries is significant. In addition, this change will eliminate the traditional cost advantage secondary lead producers have had over primary lead operations in the production of antimonial lead. This cost advantage is due to the fact that secondary producers have purchased antimonial lead scrap for only the price of contained lead. Their resale price includes the value of the antimony. This incremental profit is reduced as the use of antimony decreases. These shifts in the market are of serious concern to the Agency and we are soliciting comments on changes in this market and its effect

on production prices, profitability and capacity.

The world market for refined copper has traditionally been subject to cyclical changes in demand ranging from ± 10 percent to high as 20 percent. Several trends in the world market have caused the Agency to focus its concern on where the U.S. refining industry is headed over the next 3-5 years. Throughout this recessionary period the production of refined copper in the U.S. has decreased to approximately 55% of capacity in 1982, according to a Standard and Poors Industry Survey (February 1982). However, due to slack demand for copper produced even at this level, inventories are building which have placed a downward pressure on prices. These conditions are further exacerbated by developing countries with high grade ores, who are maintaining output at levels exceeding demand. This behavior has also contributed to the downward pressure on prices. Over the long run, the cost of production provides a rising floor on copper prices and the long run price of copper tends to be equal to the price that is sufficient to reduce continued investment. Because of the rising costs of production in the U.S. aggravated by slack demand, world wide surpluses and depressed prices, the Agency believes that profit margins are being reduced to the point where investment in future production of copper is in serious question. These shifts in the market and continued pressures on prices are of serious concern to the Agency and we are soliciting comments on production costs, prices, operating margins, profitability and projected increases or decreases in capacity.

Regulatory Flexibility: Public Law 96-354 requires that a Regulatory Flexibility Analysis (RFA) be prepared for regulations that have a significant impact on a substantial number of small entities. We do not believe these proposed regulations have such an impact. In the course of developing the impact analysis for this regulation the industry was divided into two major subcategories, primary and secondary producers. (Primary producers use virgin ore as a raw material; secondary producers use scrap as their major raw material.) For each metal group under the primary and secondary subcategory the definition of small varied according to capacity, production and number of employees. No "small" plants exist in the primary subcategory. Within each metal group in the secondary subcategory a wide range of plant sizes exist. However, each plant in the secondary subcategory data base was

subjected to a plant-by-plant screening analysis which compared compliance costs to projected 1985 annual revenues. The only substantial impacts shown by this analysis are in the secondary silver subcategory, where three small (150,000 troy oz./yr.) processing plants may close due to this regulation. This impact, we believe, is not "significant" within the meaning of the Regulatory Flexibility Act.

SBA Loans: The Agency is continuing to encourage small nonferrous smelting and refining operations to use Small Business Administration (SBA) financing as needed for pollution control equipment. The three basic programs are: (1) The Guaranteed Pollution Control Bond Program, (2) the Section 503 Program, and (3) the Regular Guarantee Program. All the SBA loan programs are only open to businesses that have: (a) net assets less than \$6 million, (b) an average annual aftertax income of less than \$2 million, and (c) fewer than 250 employees.

The guaranteed pollution control bond is a full faith and credit instrument with a tax free feature, making it the most favorable of the programs. Although, all 1981 funds have already been committed, the SBA is trying to get additional funding for this program. The program applies to projects that cost from \$150,000 to \$2,000,000.

The Section 503 Program, as amended in July 1981, allows long-term loans to small and medium-sized businesses. These loans are made by SBA approved local development companies. For the first time, 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 Guarantee Program, loans are made available by commercial banks and are guaranteed by the SBA. This program has interest rates equivalent to market rates.

For additional information on the Regular Guarantee 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) 426-7874. For further information and specifics on the Guaranteed 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.

XIX. Non-water Quality Aspects of Pollution Control

The elimination or reduction of one form of pollution may aggravate other environmental problems. Therefore,

Sections 304(b) and 306 of the Act require EPA to consider the non-water quality environmental impacts (including energy requirements) of certain regulations. In compliance with these provisions, EPA has considered the effect of this regulation on air pollution, solid waste generation, water scarcity, and energy consumption. While it is difficult to balance pollution problems against each other and against energy utilization, EPA is proposing regulations which it believes best serve often competing national goals.

The following are the non-water quality environmental impacts (including energy requirements) associated with the proposed regulations:

A. Air Pollution

Imposition of BPT will not create any substantial air pollution problems. BAT, BCT, NSPS, PSES, and PSNS will result in a slight increase in air pollution. Water vapor containing some particulate matter will be released in the drift from the cooling tower systems which are used as the technology basis for flow reduction which is a part of BAT, NSPS, PSES, and PSNS in many subcategories. In those plants using lubricants for casting, there may be organics present in the drift from cooling towers used to cool and recycle casting contact cooling water. The Agency does not consider any of these impacts to be significant.

B. Solid Waste

EPA estimates that nonferrous metals manufacturing facilities generated 164 kkg of solid wastes (wet basis) in 1978 as a result of wastewater treatment in place. These wastes were comprised of treatment system sludges containing toxic metals, including arsenic, antimony, cadmium, chromium, copper, lead, nickel, selenium, and zinc.

EPA estimates that the proposed BPT will contribute an additional 65 kkg per year of solid wastes. Proposed BAT and PSES will increase these wastes by approximately 20 kkg per year beyond BPT levels. These sludges will necessarily contain additional quantities (and concentrations) of toxic metal pollutants.

Wastes generated by primary smelters and refiners are currently exempt from regulation by Act of Congress (Resource Conservation and Recovery Act (RCRA)), Section 3001(b). Consequently, sludges generated from treating primary industries' wastewater are not presently subject to regulation as hazardous wastes.

Wastes generated by secondary metal industries can be regulated as

hazardous. However, the agency examined the solid wastes that would be generated at secondary nonferrous metals manufacturing plants by the suggested treatment technologies and believes they are not hazardous wastes under the Agency's regulations implementing Section 3001 of the Resource Conservation and Recovery Act. None of these wastes is listed specifically as hazardous. Nor are they likely to exhibit a characteristic of hazardous waste. This judgment is made based on the recommended technology of lime precipitation, sedimentation and filtration. By the addition of excess lime during treatment, similar sludges, specifically toxic metal bearing sludges, generated by other industries such as the iron and steel industry passed the Extraction Procedure (EP) toxicity test. See 40 CFR 261.24. Thus, the Agency believes that the wastewater sludges will similarly not be EP toxic if the recommended technology is applied.

Although it is the Agency's view that solid wastes generated as a result of these guidelines are not expected to be hazardous, generators of these wastes must test the waste to determine if the wastes meet any of the characteristics of hazardous waste (see 40 CFR 262.11).

If these wastes should be identified or are listed 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 would require generators of hazardous nonferrous metals manufacturing wastes to meet containerization, labeling, recordkeeping, and reporting requirements; if plants dispose of hazardous wastes off-site, 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), as amended at 45 FR 86973 (December 31, 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 Part 464, 46 FR 2802 (January 12, 1981), 47 FR 32274 (July 26, 1982).

Even if these wastes are not identified as hazardous, they still must be disposed of in compliance with the

Subtitle D open dumping standards, implementing 4004 of RCRA. See 44 FR 53438 (September 13, 1979). The Agency has calculated as part of the costs for wastewater treatment the cost of hauling and disposing of these wastes. For more details, see Section VII of the General Development Document.

C. Energy Requirements

EPA estimates that achieving proposed BPT effluent limitations will result in a net increase in electrical energy consumption of approximately 77.2 million kilowatt-hours per year. The BAT and PSES technology should not substantially increase the energy requirements of BPT because the additional pumping requirements for filtration should be offset by the reduced pumping requirements, the agitation requirements for mixing wastewater and other volume related energy requirements, as a result of reducing process wastewater discharge to treatment. To achieve the proposed 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 the NSPS and PSNS technology will, in general, require as much energy as the existing source limitations.

XX. Best Management Practices (BMP)

Section 304(e) of the Clean Water Act authorizes the Administrator to prescribe "best management practices" (BMP) described under Legal Authority and Background. EPA is not proposing specific BMP for nonferrous metals manufacturing at this time.

XXI. Upset and Bypass Provisions

A recurring issue is whether industry limitations and standards should include provisions that authorize noncompliance during "upsets" or "bypasses." An upset, sometimes called an "excursion," is unintentional noncompliance beyond the reasonable control of the permittee. EPA believes that upset provisions are necessary because upsets will inevitably occur, even if the control equipment is properly operated. Because technology-based limitations can require only what technology can achieve, many claim that liability for upsets is improper. When confronted with this issue, courts have been divided on the questions of whether an explicit upset or excursion exemption is necessary or whether upset or excursion incidents may be handled through EPA's enforcement discretion. Compare *Manathon Oil Co. v. EPA*, 564 F.2d 1253 (9th Cir. 1977) with *Weyerhaeuser v. Costle*, *supra* and *Corn*

Refiners Association, et. al. v. Costle, No. 78-1089 (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 (8th Cir. 1976); and *FMC Corp. v. Train*, 539 F.2d 973 (4th Cir. 1976).

Unlike an upset—which is an unintentional episode—a bypass is an intentional noncompliance to circumvent waste treatment facilities during an emergency.

EPA has both upset and bypass provisions in NPDES permits, and the NPDES portions of the Consolidated Permit regulations include upset and bypass permit provisions. See 40 CFR Part 11.60, 44 FR 32854, 32862-3 (June 7, 1979). 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. Since permittees in the nonferrous metals manufacturing category are entitled to the upset and bypass provisions in NPDES permits, this proposed regulation does not repeat these provisions. Upset provisions are also contained in the General Pretreatment regulation.

XXII. Variances and Modifications

Upon the promulgation of the final regulation, the numerical effluent limitations for the appropriate subcategory must be applied to all Federal and State NPDES permits thereafter issued to aluminum forming directed dischargers. In addition, on promulgation, the pretreatment standards are directly applicable to indirect dischargers.

For the BPT effluent limitations, the only exception to the binding limitations is EPA's "fundamentally different factors" variance. See *E. I. duPont de Nemours and Co. v. Train*, 430 U.S. 112 (1977); *Weyerhaeuser Co. v. Costle*, *supra*. This variance recognizes factors concerning a particular discharger which 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). This variance clause was originally set forth in EPA's 1973-1976 industry regulations. It is now included in the general NPDES regulations and will not be included in the aluminum forming or other specific industry regulations. See the NPDES regulations at 40 CFR Part 122 Subparts A and D, 45 FR 33290 et seq. (May 19, 1980) for the text and

explanation of the "fundamentally different factors" variance.

The BAT limitations in this regulation are subject to EPA's "fundamentally different factors" variance. In addition, BAT limitations for nonconventional pollutants are subject to modifications under Sections 301(c) and 301(g) of the Act. According to Section 301(j)(1)(B), applications for these modifications must be filed within 270 days after promulgation of final effluent limitations guidelines. See 49 FR 40859 (September 13, 1978). Under Section 201(1) of the Act, these statutory modifications are not applicable to "toxic" pollutants.

Pretreatment standards for existing sources are subject to the "fundamentally different factors" variance. See 40 CFR 403.13; 46 FR 9404 (January 23, 1981); 46 FR 50502 (October 13, 1981); 47 FR 4518 (February 1, 1982). In addition, pretreatment standards for existing and new sources are subject to a provision allowing relaxation of a pretreatment standard upon demonstration by a POTW of consistent removal of the regulated pollutants. 40 CFR 403.7; 43 FR 27736 (June 26, 1978); 40 CFR 403.13; 46 FR 9404 (January 28, 1981).

New source performance standards are not subject to EPA's "fundamentally different factors" variance or any statutory of regulatory modifications. See *duPont v. Train*, *supra*.

XXIII. Relation to NPDES Permits

The BPT and BAT limitations and NSPS in this regulation will be applied to individual plants through NPDES permits issued by EPA or approved state agencies under Section 402 of the Act. Under the proposed regulation for the nonferrous metals manufacturing category, all limitations are mass based.

The preceding section of this preamble discussed the binding effect of this regulation on NPDES permits, except when variances and modifications are expressly authorized. The following adds more detail on the relation between this regulation and NPDES permits.

One subject that has received different judicial rulings is the scope of NPDES permit proceedings when effluent limitations and standards do not exist. Under current EPA regulations, States and EPA regions that issue NPDES permits before regulations are promulgated must do so on a case-by-case basis. This regulation provides a technical and legal base for new permits.

Another issue is how the regulation affects the authority of those that issue NPDES permits. EPA has developed the

limitations and standards in this regulation to cover the typical facility for this point source category. In specific cases, the NPDES permitting authority may have to establish permit limits on toxic pollutants that are not covered by this regulation. This regulation does not restrict the power of any permit-issuing authority to comply with law or any EPA regulation, guideline, or policy. For example, if this regulation does not control a particular pollutant, the permit issuer may still limit the pollutant on a case-by-case basis, when such action conforms with the purposes of the Act. In addition, if State water quality standards or other provisions of State or Federal law require limits on pollutants not covered by this regulation (or require more stringent limits on covered pollutants), the permit-issuing authority must apply those limitations.

A final topic of concern is the operation of EPA's NPDES enforcement program, which was an important consideration in developing this regulation. The Agency emphasizes that although the Clean Water Act is a strict liability statute, EPA can initiate enforcement proceedings at its discretion (*Sierra Club v. Train*, 557 F.2d 485 (5th Cir. 1977)). EPA has exercised and intends to exercise that discretion in a manner that recognizes and promotes good-faith compliance and conserves enforcement resources for those who fail to make these good-faith efforts.

XXIV. Solicitation of Comments

EPA invites public participation in this rulemaking. We ask that any perceived deficiencies in the record be addressed specifically. We also ask that any suggested revisions or corrections be supported by data.

In addition to issues already addressed in the preamble, EPA is particularly interested in receiving additional comments and information on the following issues:

1. In our discussion of choices for BAT, PSES, NSPS, and PSNS for each subcategory, we described the range of options we considered. We formally solicit comment on whether we should adopt less or more stringent options in each subcategory, and if so, why.

2. The Agency is continuing to seek additional data to support these proposed limitations. The treatment effectiveness data for lime precipitation and sedimentation and lime precipitation, sedimentation and filtration technology. This regulation are based on the results of Agency sampling of the raw wastewaters and treated effluents from a broad range of plants generating similar wastewaters and (for

filtration) on long-term self-monitoring. The Agency invites comments on the treatment effectiveness results, and the statistical analysis and underlying assumptions discussed in Section VII of the Development Document as they pertain to the nonferrous metals manufacturing plants. The Agency specifically requests long-term sampling data (especially paired raw wastewater—treated effluent data) from nonferrous metals manufacturing plants having well-operated treatment systems using the treatment technologies relied upon for this regulation, and also other equally effective treatment technologies.

3. The Agency requests long-term sampling data (especially paired raw wastewater—treated effluent data) from any plants treating cadmium that use chemical precipitation and settling technology (with and without a polishing filter).

4. In its cost estimates the Agency has not considered cost savings associated with water flow reduction, such as reduced charges for water use and sewerage savings.

The Agency invites comments and requests that cost data be submitted to the Agency.

5. Nonferrous plants in roughly half the subcategories (secondary aluminum, primary copper electrolytic refining, secondary lead, primary zinc, primary tungsten, primary columbium-tantalum, secondary silver, and metallurgical acid plants) discharge to POTWs. Because their wastewaters contain substantial amounts of toxic metals, the Agency invites comments and any supporting data concerning incompatibility of these wastewaters with the POTW treatment systems or sludge disposition.

6. We request comment as to whether nonferrous plants could incur disproportionate costs as a result of treating both nonferrous wastewaters and wastewaters from a different point source category.

7. We request that commenters identify any process wastewater streams not identified by EPA which they believe should receive a discharge allowance. For any such streams, commenters should identify flow (in relation to production normalized parameter) and pollutant concentrations.

8. In the primary aluminum subcategory, we are proposing that NSPS be based on dry (or 100 percent recycle) emission scrubbing, because we know of primary aluminum plants that do not discharge scrubber wastewater. Recently EPA has received information that certain types of primary aluminum production require wet scrubber systems that cannot achieve 100 percent

recycle. The Agency solicits comments as to the accuracy of this information, and generally as to whether NSPS (and PSNS) should include an allowance for scrubber blowdown.

9. For the primary lead subcategory, we solicit comment as to whether it is necessary to have a BAT discharge allowance for slag granulation wastewater. Our information is that a discharge allowance is necessary to allow slag recycling. On the other hand, we know of other plants with this waste stream that do not discharge, although we do not know if they practice slag recycling. We solicit comment as to whether slag recycling necessarily requires wastewater discharge.

10. For the primary tungsten subcategory, we solicit additional data as to organic pollutant concentrations in APT purification wastewaters using organics in ion-exchange extraction.

11. For the primary columbium-tantalum subcategory, we solicit additional data on organic pollutant concentrations in process wastewaters.

12. In the primary aluminum subcategory, we are proposing that BAT, NSPS and PSNS include activated carbon adsorption pretreatment to reduce the concentrations of benzo(a)pyrene and other polynuclear aromatic compounds. We solicit comment on the reduction of benzo(a)pyrene and other polynuclear aromatic compounds through the use of lime precipitation and sedimentation, lime precipitation and sedimentation followed by polishing filtration and activated carbon pretreatment. Specifically, the Agency requests data (preferably paired raw wastewater treated effluent data) from plants having well-operated treatment systems using these technologies or from plants who have performed bench- or pilot-scale studies using these technologies on primary aluminum wastewater.

13. The methodology used to estimate the economic effects of these regulations is discussed in Section XVIII of this preamble and in the Economic Development Document. We solicit comments on the methodology and criteria used to screen for economic impacts and on the methodology presented for financial analyses of individual plants. The Agency plans to reassess a number of the estimates used in its economic analysis incorporating the current economic recession and the Administrations forecasts of expected recovery. We solicit information on current production levels for the industry, prices, returns on investment, and changes in industry capacity. We solicit historical information on these

same factors so we can evaluate how they change with the general economic conditions. We solicit information on structural changes in the industry that have occurred and changes in the competitive position of the domestic market vis-a-vis in the international markets.

14. A number of firms have not responded to the economic survey mailed to them under the authority of Section 308 of the Clean Water Act. The Agency requests that each facility that has failed to respond to submit its response. If the questionnaire has been misplaced there is a blank copy of a survey in the Appendix of the Economic Impact Analysis that can be used or a duplicate of the survey will be sent directly upon request.

15. The Agency is concerned that fundamental changes in the economic conditions of the secondary lead industry may affect the ability of certain firms to install the technology necessary to meet the proposed limitations and standards. Restrictions on the use of lead in gasoline and changes in the material used in automotive batteries are affecting the overall demand for lead and the supply of scrap batteries used by secondary lead smelters. The Agency solicits comments on these and any other structural changes that have affected production levels, prices, profitability, and changes in existing capacity.

16. The Agency is considering forming a separate subcategory for toll processors in the secondary silver subcategory due to the special market position of toll processors. The Agency solicits comments on the economic conditions in the industry and the financial conditions of toll processors in the industry. We especially are interested in information on the pricing policies of toll processors.

17. The current and future conditions of the primary copper refining industry are of concern to the Agency. We are soliciting comments and data on world supplies of copper and their influence on U.S. producer prices and revenues. We are also requesting data on this level of substitution affecting the industry, its chief competitors and their effects on copper demand. The Agency also requests comments on the overall health and direction of the industry and what structural changes may be taking place over the next 3-5 years.

List of Subjects in 40 CFR Part 421

Metals, Water pollution control, Waste treatment and disposal.

Dated: January 31, 1983.

Anne M. Gorsuch,
Administrator.

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.

BMP—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 (Public Law 95-217).

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 Permits—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) of the Act.

PSNS—Pretreatment standards for new sources of direct dischargers under Sections 307 (b) and (c) of the Act.

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

Appendix B—Summary of BCT Test in the Nonferrous Metals Manufacturing Category

Subcategory	Comparable POTW benchmark	Incremental cost proposed BAT (part 1)	Proposed BAT option part 1 (pass or fail)	Incremental cost intermediate option (part 1)	Proposed intermediate option part 1 (pass or fail)
Primary Aluminum	\$0.27	\$3.07	Fail	\$2.20	Fail
Secondary Aluminum	0.27	15.88	Fail		Fail
Primary Electrolytic Copper Refining	0.27	5.07	Fail	22.06	Fail
Primary Lead	0.27	13.28	Fail	0.0	Fail
Primary Zinc	0.27	8.20	Fail	4.30	Fail
Metallurgical Acid Plants	0.27	19.60	Fail	23.77	Fail
Primary Tungsten	0.27	15.04	Fail	19.73	Fail
Primary Columbium-Tantalum	0.27	76.16	Fail	8.73	Fail
Secondary Silver	0.27	4.09	Fail	1,700.00	Fail
Secondary Lead	0.27	179.94	Fail	15.34	Fail

Appendix C—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), TSS pH

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

- 120. copper
- 122. lead
- 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
- 125. selenium

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

(h) Subpart K—Primary Columbian-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, TSS, pH

Appendix D—Toxic Pollutants Not Detected

(a) Subpart B—Primary Aluminum Smelting Subcategory.

2. acrolein

3. acrylonitrile

6. carbon tetrachloride (tetrachloromethane)

7. chlorobenzene

8. 1, 2, 4-trichlorobenzene

9. hexachlorobenzene

10. 1,2-dichloroethane

11. 1, 1, 1-trichloroethane

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-chloromethyl) 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

30. 1, 2-trans-dichloroethylene

31. 2, 4-dichlorophenol

32. 1, 2-dichloropropane

33. 1, 2-dichloropropylene (1, 3-dichloropropene)

38. ethylbenzene

40. 4-chlorophenyl phenyl ether

41. 4-bromophenyl phenyl ether

43. bis (2-chloroethoxy) methane

46. methyl bromide (bromomethane)

47. bromoform (tribromomethane)

49. trichlorofluoromethane

50. dichlorodifluoromethane

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

88. vinyl chloride (chloroethylene)

94. 4, 4'-DDD (p,p' TDE)

95. a-endosulfan-Alpha

97. endosulfan sulfate

98. endrin

129. 2, 3, 7, 8-tetrachlorodibenzo-p-dioxin

(TCDD)

(b) Subpart C—Secondary Aluminum

Subcategory

1. acenaphthene

2. acrolein

3. acrylonitrile

5. benzidene

7. chlorobenzene

8. 1, 2, 4-trichlorobenzene

9. hexachlorobenzene

11. 1, 1, 1-trichloroethane

12. hexachlorethane

13. 1, 1-dichloroethane

14. 1, 1, 2-trichloroethane

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

31. 2, 4-dichlorophenol

32. 1, 2-ichloropropane

33. 1, 2-dichloropropylene (1, 3-dichloropropene)

34. 2, 4-dimethylphenol

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

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)

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

94. 4, 4'-DDD (p, P' TDE)

95. a-endosulfan-Alpha

96. b-endosulfan-Beta

97. enosulfan sulfate

105. g-BHC-Delta

117. asbestos

129. 2, 3, 7, 8-tetrachlorodibenzo-p-dioxin (TCDD)

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

2. acrolein

3. acrylonitrile

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. flourene

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

94. 4,4'-DDD(p,p' TDE)

105. g-BHC-Delta

106. PCB-1242 (Arochlor 1242)

108. PCB-1221 (Arochlor 1221)

109. PCB-1232 (Arochlor 1232)

110. PCB-1248 (Arochlor 1248)

111. PCB-1260 (Arochlor 1260)

113. toxaphene

116. asbestos

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-trichloroethane
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. trichlorofluoromethane
50. dichlorodifluoromethane
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. ethyl 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)fluoranthene (11,12-benzofluoranthene)

76. chrysene
77. acenaphthylene
78. anthracene (a)
79. benzo(ghi)perylene (1,11-benzoperylene)
80. flourene
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

1. acenaphthene
2. acrolein
3. acrylonitrile
4. benzene
5. benzidene
6. carbon tetrachloride (tetrachloromethane)
7. chlorobenzene
8. 1,2,4-trichlorobenzene
9. hexachlorobenzene
10. 1,2-dichloroethane
11. 1,1,1-trichloroethane
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
23. chloroform (trichloromethane)
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)fluoranthene (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
 114. antimony
 117. beryllium
 121. cyanide (Total)
 127. thallium
 129. 2,3,7,8-B-tetrachlorodibenzo-p-dioxin (TCDD)
- (a), (b), (c) Reported together.
 (f) Subpart I—Metallurgical Acid Plants Subcategory.
1. acenaphthene
 2. acrolein
 3. acrylonitrile
 5. benzidene
 7. chlorobenzene
 8. 1,2,4-trichlorobenzene
 9. hexachlorobenzene
 11. 1,1,1-trichloroethane
 12. hexachlorethane
 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
 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
 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)
 50. Deleted
 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
 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
 102. a-BHC-Alpha
 105. g-BHC-Delta
 113. toxaphene
 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
 11. 1,1,1-trichloroethane
 12. hexachlorethane
 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
 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
 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
 67. butyl benzyl 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)fluoranthene (11,12-benzofluoranthene)
 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
 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
 114. antimony
 116. asbestos
 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
 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) methone
 45. methyl chloride (chloromethane)
 46. methyl bromide (bromomethane)
 49. Deleted
 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
 62. N-nitrosodiphenylamine
 63. N-nitrosodi-n-propylamine
 64. pentachlorophenol
 65. phenol
 72. benzo(a)anthracene (1,2-benzanthracene)
 74. 3,4-benzofluoranthene
 75. benzo(k)fluoranthene (11,12-benzofluoranthene)
 82. dibenzo(a,h)anthracene (1,2,5,6-dibenzanthracene)
 83. indeno (1,2,3-cd)pyrene
 88. vinyl chloride (chloroethylene)

94. 4,4'-DDD (p,p'TDE)
 95. a-endosulfan-Alpha
 96. b-endosulfan-Beta
 97. endosulfan sulfate
 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. parachlorometacresol
 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-demethylphenol
 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
 45. methyl chloride (chloromethane)
 46. methyl bromide (bromomethane)
 48. dichlorobromomethane
 49. Deleted
 50. Deleted
 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
 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-benzopyrene)
 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
 98. b-endosulfan-Beta
 97. endosulfan sulfate
 101. heptachlor epoxide
 106. PCB-1242 (Arochlor 1242)
 116. asbestos
 117. beryllium
 129. 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)
 (j) Subpart M—Secondary Lead Subcategory.
 2. acrolein
 3. acrylonitrile
 5. benzidene
 6. carbon tetrachloride (tetrachloromethane)
 8. 1,2,4-trichlorobenzene
 9. hexachlorobenzene
 11. 1,1,1-trichloroethane
 12. hexachlorethane
 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. parachlorometacresol
 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
 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)
 48. dichlorobromomethane
 49. trichlorofluoromethane
 50. dichlorodifluoromethane
 51. chlorodibromomethane
 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
 67. butyl benzyl phthalate
 79. benzo (ghi)perylene (1,11-benzopyrene)
 88. vinyl chloride (chloroethylene)
 89. aldrin
 95. a-endosulfan-Alpha
 97. endosulfan sulfate
 105. g-BHC-Delta
 116. asbestos
 129. 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)

Appendix E—Toxic Pollutants Detected Below the Analytical Quantification Limit

(a) Subpart B—Primary Aluminum Smelting Subcategory.

5. benzidene
 15. 1,1,2,2-tetrachloroethane
 29. 1,1-dichloroethylene
 35. 2,4-dinitrotoluene
 38. 2,6-dinitrotoluene
 45. methyl chloride (chloromethane)
 48. dichlorobromomethane
 70. diethyl phthalate
 71. dimethyl phthalate
 85. tetrachloroethylene
 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)
 96. b-endosulfan-Beta
 99. endrin aldehyde
 100. heptachlor
 101. heptachlor epoxide
 102. a-BHC-Alpha
 103. b-BHC-Beta
 104. r-BHC (lindane)-Gamma
 g-BHC-Delta
 113. toxaphene
 (b) Subpart C—Secondary Aluminum Subcategory.
 6. carbon tetrachloride (tetrachloromethane)
 10. 1,2-dichloroethane
 15. 1,1,2,2-tetrachloroethane
 16. chloroethane
 28. 3,3'-dichlorobenzidine
 35. 2,4-dinitrotoluene
 36. 2,6-dinitrotoluene
 54. isophorone
 55. naphthalene
 3,4-benzofluoranthene
 75. benzo(k)fluoranthene (11,12-benzofluoranthene)
 78. anthracene (a)
 80. fluorene
 81. phenanthrene (a)
 86. toluene
 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
 121. cyanide (Total)
 (a) Reported together.
 (c) Subpart E—Primary Copper Electrolytic Refining Subcategory.
 1. acenaphthene
 4. benzene
 5. benzidene
 11. 1,1,1-trichloroethane
 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)fluoranthene (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
- 107. PCB-1254 (Arochlor 1254)

(a) Reported together.

(d) Subpart G—Primary Lead Subcategory.

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

(e) Subpart I—Metallurgical Acid Plants Subcategory.

- 4. benzene
- 10. 1,2-dichloroethane
- 14. 1,1,2-trichloroethane
- 15. 1,1,2,2-tetrachloroethane
- 39. fluoranthene
- 49. DELETED
- 51. chlorodibromomethane
- 54. isophorone
- 55. naphthalene
- 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)fluoranthene (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)
- 98. b-endosulfan-Beta
- 98. endrin
- 99. endrin aldehyde
- 100. heptachlor
- 101. heptachlor epoxide
- 103. b-BHC-Beta
- 104. r-BHC (lindane)-Gamma
- 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)
- 116. asbestos
- 117. beryllium
- 121. cyanide (Total)

(a), (b) Reported together.
(f) Subpart j—Primary Tungsten Subcategory.

- 4. benzene
- 10. 1,2-dichloroethane
- 15. 1,1,2,2-tetrachloroethane
- 39. fluoranthene
- 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)

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

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

- 20. 2-chloronaphthalene
- 39. fluoranthene
- 55. naphthalene
- 69. di-n-octyl phthalate
- 70. diethyl phthalate
- 73. benzo (a)pyrene (3,4-benzopyrene)
- 76. chrysene
- 77. acenaphthylene
- 79. benzo(ghi)perylene (1,11-benzoperylene)
- 80. fluorene
- 84. pyrene
- 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)
- 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
- 121. cyanide (Total)

(h) 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

(a) Reported together.

(i) Subpart M—Secondary Lead.

- 1. acenaphthene
- 4. benzene
- 7. chlorobenzene
- 10. 1,2-dichloroethane
- 13. 1,1-dichloroethane
- 15. 1,1,2,2-tetrachloroethane
- 29. 1,1-dichloroethylene

- 30. 1,2-trans-dichloroethylene
- 37. 1,2-diphenylhydrazine
- 38. ethylbenzene
- 39. fluoranthene
- 54. isophorone
- 55. naphthalene
- 70. diethyl 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)
- 80. fluorene
- 82. dibenzo (a,h)anthracene (1,2,5,6-dibenzanthracene)
- 83. indeno (1,2,3-cd)pyrene
- 85. tetrachloroethylene
- 86. toluene
- 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. a-BHC-Alpha
- 103. b-BHC-Beta
- 104. r-BHC (lindane)-Gamma
- 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
- 121. cyanide (Total)
- 125. selenium

(a), (b) Reported together.

Appendix F—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
- 37. 1,2-diphenylhydrazine
- 42. bis(2-chloroisopropyl) ether
- 54. isophorone
- 123. mercury
- 127. thallium

(b) Subpart C—Secondary Aluminum Subcategory.

- 29. 1,1-dichloroethylene
- 30. 1,2-trans-dichloroethylene
- 48. dichlorobromomethane
- 113. toxaphene
- 117. beryllium
- 123. mercury
- 126. silver

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

- 114. antimony
- 119. chromium (Total)

(d) Subpart G—Primary Lead Subcategory.

- 115. arsenic
- 117. beryllium
- 118. cadmium
- 119. chromium (Total)

123. mercury
124. nickel
126. silver

(e) Subpart H—Primary Zinc Subcategory.

44. methylene chloride
116. asbestos (Fibrous)
123. mercury

(f) Subpart I—Metallurgical Acid Plants Subcategory.

23. chloroform (trichloromethane)
48. dichlorobromomethane
85. tetrachloroethylene

(g) Subpart J—Primary Tungsten Subcategory.

1. acenaphthene
23. chloroform (trichloromethane)
29. 1,1-dichloroethylene
38. ethylbenzene
51. chlorodibromomethane
55. naphthalene
77. acenaphthylene
80. fluorene
85. tetrachloroethylene
86. toluene
117. beryllium
121. cyanide (Total)
123. mercury

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

4. benzene
14. 1,1,2-trichloroethane
35. 2,4-dinitrotoluene
36. 2,6-dinitrotoluene
47. bromoform (tribromomethane)
48. dichlorobromomethane
54. isophorone
126. silver

(i) Subpart L—Secondary Silver Subcategory.

1. acenaphthene
4. benzene
6. carbon tetrachloride (tetrachloromethane)
10. 1,2-dichloroethane
29. 1,1-dichloroethylene
30. 1,2-trans-dichloroethylene
38. ethylbenzene
87. trichloroethylene
114. antimony
125. selenium
126. silver
127. thallium
115. arsenic
121. cyanide (Total)
125. selenium
127. thallium

(j) Subpart M—Secondary Lead Subcategory.

23. chloroform (trichloromethane)
44. methylene chloride (dichloromethane)
47. bromoform (tribromomethane)
56. nitrobenzene
71. dimethyl phthalate
117. beryllium
126. silver
127. thallium

Appendix G—Toxic Pollutants Detected in the Effluent From Only A Small Number of Sources

(a) Subpart B—Primary Aluminum Smelting Subcategory.

20. 2-chloronaphthalene
23. chloroform (trichloromethane)

34. 2,4-dimethylphenol
44. methylene chloride (dichloromethane)
55. naphthalene
62. N-nitrosodiphenylamine
65. phenol
66. bis(2-ethylhexyl) phthalate
67. butyl benzyl phthalate
68. di-n-butyl phthalate
69. di-n-octyl phthalate
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
116. asbestos (Fibrous)
117. beryllium
126. silver
128. zinc

(a), (b) 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)

Appendix G—Toxic Pollutants Detected in the Effluent From Only A Small Number of Sources

(a) Subpart B—Primary Aluminum Smelting Subcategory.

20. 2-chloronaphthalene
23. chloroform (trichloromethane)
34. 2,4-dimethylphenol
44. methylene chloride (dichloromethane)
55. naphthalene
62. N-nitrosodiphenylamine
65. phenol
66. bis(2-ethylhexyl) phthalate
67. butyl benzyl phthalate
68. di-n-butyl phthalate
69. di-n-octyl phthalate
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
116. asbestos
117. beryllium
126. silver
128. zinc

(a), (b) 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
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
114. antimony
115. arsenic
119. chromium (Total)
120. copper
124. nickel
125. selenium
127. thallium

(a), (b) Reported together.

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

23. chloroform
66. bis(2-ethylhexyl) phthalate
67. butyl benzyl phthalate
68. di-n-butyl phthalate
69. di-n-octyl phthalate
112. PCB-1016

(d) Subpart G—Primary Lead Subcategory.

114. antimony
120. copper

(e) Subpart H—Primary Zinc Subcategory.

116. asbestos

(f) Subpart I—Metallurgical Acid Plants Subcategory.

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

(a) Reported together.

(g) 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
124. nickel
126. silver

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

6. carbon tetrachloride (tetrachloromethane)
10. 1,2-dichloroethane
11. 1,1,1-trichloroethane
12. hexachlorethane
15. 1,1, 2,2-tetrachloroethane
23. chloroform (trichloromethane)
29. 1,1-dichloroethylene
38. ethylbenzene
44. methylene chloride (dichloromethane)
66. bis(2-ethylhexyl) phthalate
67. butyl benzyl phthalate
68. di-n-butyl phthalate

71. demethyl phthalate
 78. anthracene (a)
 81. phenanthrene (a)
 86. toluene
 113. toxaphene
 116. asbestos
 117. beryllium
 123. mercury
 127. thallium
 (a) Reported together.
 (i) Subpart L—Secondary Silver Subcategory.
 11. 1,1,1-trichloroethane
 23. chloroform (trichloromethane)
 44. methylene chloride (dichloromethane)
 47. bromoform (tribromomethane)
 68. 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.
 (j) Subpart M—Secondary Lead Subcategory.
 68. bis(2-ethylhexyl) Phthalate
 68. di-n-butyl phthalate
 69. di-n-octyl phthalate
 76. chrysene
 77. acenaphthylene
 78. anthracene (a)
 81. Phenanthrene (a)
 84. pyrene
 87. trichloroethylene
 123. mercury
 (a) Reported together.
Appendix H—Toxic Pollutants Effectively Controlled By Technologies Which Other Effluent Limitations and Guidelines Are Based Upon
 (a) Subpart B—Primary Aluminum Smelting Subcategory.
 1. acenaphthene
 39. fluoranthene
 72. benzo (a)anthracene (1,2-benzanthracene)
 74. 3,4-benzofluoranthene
 75. benzo(k) fluoranthene (11,12-benzofluoranthene)
 76. chrysene
 77. acenaphthylene
 78. anthracene
 79. benzo(ghi)perylene (1,11-benzoperylene)
 80. fluorene
 81. phenanthrene
 82. dibenzo (a,h)anthracene (1,2,5,8-dibenzanthracene)
 83. indeno (1,2,3-cd)pyrene
 84. pyrene
 115. arsenic
 118. cadmium
 119. chromium (Total)
 120. copper
 122. lead
 125. selenium

128. zinc
 (b) Subpart C—Secondary Aluminum Subcategory.
 118. cadmium
 (c) Subpart E—Primary Copper Electrolytic Refining Subcategory.
 115. arsenic
 125. selenium
 126. silver
 128. zinc
 (d) Subpart H—Primary Zinc Subcategory.
 115. arsenic
 119. chromium (Total)
 124. nickel
 125. selenium
 126. silver
 (e) Subpart I—Metallurgical Acid Plants Subcategory.
 114. antimony
 119. chromium (Total)
 123. mercury
 124. nickel
 125. selenium
 126. silver
 (f) Subpart J—Primary Tungsten Subcategory.
 118. cadmium
 119. chromium (Total)
 (g) Subpart K—Primary Columbium-tantalum Subcategory
 114. antimony
 115. arsenic
 118. cadmium
 119. chromium (Total)
 120. copper
 124. nickel
 (h) Subpart L—Secondary Silver Subcategory.
 118. cadmium
 119. chromium (Total)
 121. cyanide
 122. lead
 124. nickel
 (i) Subpart M—Secondary Lead Subcategory.
 118. cadmium
 119. chromium (Total)
 120. copper
 124. nickel
Appendix I—Toxic Pollutants Detected but Only in Trace Amounts And Are Neither Causing nor Likely To Cause Toxic Effects
 (f) Subpart J—Primary Tungsten Subcategory.
 1. acenaphthene
 55. naphthalene
 77. acenaphthylene
 80. fluorene
 (g) Subpart K—Primary Columbium-tantalum Subcategory.
 1. acenaphthene
 7. chlorobenzene
 8. 1,2,4-trichlorobenzene
 30. 1,2-trans-dichloroethylene
 56. nitrobenzene
 85. tetrachloroethylene
 87. trichloroethylene
 (h) Subpart L—Secondary Silver Subcategory.
 4. benzene

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

For the reasons discussed above, EPA proposes to add an undesignated subpart titled "General Provisions", revise portions of Subparts B-I and to add Subparts J-M of 40 CFR Part 421, to read as follows: (For the purpose of clarity, promulgated BPT effluent limitations guidelines and provisions relating to applicability and to 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 review. These provisions are indicated by an asterisk (*).)

PART 421—NONFERROUS METALS MANUFACTURING POINT SOURCE CATEGORY

General Provisions

Sec.
 421.01 Applicability.
 421.02 [Reserved].
 421.03 Monitoring and reporting requirements.
 421.04 Compliance date for PSES.

Subpart A—Bauxite Refining Subcategory

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Subpart B—Primary Aluminum Smelting Subcategory

421.20 Applicability: Description of the primary aluminum smelting subcategory.*
 421.21 Specialized definitions.
 421.22 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.*
 421.23 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.
 421.24 Standards of performance for new sources.
 421.25 [Reserved].
 421.26 Pretreatment standards for new sources.
 421.27 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology.

Subpart C—Secondary Aluminum Smelting Subcategory

421.30 Applicability: Description of the secondary aluminum smelting subcategory.*
 421.31 Specialized definitions.*
 421.32 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.*

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421.33 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.
421.34 Standards of performance for new sources.
421.35 Pretreatment standards for existing sources.
421.36 Pretreatment standards for new sources.
421.37 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology.

Subpart D—Primary Copper Smelting Subcategory

- 421.40 Applicability: Description of the primary copper smelting subcategory.*
421.41 Specialized definitions.*
421.42 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.*
421.43 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.
421.44 Standards of performance for new sources.
421.45 [Reserved].
421.46 Pretreatment standards for new sources.
421.47 [Reserved].

Subpart E—Primary Electrolytic Copper Refining Subcategory

- 421.50 Applicability: Description of the primary electrolytic copper refining subcategory.*
421.51 Specialized definitions.*
421.52 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.*
421.53 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.
421.54 Standards of performance for new sources.
421.55 [Reserved].
421.56 Pretreatment standards for new sources.
421.57 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology.

Subpart F—Secondary Copper Subcategory

- 421.60 Applicability: Description of the secondary copper subcategory.*
421.61 Specialized definitions.*
421.62 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.*

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421.63 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.
421.64 Standards of performance for new sources.
421.65 Pretreatment standards for existing sources.
421.66 Pretreatment standards for new sources.
421.67 [Reserved].

Subpart G—Primary Lead Subcategory

- 421.70 Applicability: Description of the primary lead subcategory.
421.71 Specialized definitions.*
421.72 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.
421.73 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.
421.74 Standards of performance for new sources.
421.75 [Reserved].
421.76 Pretreatment standards for new sources.
421.77 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology.

Subpart H—Primary Zinc Subcategory

- 421.80 Applicability: Description of the primary zinc subcategory.*
421.81 Specialized definitions.*
421.82 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.*
421.83 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.
421.84 Standards of performance for new sources.
421.85 [Reserved].
421.86 Pretreatment standards for new sources.
421.87 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology.

Subpart I—Metallurgical Acid Plants Subcategory

- 421.90 Applicability: Description of the metallurgical acid plants subcategory.
421.91 Specialized definitions.*
421.92 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.*
421.93 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of

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the best available technology economically achievable.
421.94 Standards of performance for new sources.
421.95 [Reserved].
421.96 Pretreatment standards for new sources.
421.97 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology.

Subpart J—Primary Tungsten Subcategory

- 421.100 Applicability: Description of the primary tungsten subcategory.
421.101 Specialized definitions.
421.102 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of 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 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology.

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 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology.

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 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology.

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 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology.

Authority: Secs. 301, 304 (b), (c), (e), and (g), 303 (b) and (c), 307(c), 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; 68 Stat. 816, Pub. L. 92-500; 91 Stat. 1567, Pub. L. 95-217.

General Provisions

§ 421.01 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.

§ 421.02 [Reserved].

§ 421.03 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.

§ 421.04 Compliance date for PSES.

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

Subpart A—Bauxite Refining Subcategory

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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) "At-the-source" means at or before the commingling of wastewaters from potroom wet air pollution control, potline wet air pollution control, anode bake plant wet air pollution control, anode paste plant wet air pollution control, and cathode reprocessing (or any combination of these) with other process or non-process wastewaters.

(c) 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.

(a) In establishing the limitations set forth in this section, EPA took into account all information it was able to collect, develop and solicit with respect to factors (such as age and size of plant, raw materials, manufacturing processes, products produced, treatment technology available, energy requirements and costs) which can affect the industry subcategorization and effluent levels established. It is, however, possible that data which would affect these limitations have not been available and, as a result, these limitations should be adjusted for certain plants in this industry. An individual discharger or other interested person may submit evidence to the Regional Administrator (or to the State, if the State has the authority to issue NPDES permits) that factors relating to

the equipment or facilities involved, the process applied, or other such factors related to such discharger are fundamentally different from the factors considered in the establishment of the guidelines. On the basis of such evidence or other available information; the Regional Administrator (or the State) will make a written finding that such factors are or are not fundamentally different for that facility compared to those specified in the Development Document. If such fundamentally different factors are found to exist, the Regional Administrator or the State shall establish for the discharger effluent limitations in the NPDES permit either more or less stringent than the limitations established herein, to the extent dictated by such fundamentally different factors. Such limitations must be approved by the Administrator of the Environmental Protection Agency. The Administrator may approve or disapprove such limitations, specify other limitations, or initiate proceedings to revise these regulations.

(b) 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 after application of the best practicable control technology currently available:

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
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 through 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 Paste Plant Wet Air Pollution Control.*

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of paste produced		
English units—lbs/billion lbs of paste produced		
Benzo(a)pyrene ¹	1.03	
Antimony.....	14.42	6.18
Cyanide.....	20.60	8.24
Nickel.....	56.85	38.11
Aluminum.....	312.09	127.72
Fluoride.....	3,998.40	1,627.40

¹At the source.

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

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of anodes baked		
English units—lbs/billion lbs of anodes baked		
Benzo (a)pyrene ¹	0.49	
Antimony.....	6.92	2.98
Cyanide.....	9.88	3.95
Nickel.....	27.17	18.28
Aluminum.....	149.68	61.26
Fluoride.....	1,916.72	780.52

¹At the source.

(c) Subpart B—Cathode Manufacturing.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of cathodes produced		
English units—lbs/billion lbs of cathodes produced		
Antimony.....	10.84	4.84
Cyanide.....	15.48	6.19
Nickel.....	42.57	28.64
Aluminum.....	234.52	95.98
Fluoride.....	3,003.12	1,222.96

(d) Subpart B—Cathode Reprocessing.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of aluminum from electrolytic reduction		
English units—lbs/billion lbs of aluminum from electrolytic reduction		
Benzo(a)pyrene ¹	9.52	
Antimony.....	133.28	57.12
Cyanide.....	180.40	76.16
Nickel.....	523.60	352.24
Aluminum.....	2,884.56	1,180.48
Fluoride.....	36,937.60	15,041.60

¹At the source.

(e) Subpart B—Anode Contact Cooling.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any one day	Maximum for monthly average
Metric units—mg/kg of anode cast		
English units—lbs/billion lbs of anode cast		
Antimony.....	86.95	37.27
Cyanide.....	124.22	49.69
Nickel.....	341.61	229.81
Aluminum.....	1,881.93	770.16
Fluoride.....	24,098.68	9,813.38

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

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any one day	Maximum for monthly average
Metric Units—mg/kg of aluminum from electrolytic reduction		
English Units—lbs/billion lbs of aluminum from electrolytic reduction		
Benzo (a) pyrene ¹	8.38	
Antimony.....	117.32	50.28
Cyanide.....	167.60	67.04
Nickel.....	480.90	310.06
Aluminum.....	2,539.14	1,039.12
Fluoride.....	32,514.40	13,240.40

¹At the source.

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

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any one day	Maximum for monthly average
Metric units—mg/kg of aluminum from electrolytic reduction		
English units—lbs/billion lbs of aluminum from electrolytic reduction		
Benzo(a)pyrene ¹	13.05	
Antimony.....	182.70	78.30
Cyanide.....	261.0	104.40
Nickel.....	717.75	482.85
Aluminum.....	3,854.15	1,618.20
Fluoride.....	50,634.0	20,619.0

¹At the source.

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

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any one day	Maximum for monthly average
Metric Units—mg/kg of aluminum degassed		
English Units—lbs/billion lbs of aluminum degassed		
Antimony.....	0	0
Cyanide.....	0	0
Nickel.....	0	0
Aluminum.....	0	0
Fluoride.....	0	0

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

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any one day	Maximum for monthly average
Metric Units—mg/kg of aluminum product from direct chill casting		
English Units—lbs/billion lbs of aluminum product from direct chill casting		
Antimony.....	279.86	119.94
Cyanide.....	399.80	159.92
Nickel.....	1,099.45	739.63
Aluminum.....	6,056.97	2,478.76
Fluoride.....	77,561.20	31,584.20

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

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any one day	Maximum for monthly average
Metric Units—mg/kg of aluminum product from continuous rod casting		
English Units—lbs/billion lbs of aluminum product from continuous rod casting		
Antimony.....	14.60	6.26
Cyanide.....	20.86	8.34
Nickel.....	57.37	38.59
Aluminum.....	316.03	129.33
Fluoride.....	4,046.84	1,647.94

(k) Subpart B—Stationary Casting Contact Cooling.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any one day	Maximum for monthly average
Metric units—mg/kg of aluminum product from stationary casting		
English units—lbs/billion lbs of aluminum product from stationary casting		
Antimony.....	0	0
Cyanide.....	0	0
Nickel.....	0	0
Aluminum.....	0	0
Fluoride.....	0	0

§ 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 Paste Plant Wet Air Pollution Control NSPS.

Pollutant or pollutant property	Maximum for any one day	Maximum for monthly average
Metric units—mg/kg of paste produced		
English units—lbs/billion lbs of paste produced		
Benzo(a)pyrene ¹	0	0
Antimony	0	0
Cyanide	0	0
Nickel	0	0
Aluminum	0	0
Fluoride	0	0
Oil and Grease	0	0
TSS	0	0
pH	(²)	(²)

¹ Within the range of 7.5 to 10.0 at all times.
² At the source.

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

Pollutant or pollutant property	Maximum for any one day	Maximum for monthly average
Metric units—mg/kg of anode baked		
English units—lbs/billion lbs of anode baked		
Benzo(a)pyrene ¹	0	0
Antimony	0	0
Cyanide	0	0
Nickel	0	0
Aluminum	0	0
Fluoride	0	0
Oil and Grease	0	0
TSS	0	0
pH	(²)	(²)

¹ At the source.
² Within the range of 7.5 to 10.0 at all times.

(c) Subpart B—Cathode Manufacturing NSPS.

Pollutant or pollutant property	Maximum for any one day	Maximum for monthly average
Metric Units—mg/kg of cathode produced		
English Units—lbs/billion lbs of cathode produced		
Antimony	10.84	4.64
Cyanide	15.48	6.19
Nickel	42.57	28.64
Aluminum	234.52	95.98
Fluoride	3,003.12	1,222.92
Oil and Grease	774.0	774.0
TSS	1,161.0	928.80
pH	(²)	(²)

¹ Within the range of 7.5 to 10.0 at all times.

(d) Subpart B—Cathode Reprocessing NSPS.

Pollutant or pollutant property	Maximum for any one day	Maximum for monthly average
Metric units—mg/kg of aluminum from electrolytic reduction		
English units—lbs/billion lbs of aluminum from electrolytic reduction		
Benzo (a)pyrene ¹	9.52	

Pollutant or pollutant property	Maximum for any one day	Maximum for monthly average
Antimony	133.28	57.12
Cyanide	190.40	76.16
Nickel	*523.60	352.24
Aluminum	2,884.56	1,180.48
Fluoride	36,937.60	15,041.60
Oil and Grease	9,520.0	9,520.0
TSS	14,280.0	11,424.0
pH	(²)	(²)

¹ At the source.
² Within the range of 7.5 to 10.0 at all times.

(e) Subpart B—Anode Contract Cooling NSPS.

Pollutant or pollutant property	Maximum for any one day	Maximum for monthly average
Metric units—mg/kg of anodes cast		
English units—lbs/billion lbs of anodes cast		
Antimony	86.95	37.27
Cyanide	124.22	49.69
Nickel	341.61	229.81
Aluminum	1,881.93	770.16
Fluoride	24,098.68	9,813.38
Oil and Grease	6,211.0	6,211.0
TSS	9,316.50	7,453.20
pH	(²)	(²)

¹ Within the range of 7.5 to 10.0 at all times.

(f) Subpart B—Poline Wet Air Pollution Control NSPS.

Pollutant or pollutant property	Maximum for any one day	Maximum for monthly average
Metric units—mg/kg of aluminum from electrolytic reduction		
English units—lbs/billion lbs of aluminum from electrolytic reduction		
Benzo(a)pyrene ¹	0	0
Antimony	0	0
Cyanide	0	0
Nickel	0	0
Aluminum	0	0
Fluoride	0	0
Oil and Grease	0	0
TSS	0	0
pH	(²)	(²)

¹ At the source.
² Within the range of 7.5 to 10.0 at all times.

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

Pollutant or pollutant property	Maximum for any one day	Maximum for monthly average
Metric units—mg/kg of aluminum from electrolytic reduction		
English units—lbs/billion lbs of aluminum from electrolytic reduction		
Benzo(a)pyrene ¹	0	0
Antimony	0	0
Cyanide	0	0
Nickel	0	0
Aluminum	0	0
Fluoride	0	0

Pollutant or pollutant property	Maximum for any one day	Maximum for monthly average
Oil and Grease	0	0
TSS	0	0
pH	(²)	(²)

¹ At the source.
² Within the range of 7.5 to 10.0 at all times.

(h) Subpart B—Degassing Wet Air Pollution Control NSPS.

Pollutant or pollutant property	Maximum for any one day	Maximum for monthly average
Metric units—mg/kg of aluminum degassed		
English units—lbs/billion lbs of aluminum degassed		
Antimony	0	0
Cyanide	0	0
Nickel	0	0
Aluminum	0	0
Fluoride	0	0
Oil and Grease	0	0
TSS	0	0
pH	(²)	(²)

¹ Within the range of 7.5 to 10.0 at all times.

(i) Subpart B—Direct Chill Casting Contact Cooling NSPS.

Pollutant or pollutant property	Maximum for any one day	Maximum for monthly average
Metric units—mg/kg of aluminum product from direct chill casting		
English units—lbs/billion lbs of aluminum product from direct chill casting		
Antimony	279.86	119.94
Cyanide	399.80	159.92
Nickel	1,099.45	739.63
Aluminum	6,056.97	2,478.76
Fluoride	77,561.20	31,564.20
Oil and Grease	19,990.0	19,990.0
TSS	29,985.0	23,988.0
pH	(²)	(²)

¹ Within the range of 7.5 to 10.0 at all times.

(j) Subpart B—Continuous Rod Casting Contact Cooling NSPS.

Pollutant or pollutant property	Maximum for any one day	Maximum for monthly average
Metric units—mg/kg of aluminum product from continuous rod casting		
English units—lbs/billion lbs of aluminum product from continuous rod casting		
Antimony	14.60	6.28
Cyanide	20.86	8.34
Nickel	57.37	38.59
Aluminum	316.03	129.33
Fluoride	4,046.84	1,647.84
Oil and Grease	1,043.0	1,043.0
TSS	1,584.50	1,251.60
pH	(²)	(²)

¹ Within the range of 7.5 to 10.0 at all times.

(k) Subpart B—Stationary Casting Contact Cooling NSPS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of aluminum product from stationary casting	
	English units—lbs/billion lbs of aluminum product from stationary casting	
Antimony	0	0
Cyanide	0	0
Nickel	0	0
Aluminum	0	0
Fluoride	0	0
Oil and Grease	0	0
TSS	0	0
pH	(¹)	(¹)

¹ Within the range of 7.5 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 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 aluminum process wastewater introduced into a POTW shall not exceed the following values:

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

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of paste produced	
	English Units—lbs/billion lbs of paste produced	
Benzo(a)pyrene ¹	0	0
Antimony	0	0
Cyanide	0	0
Nickel	0	0
Fluoride	0	0

¹ At the source.

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

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of anode baked	
	English Units—lbs/billion lbs of anode baked	
Benzo(a)pyrene ¹	0	0
Antimony	0	0
Cyanide	0	0
Nickel	0	0
Fluoride	0	0

¹ At the source.

(c) Subpart B—Cathode Manufacturing Control PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of cathode produced	
	English Units—lbs/billion lbs of cathode produced	
Antimony	10.84	4.84
Cyanide	15.48	8.19
Nickel	42.57	28.64
Fluoride	3,003.12	1,222.92

(d) Subpart B—Cathode Reprocessing PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of aluminum from electrolytic reduction	
	English Units—lbs/billion lbs of aluminum from electrolytic reduction	
Benzo (a)pyrene ¹	9.52	67.12
Antimony	133.28	78.18
Cyanide	190.40	352.24
Nickel	523.80	15,041.60
Fluoride	38,937.60 ¹	

¹ At the source.

(e) Subpart B—Anode Contact Cooling PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of anode cast	
	English Units—lbs/billion lbs of anode cast	
Antimony	86.95	37.27
Cyanide	124.22	49.89
Nickel	341.81	228.81
Fluoride	24,098.68	9,813.38

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

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of aluminum from electrolytic reduction	
	English Units—lbs/billion lbs of aluminum from electrolytic reduction	
Benzo (a)pyrene ¹	0	0
Antimony	0	0
Cyanide	0	0
Nickel	0	0
Fluoride	0	0

¹ At the source.

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

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of aluminum from electrolytic reduction	
	English Units—lbs/billion lbs of aluminum from electrolytic reduction	
Benzo (a)pyrene ¹	0	0
Antimony	0	0
Cyanide	0	0
Nickel	0	0
Fluoride	0	0

¹ At the source.

(h) Subpart B—Degassing Wet Air Pollution Control PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of aluminum degassed	
	English Units—lbs/billion lbs of aluminum degassed	
Antimony	0	0
Cyanide	0	0
Nickel	0	0
Fluoride	0	0

(i) Subpart B—Direct Chill Casting Contact Cooling PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of aluminum product from direct chill casting	
	English Units—lbs/billion lbs of aluminum product from direct chill casting	
Antimony	279.86	119.94
Cyanide	399.80	159.92
Nickel	1,099.45	739.63
Fluoride	77,561.20	31,584.20

(j) Subpart B—Continuous Rod Casting Contact Cooling PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of aluminum product from continuous rod casting	
	English Units—lbs/billion lbs of aluminum product from continuous rod casting	
Antimony	14.60	6.26
Cyanide	20.88	8.34
Nickel	57.37	38.59
Fluoride	4,046.84	1,647.94

(k) Subpart B—Stationary Casting Contact Cooling PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric Units—mg/tkg of aluminum product from stationary casting		
English Units—lbs/billion lbs of aluminum product from stationary casting		
Antimony	0	0
Cyanide	0	0
Nickel	0	0
Fluoride	0	0

§ 421.27 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology.

Except as provided in §§ 125.30 through 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 conventional pollutant control technology:

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

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric Units—mg/kg of paste produced		
English Units—lbs/billion lbs of paste produced		
Oil and grease	20,560.0	12,336.0
Total Suspended Solids	42,148.0	20,560.0
pH		

¹ Within the range of 7.5 to 10.0 at all times.

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

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of anode baked		
English units—lbs/billion lbs of anode baked		
Oil and grease	12,340.0	7,404.0
Total Suspended Solids	25,297.0	12,340.0
pH	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(c) Subpart B—Cathode Manufacturing.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of cathode produced		
English units—lbs/billion lbs of cathode produced		
Oil and grease	1,550.0	930.0
Total Suspended Solids	3,177.5	1,550.0
pH	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(d) Subpart B—Cathode Reprocessing.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/tkg of aluminum from electrolytic reduction		
English units—lbs/billion lbs of aluminum from electrolytic reduction		
Oil and grease	19,040.0	11,424.0
Total Suspended Solids	39,032.0	19,040.0
pH	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(b) Subpart B—Anode Contact Cooling.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of anode cast		
English units—lbs/billion lbs of anode cast		
Oil and grease	29,800.0	17,880.0
Total Suspended Solids	61,090.0	29,800.0
pH	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

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

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of aluminum from electrolytic reduction		
English units—lbs/billion lbs of aluminum from electrolytic reduction		
Oil and grease	18,760.0	10,056.0
Total Suspended Solids	34,358.0	18,760.0
pH	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

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

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of aluminum from electrolytic reduction		
English units—lbs/billion lbs of aluminum from electrolytic reduction		
Oil and grease	26,100.0	15,660.0
Total Suspended Solids	53,505.0	26,100.0
pH	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

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

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric Units—mg/kg of aluminum degassed		
English Units—lbs/billion lbs of aluminum degassed		
Oil and grease	52,320.0	31,392.0
Total Suspended Solids	107,256.0	52,320.0
pH	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

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

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric Units—mg/kg of aluminum product from direct chill casting		
English Units—lbs/billion lbs of aluminum product from direct chill casting		
Oil and grease	39,980.0	23,988.0
Total Suspended Solids	81,959.09	39,980.0
pH	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

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

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric Units—mg/kg of aluminum product from continuous rod casting		
English Units—lbs/billion lbs of aluminum product from continuous rod casting		
Oil and grease	20,840.0	12,504.0
Total Suspended Solids	42,722.0	20,840.0
pH	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(k) Subpart B—Stationary Casting Contact Cooling.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of aluminum product from stationary casting	
	English Units—lbs/billion lbs of aluminum product from stationary casting	
Oil and grease.....	0	0
Total Suspended Solids.....	0	0
pH.....	1	1

¹Within the range of 7.5 to 10.0 at all times.

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.

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

In establishing the limitations set forth in this section, EPA took into account all information it was able to collect, develop and solicit with respect to factors (such as age and size of plant, raw materials, manufacturing processes, products produced, treatment technology available, energy requirements and costs) which can affect the industry subcategorization and effluent levels established. It is, however, possible that data which would affect these limitations have not been available and as a result, these limitations should be adjusted for certain plants in this industry. An individual discharger or other interested person may submit evidence to the Regional Administrator (or to the State, if the State has the authority to issue NPDES permits) that factors relating to the equipment or facilities involved, the process applied, or other such factors related to such discharger are fundamentally different from the factors considered in the establishment of the guidelines. On the basis of such evidence or other available information, the Regional Administrator (or the

State) will make a written finding that such factors are or are not fundamentally different for that facility compared to those specified in the Development Document. If such fundamentally different factors are found to exist, the Regional Administrator or the State shall establish for the discharger effluent limitations in the NPDES permit either more or less stringent than the limitations established herein, to the extent dictated by such fundamentally different factors. Such limitations must be approved by the Administrator of the Environmental Protection Agency. The Administrator may approve or disapprove such limitations, specify other limitations, or initiate proceedings to revise these regulations.

(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	

¹Within 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	

¹Within 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 through 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
	Metric units—mg/kg of aluminum scrap dried	
	English units—pounds per billion pounds of aluminum scrap dried	
Lead.....	0	0
Zinc.....	0	0
Aluminum.....	0	0
Ammonia (as N).....	0	0

(b) *Subpart C—Scrap Screening and Milling.*

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of aluminum scrap screened and milled	
	English units—pounds per billion pounds of aluminum scrap screened and milled	
Lead.....	0	0
Zinc.....	0	0
Aluminum.....	0	0
Ammonia (as N).....	0	0

(c) Subpart C—Dross Washing.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of dross washed	
	English units—pounds per billion pounds of dross washed	
Lead.....	1,086.80	978.12
Zinc.....	11,085.38	4,584.58
Aluminum.....	32,930.04	13,478.32
Ammonia (as N).....	1,445,444.0	636,884.80

(d) Subpart C—Demagging Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of aluminum demagged	
	English units—pounds/billion pounds of aluminum demagged	
Lead.....	80.0	72.0
Zinc.....	816.0	338.0
Aluminum.....	2,424.0	892.0
Ammonia (as N).....	108,400.0	46,880.0

(e) Subpart C—Direct Chill Casting Contact Cooling.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of aluminum product from direct chill casting	
	English units—pounds/billion pounds of aluminum product from direct chill casting	
Lead.....	86.20	77.58
Zinc.....	879.24	382.04
Aluminum.....	2,611.86	1,068.88
Ammonia (as N).....	114,648.0	50,513.20

(f) Subpart C—Stationary Casting Contact Cooling.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of aluminum produced from stationary casting	
	English units—pounds/billion pounds of aluminum produced from stationary casting	
Lead.....	0	0
Zinc.....	0	0
Aluminum.....	0	0
Ammonia (as N).....	0	0

(g) Subpart C—Shot Casting Contact Cooling.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of aluminum produced from shot casting	
	English Units—lbs/billion lbs of aluminum produced from shot casting	
Lead.....	0	0
Zinc.....	0	0
Aluminum.....	0	0
Ammonia (as N).....	0	0

§ 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
	Metric Units—mg/kg of aluminum scrap dried	
	English Units—lbs/billion lbs of aluminum scrap dried	
Lead.....	0	0
Zinc.....	0	0
Aluminum.....	0	0
Ammonia (as N).....	0	0
Oil and grease.....	0	0
TSS.....	0	0
pH.....	(¹)	(¹)

¹ Within the range 7.5 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
	Metric units—mg/kg of aluminum scrap screened and milled	
	English units—pounds per billion pounds of aluminum scrap screened and milled	
Lead.....	0	0
Zinc.....	0	0
Aluminum.....	0	0
Ammonia (as N).....	0	0
Oil and grease.....	0	0
TSS.....	0	0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 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
	Metric units—mg/kg of dross washed	
	English units—pounds per billion pounds of dross washed	
Lead.....	1,086.80	978.12
Zinc.....	11,085.38	4,584.58
Aluminum.....	32,930.04	13,478.32
Ammonia (as N).....	1,445,444.0	636,884.80
Oil and grease.....	108,680.0	108,680.0
TSS.....	183,020.0	130,418.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(d) Subpart C—Demagging Wet Air Pollution Control NSPS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of aluminum demagged	
	English units—pounds per billion pounds of aluminum demagged	
Lead.....	80.0	72.0
Zinc.....	816.0	338.0
Aluminum.....	2,424.0	892.0
Ammonia (as N).....	108,400.0	46,880.0
Oil and grease.....	8,000.00	8,000.00
TSS.....	12,000.0	9,600.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(e) Subpart C—Direct Chill Casting Contact Cooling NSPS.

Pollutant or pollutant property	Maximum for any One day	Maximum for monthly average
	Metric units—mg/kg of aluminum produced from direct chill casting	
	English units—pounds per billion pounds of aluminum produced from direct chill casting	
Lead.....	86.20	77.58
Zinc.....	879.24	382.04
Aluminum.....	2,611.86	1,068.88

Pollutant or pollutant property	Maximum for any One day	Maximum for monthly average
Ammonia (as N).....	114,646.0	50,513.20
Oil and grease.....	8,620.0	8,620.0
TSS.....	12,930.0	10,344.0
pH.....	(¹)	(¹)

¹Within the range of 7.5 to 10.0 at all times.

(f) Subpart C—Stationary Casting Contact Colling NSPS.

Pollutant or pollutant property	Maximum for any One day	Maximum for monthly average
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Metric units—mg/kg of aluminum produced from stationary casting

English units—pounds per billion pounds of aluminum produced from stationary casting

Lead.....	0	0
Zinc.....	0	0
Aluminum.....	0	0
Ammonia (as N).....	0	0
Oil and grease.....	0	0
TSS.....	0	0
pH.....	(¹)	(¹)

¹Within the range of 7.5 to 10.0 at all times.

(g) Subpart C—Short Casting Contact Cooling NSPS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
---------------------------------	-----------------------	-----------------------------

Metric units—mg/kg of Aluminum produced from shot casting

English units—pounds per billion pounds of aluminum produced from shot casting

Lead.....	0	0
Zinc.....	0	0
Aluminum.....	0	0
Ammonia (as N).....	0	0
Oil and grease.....	0	0
TSS.....	0	0
pH.....	(¹)	(¹)

¹Within the range of 7.5 to 10.0 at all times.

(a) Subpart C—Scrap Drying Wet Air Pollution Control PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
---------------------------------	-----------------------	-----------------------------

Metric units—mg/kg of aluminum scrap dried

English Units—pounds per billion pounds of aluminum scrap dried

Lead.....	0	0
Zinc.....	0	0
Ammonia (as N).....	0	0

(b) Subpart C—Scrap Screening and Milling PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
---------------------------------	-----------------------	-----------------------------

Metric Units—mg/kg of aluminum scrap screened and milled

English Units—pounds per billion pounds of aluminum scrap screened and milled

Lead.....	0	0
Zinc.....	0	0
Ammonia (as N).....	0	0

(c) Subpart C—Dross Washing PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
---------------------------------	-----------------------	-----------------------------

Metric Units—mg/kg of dross washed

English units—pounds per billion pounds of dross washed

Lead.....	1,086.80	978.12
Zinc.....	11,085.36	4,564.56
Ammonia (as N).....	1,445,444.0	636,864.80

(d) Subpart C—Demagging Wet Air Pollution Control PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
---------------------------------	-----------------------	-----------------------------

Metric Units—mg/kg of aluminum demagged

English units—pounds per billion pounds of aluminum demagged

Lead.....	80.0	72.0
Zinc.....	816.0	336.0
Ammonia (as N).....	106,400.0	46,880.0

(e) Subpart C—Direct Chill Casting Contact Cooling PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
---------------------------------	-----------------------	-----------------------------

Metric Units—mg/kg of aluminum produced from direct chill casting

English units—pounds per billion pounds of aluminum produced from direct chill casting

Lead.....	86.20	77.58
Zinc.....	879.24	362.04
Ammonia (as N).....	114,646.0	50,513.20

(f) Subpart C—Stationary Casting Contact Cooling PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
---------------------------------	-----------------------	-----------------------------

Metric Units—mg/kg of aluminum produced from stationary casting

English units—pounds per billion pounds of aluminum produced from stationary casting

Lead.....	0	0
Zinc.....	0	0
Ammonia (as N).....	0	0

(g) Subpart C—Shot Casting Cooling PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
---------------------------------	-----------------------	-----------------------------

Metric units—mg/kg of aluminum produced from shot casting

English Units—pounds per billion pounds of aluminum produced from shot casting

Lead.....	0	0
Zinc.....	0	0
Ammonia (as N).....	0	0

Alternatively, a POTW electing to use concentration-based standards may apply the concentrations (shown below) to all process wastewater streams for which allowances were given under the mass-based standards proposed above.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
---------------------------------	-----------------------	-----------------------------

Metric units—mg/l
English units—ppm

Lead.....	0.10	0.09
Zinc.....	1.02	0.42
Ammonia (as N).....	133	56.6

§421.36 Pretreatment standards for new sources

Except as provided in 40 CFR 403.7, any new source subject to this subpart

§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:

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
	Metric units—mg/kg of aluminum scrap dried	
	English units—pounds per billion pounds of aluminum scrap dried	
Lead.....	0	0
Zinc.....	0	0
Ammonia (as N).....	0	0

(b) Subpart C—Scrap Screening and Milling PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of aluminum scrap screened and milled	
	English units—pounds per billion pounds of aluminum scrap screened and milled	
Lead.....	0	0
Zinc.....	0	0
Ammonia (as N).....	0	0

(c) Subpart C—Dross Washing PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of dross washed	
	English units—pounds per billion pounds of dross washed	
Lead.....	1,086.80	976.12
Zinc.....	11,085.36	4,564.56
Ammonia (as N).....	1,445,444.0	636,864.80

(d) Subpart C—Demagging Wet Air Pollution Control PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of aluminum demagged	
	English units—pounds per billion pounds of aluminum demagged	
Lead.....	80.0	72.0

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Zinc.....	816.0	336.0
Ammonia (as N).....	106,400.0	46,880.0

(e) Subpart C—Direct Chill Casting Contact Cooling PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of aluminum produced from direct chill casting	
	English units—pounds per billion pounds of aluminum produced from direct chill casting	
Lead.....	86.20	77.58
Zinc.....	879.24	362.04
Ammonia (as N).....	114,648.0	50,513.20

(f) Subpart C—Stationary Casting Contact Cooling PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of aluminum produced from stationary casting	
	English units—pounds per billion pounds of aluminum produced from stationary casting	
Lead.....	0	0
Zinc.....	0	0
Ammonia (as N).....	0	0

(g) Subpart C—Shot Casting Contact Cooling PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of aluminum produced from shot casting	
	English units—pounds per billion pounds of aluminum produced from shot casting	
Lead.....	0	0
Zinc.....	0	0
Ammonia (as N).....	0	0

§ 421.37 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology:

Except as provided in § 125.30 through 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 conventional pollutant control technology:

(a) Subpart C—Scrap Drying Wet Air Pollution Control.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of aluminum scrap dried	
	English units—pounds per billion pounds of aluminum scrap dried	
Oil and grease.....	0	0
TSS.....	0	0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 all times.

(b) Subpart C—Scrap Screening and Milling.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of aluminum scrap screened and milled	
	English units—pounds per billion pounds of aluminum scrap screened and milled	
Oil and grease.....	0	0
TSS.....	0	0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 all times.

(c) Subpart C—Dross Washing.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of dross washed	
	English units—pounds per billion pounds of dross washed	
Oil and grease.....	217,360.0	130,416.0
TSS.....	445,588.0	217,360.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 all times.

(d) Subpart C—Demagging Wet Air Pollution Control.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of aluminum demagged	
	English units—pounds per billion pounds of aluminum demagged	
Oil and grease.....	16,000.0	9,600.0
TSS.....	32,800.0	16,000.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 all times.

(e) Subpart C—Direct chill casting Contact Cooling.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of aluminum produced from direct chill casting	
	English units—pounds per billion pounds of aluminum produced from direct chill casting	
Oil and grease.....	17,240.0	10,344.0
TSS.....	35,342.0	17,240.0
pH.....	(¹)	(¹)

¹Within the range of 7.5 to 10.0 all times.

(f) Subpart C—Stationary Casting Contact Cooling.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of aluminum produced from stationary casting casting	
	English units—pounds per billion pounds of aluminum produced from stationary casting	
Oil and grease.....	0	0
TSS.....	0	0
pH.....	(¹)	(¹)

¹Within the range of 7.5 to 10.0 all times.

(g) Subpart C—Shot Casting Contact Cooling.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of aluminum produced from shot casting	
	English units—pounds per billion pounds of aluminum produced from shot casting	
Oil and grease.....	0	0
TSS.....	0	0
pH.....	(¹)	(¹)

¹Within the range of 7.5 to 10.0 all times.

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 Subpart 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 (40 FR 8513), 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 through 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 through 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.

§ 421.44 Standards of performance for new sources.

Any new source subject to this subpart shall achieve the following new source source performance standards: There shall be no 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 introduced in primary copper smelting process wastewater 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 through 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/kg of product; English units, lbs/1,000 lb of product)	
Total suspended solids	0.100	0.050
Copper	0.0017	0.0008
Cadmium	0.00006	0.00003
Lead	0.0006	0.0026
Zinc	0.0012	0.0003
pH		

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.

Alternative A:

Except as provided in 40 CFR 125.30 through 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—Anode and Cathode Rinsing.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of cathode copper produced	
	English units—pounds per/billion pounds of cathode copper produced	
Copper	0	0
Lead	0	0
Nickel	0	0

(b) Subpart E—Spent Electrolyte.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of cathode copper produced	
	English units—pounds per/billion pounds of cathode copper produced	
Copper	0	0
Lead	0	0
Nickel	0	0

(c) Subpart E—Casting Contact Cooling.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of copper cast	
	English Units—pounds per/billion pounds of copper cast	
Copper	946.20	498.0
Lead	74.70	64.74
Nickel	702.18	498.0

(d) Subpart E—Casting Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of copper cast	
	English Units—pounds per/billion pounds of copper cast	
Copper	0	0
Lead	0	0
Nickel	0	0

(e) Subpart E—By-Product Recovery.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of product recovered from electrolytic slimes processing	
	English units—pounds per/billion pounds of product recovered from electrolytic slimes processing	
Copper	0	0
Lead	0	0
Nickel	0	0

Alternative B

Except as provided in 40 CFR 125.30 through 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—Anode and Cathode Rinsing.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of cathode copper produced	
	English Units—pounds/billion pounds of cathode copper produced	
Copper	0	0
Lead	0	0
Nickel	0	0

(b) Subpart E—Spent Electrolyte.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of cathode copper produced	
	English Units—pounds/billion pounds of cathode copper produced	
Copper	0	0
Lead	0	0

BAT EFFLUENT LIMITATIONS—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Nickel.....	0	0

(c) Subpart E—Casting Contact Cooling.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric Units—mg/kg of copper cast		
English Units—pounds/billion pounds of copper cast		
Copper.....	637.44	303.78
Lead.....	49.80	44.82
Nickel.....	273.90	184.26

(d) Subpart E—Casting Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric Units—mg/kg of copper cast		
English Units—pounds/billion pounds of copper cast		
Copper.....	0	0
Lead.....	0	0
Nickel.....	0	0

(e) Subpart E—By-Product Recovery.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of product recovered from electrolytic slimes processing		
English units—pounds per billion pounds of product recovered from electrolytic slimes processing		
Copper.....	0	0
Lead.....	0	0
Nickel.....	0	0

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of cathode copper produced		
English units—pounds per billion pounds of cathode copper produced		
Copper.....	0	0
Lead.....	0	0
Nickel.....	0	0
TSS.....	0	0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(b) Subpart E—Spent Electrolyte NSPS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of cathode copper produced		
English units—pounds per billion pounds of cathode copper produced		
Copper.....	0	0
Lead.....	0	0
Nickel.....	0	0
TSS.....	0	0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(c) Subpart E—Casting Contact Cooling NSPS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of copper cast		
English units—pounds per billion pounds of copper cast		
Copper.....	637.44	303.78
Lead.....	49.80	44.82
Nickel.....	273.90	184.26
TSS.....	7,470.0	5,978.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 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
Metric units—mg/kg of copper cast		
English units—pounds per billion pounds of copper cast		
Copper.....	0	0
Lead.....	0	0
Nickel.....	0	0
TSS.....	0	0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 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
Metric units—mg/kg of product recovered from electrolytic slimes processing		
English units—pounds per billion pounds of product recovered from electrolytic slimes processing		
Copper.....	0	0
Lead.....	0	0
Nickel.....	0	0
TSS.....	0	0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 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 of 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—Anode and Cathode Rinsing PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of cathode copper produced		
English units—pounds per billion pounds of cathode copper produced		
Copper.....	0	0
Lead.....	0	0
Nickel.....	0	0

(b) Subpart E—Spent Electrolyte PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of cathode copper produced		
English units—pounds per billion pounds of cathode copper produced		
Copper.....	0	0
Lead.....	0	0
Nickel.....	0	0

§ 412.54 Standards of performance for new sources.

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

(a) Subpart E—Anode and Cathode Rinsing NSPS.

(c) Subpart E—Casting Contact Cooling PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of copper cast	
	English units—pounds per billion pounds of copper cast	
Copper.....	637.44	303.78
Lead.....	49.80	44.82
Nickel.....	273.90	184.26

(d) Subpart E—Casting Wet Air Pollution Control PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of copper cast	
	English units—pounds per billion pounds of copper cast	
Copper.....	0	0
Lead.....	0	0
Nickel.....	0	0

(e) Subpart E—By-Product recovery PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of product recovered from electrolytic slimes processing	
	English units—pounds per billion pounds of product recovered from electrolytic slimes processing	
Copper.....	0	0
Lead.....	0	0
Nickel.....	0	0

§ 421.57 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology.

Except as provided in 40 CFR 125.30 through 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 conventional pollutant control technology:

(a) Subpart E—Anode and Cathode Rinsing.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of cathode copper produced	
	English units—pounds per billion pounds of cathode copper produced	
TSS.....	4,920.0	2,400.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(b) Subpart E—Spent Electrolyte.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of cathode copper produced	
	English units—pounds per billion pounds of cathode copper produced	
TSS.....	11,480.0	5,600.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(c) Subpart E—Casting Contact Cooling.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of copper cast	
	English units—pounds per billion pounds of copper cast	
TSS.....	41,000.0	20,000.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(d) Subpart E—Casting Wet Air Pollution Control.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of copper cast	
	English units—pounds per billion pounds of copper cast	
TSS.....	0	0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(e) Subpart E—By-Product Recovery.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of product recovered from electrolytic slimes processing	
	English units—pounds per billion pounds of product recovered from electrolytic slimes processing	
TSS.....	0	0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

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.

§ 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 Part 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.

In establishing the limitations set forth in this section, EPA took into account all information it was able to collect, develop and solicit with respect to factors (such as age and size of plant, raw materials, manufacturing processes, products produced, treatment technology available, energy requirements and costs) which can affect the industry subcategorization and effluent levels established. It is, however, possible that data which would affect these limitations have not been available and, as a result, these limitations should be adjusted for certain plants in this industry. An individual discharger or other interested person may submit evidence to the Regional Administrator (or to the State, if the State has the authority to issue NPDES permits) that factors relating to the equipment or facilities involved, the process applied, or other such factors related to such discharger are fundamentally different from the factors considered in the establishment of the guidelines. On the basis of such evidence or other available information, the Regional Administrator (or the State) will make a written finding that such factors are or are not fundamentally different for that facility compared to those specified in the Development Document. If such fundamentally different factors are found to exist, the Regional Administrator or the State shall establish for the discharger effluent limitations in the NPDES permit either more or less stringent than the limitations established herein, to the extent dictated by such fundamentally different factors. Such limitations must be approved by the Administrator of the Environmental Protection Agency. The Administrator may approve or disapprove such limitations, specify other limitations, or initiate proceedings to revise these regulations. The following limitations established 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 after application of the best practicable control technology currently available:

(a) 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 established 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	Average of daily values for 30 consecutive days shall not exceed—
		Metric units (mg/l)
		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 6.0 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 through 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) of this section.

(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 part 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 through 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—Blast Furnace Slag Granulation.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric Units—mg/kg of blast furnace lead bullion produced		
English Units—pounds per billion pounds of blast furnace lead bullion produced		
Lead.....	559.5	484.9
Zinc.....	4,960.9	2,088.8
TSS.....	152,930.0	74,600.0

BPT EFFLUENT LIMITATIONS—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
pH.....	(¹)	(¹)

¹Within the range of 7.5 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
Metric units—mg/kg of blast furnace		
English units—pounds per billion pounds of blast furnace lead bullion produced		
Lead.....	0	0
Zinc.....	0	0
TSS.....	0	0
pH.....	(¹)	(¹)

¹Within the range of 7.5 to 10.0 at all times.

(c) Subpart G—Zinc Fuming Furnace Wet Air Pollution Control.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of blast furnace lead bullion produced		
English units—pounds per billion pounds of blast furnace lead bullion produced		
Lead.....	63.9	55.38
Zinc.....	566.58	238.56
TSS.....	17,466.0	6,520.0
pH.....	(¹)	(¹)

¹Within the range of 7.5 to 10.0 at all times.

(d) 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
Metric units—mg/kg of dross reverberatory furnace production		
English units—pounds per billion pounds of dross reverberatory furnace production		
Lead.....	0	0
Zinc.....	0	0
TSS.....	0	0
pH.....	(¹)	(¹)

¹Within the range of 7.5 to 10.0 at all times.

(e) Subpart G—Dross Reverberatory Furnace Granulation.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric Units—mg/kg of slag, matte, and speis granulated		
English units—pounds per billion pounds of slag, matte, and speis granulated		
Lead.....	470.10	407.42
Zinc.....	4,168.22	1,755.04
TSS.....	128,494.0	62,680.0
pH.....	(¹)	(¹)

¹Within the range of 7.5 to 10.0 at all times.

(f) Subpart G—Hard Lead Refining Wet Air Pollution Control.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric Units—mg/kg of hard lead produced		
English units—pounds per billion pounds of hard lead produced		
Lead.....	2,975.40	2,578.68
Zinc.....	26,381.88	11,108.16
TSS.....	813,276.0	396,720.0
pH.....	(¹)	(¹)

¹Within the range of 7.5 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
Metric Units—mg/kg of hard lead produced		
English units—pounds per billion pounds of hard lead produced		
Lead.....	0	0
Zinc.....	0	0
TSS.....	0	0
pH.....	(¹)	(¹)

¹Within the range of 7.5 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 through 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—Blast Furnace Slag Granulation.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of blast furnace lead bullion produced	
	English units—pounds per billion pounds of blast furnace lead bullion produced	
Lead.....	373.0	335.7
Zinc.....	3,804.6	1,566.6

(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
	Metric units—mg/kg of blast furnace lead bullion produced	
	English units—pounds per billion pounds of blast furnace lead bullion produced	
Lead.....	0	0
Zinc.....	0	0

(c) Subpart G—Zinc Fuming Furnace Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of blast furnace lead bullion produced	
	English units—pounds per billion pounds of blast furnace lead bullion produced	
Lead.....	0	0
Zinc.....	0	0

(d) Subpart G—Dross Reverberatory Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of dross reverberatory furnace production	
	English Units—pounds per billion pounds of dross reverberatory furnace production	
Lead.....	0	0
Zinc.....	0	0

(e) Subpart G—Dross Reverberatory Furnace Granulation.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of slag, mate, and speis granulated	
	English Units—pounds per billion pounds of slag, mate, and speis granulated	
Lead.....	0	0
Zinc.....	0	0

(f) 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
	Metric Units—mg/kg of hard lead produced	
	English Units—pounds per billion pounds of hard lead produced	
Lead.....	0	0
Zinc.....	0	0

(g) Subpart G—Hard Lead Refining Slag Granulation.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of hard lead produced	
	English Units—pounds per billion pounds of hard lead produced	
Lead.....	0	0
Zinc.....	0	0

§ 421.74 Standards of performance for new sources.

Any new source subject to this subpart must achieve the following performance standards: There shall be no discharge of process pollutants to navigable waters.

§ 421.75 [Reserved]

§ 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: There shall be no discharge of process pollutants into a publicly owned treatment works.

§ 421.77 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology.

Except as provided in 40 CFR 125.30 through 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 conventional pollutant control technology:

(a) Subpart G—Blast Furnace Slag Granulation.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of blast furnace lead bullion produced	
	English Units—Pounds per billion pounds of blast furnace lead bullion produced	
TSS.....	152,930.0	74,600.0
pH.....	(1)	(1)

¹ Within the range of 7.5 to 10.0 at all times.

(b) Subpart G—Blast Furnace Wet Air Pollution Control.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of blast furnace	
	English Units—pounds per billion pounds of blast furnace lead bullion produced	
TSS.....		
pH.....	(1)	(1)

¹ Within the range of 7.5 to 10.0 at all times.

(c) Subpart G—Zinc Fuming Furnace Wet Air Pollution Control.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of blast furnace lead bullion produced	
	English Units—pounds per billion pounds of blast furnace lead bullion produced	
TSS.....	17,466.0	8,520.0
pH.....	(1)	(1)

¹ Within the range of 7.5 to 10.0 at all times.

(d) Subpart G—Dross Reverberatory Furnace Wet Air Pollution Control.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kkg of dross reverberatory furnace production	
	English Units—pounds per billion pounds of dross reverberatory furnace production	
TSS.....	0	0
pH.....	(¹)	(¹)

¹Within the range of 7.5 to 10.0 at all times.

(e) Subpart G—Dross Reverberatory Furnace Granulation.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kkg of slag, matte, and speis granulated	
	English units—pounds per billion pounds of slag, matte, and speis granulated	
TSS.....	128,494.0	62,680.0
pH.....	(¹)	(¹)

¹Within the range of 7.5 to 10.0 at all times.

(f) Subpart G—Hard Lead Refining Wet Air Pollution Control.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kkg of hard lead produced	
	English units—pounds per billion pounds of hard lead produced	
TSS.....	813,276.0	396,720.0
pH.....	(¹)	(¹)

¹Within the range of 7.5 to 10.0 at all times.

(g) Subpart G—Hard Lead Refining Slag Granulation.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kkg of hard lead produced	
	English units—pounds per billion pounds of hard lead produced	
TSS.....	0	0
pH.....	(¹)	(¹)

¹Within the range of 7.5 to 10.0 at all times.

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.

In establishing the limitations set forth in this section, EPA took into account all information it was able to collect, develop and solicit with respect to factors (such as age and size of plant, raw materials, manufacturing processes, products produced, treatment technology available, energy requirements and costs) which can affect the industry subcategorization and effluent levels established. It is, however, possible that data which would affect these limitations have not been available, and, as a result, these limitations should be adjusted for certain plants in this industry. An individual discharger or other interested person may submit evidence to the Regional Administrator (or to the State, if the State has the authority to issue NPDES permits) that factors relating to the equipment or facilities involved, the process applied, or other such factors related to such discharger are fundamentally different from the factors considered in the establishment of the guidelines. On the basis of such evidence or other available information, the Regional Administrator (or the State) will make a written finding that such factors are or are not fundamentally different for that facility compared to those specified in the Development Document. If such fundamentally different factors are found to exist, the Regional Administrator or the State shall establish for the discharger effluent limitations in the NPDES permit either more or less stringent than the limitations established herein, to the extent dictated by such fundamentally

different factors. Such limitations must be approved by the Administrator of the Environmental Protection Agency. The Administrator may approve or disapprove such limitations, specify other limitations, or initiate proceedings to revise these regulations. 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 after application of the best practicable control technology currently available:

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)	
TSS.....	0.42	0.21
As.....	1.6 × 10 ⁻³	8 × 10 ⁻⁴
Cd.....	0.008	0.004
Se.....	0.08	0.04
Zn.....	0.08	0.04
pH.....	(¹)	(¹)

¹Within 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 through 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
	Metric units—mg/kkg of zinc reduced	
	English units—pounds per billion pounds of zinc reduced	
Cadmium.....	333.66	133.48
Copper.....	2,135.42	1,017.66
Lead.....	166.83	150.15
Zinc.....	1,701.67	700.69

(b) Subpart H—Leaching.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of zinc processed through leaching		
English units—pounds per billion pounds of zinc processed through leaching		
Cadmium.....	262.0	104.80
Copper.....	1,678.80	799.10
Lead.....	131.0	117.90
Zinc.....	1,336.20	550.20

(c) Subpart H—Leaching Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of zinc processed through leaching		
English units—pounds per billion pounds of zinc processed through leaching		
Cadmium.....	0	0
Copper.....	0	0
Lead.....	0	0
Zinc.....	0	0

(d) Subpart H—Cathode and Anode Washing.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of cathode zinc produced		
English units—pounds per billion pounds of cathode zinc produced		
Cadmium.....	3,970.0	1,588.0
Copper.....	25,408.0	12,108.50
Lead.....	1,985.0	1,786.50
Zinc.....	20,247.0	8,337.0

(e) Subpart H—Casting Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of zinc cast		
English units—pounds per billion pounds of zinc cast		
Cadmium.....	51.40	20.58
Copper.....	328.96	156.77
Lead.....	25.70	23.13
Zinc.....	262.14	107.94

(f) Subpart H—Casting Contact Cooling.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of zinc cast		
English units—pounds per billion pounds of zinc cast		
Cadmium.....	36.20	14.48
Copper.....	231.68	110.41
Lead.....	18.10	16.29
Zinc.....	184.62	76.02

(g) Subpart H—Cadmium Plant.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of cadmium produced		
English units—pounds per billion pounds of cadmium produced		
Cadmium.....	1,234.20	493.68
Copper.....	7,898.88	3,764.31
Lead.....	817.10	555.39
Zinc.....	6,294.42	2,591.82

§ 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
Metric Units—mg/kg of zinc reduces		
English units—pounds per billion pounds of zinc reduced		
Cadmium.....	333.66	133.48
Copper.....	2,135.42	1,017.66
Lead.....	166.83	150.15
Zinc.....	1,701.67	700.69
TSS.....	25,024.50	20,019.60
pH.....	(¹)	(¹)

¹Within the range of 7.5 to 10.0 at all times.

(b) Subpart H—Leaching NSPS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of zinc processed through leaching		
English units—pounds per billion pounds of zinc processed through leaching		
Cadmium.....	262.0	104.80
Copper.....	1,676.80	799.10
Lead.....	131.0	117.90

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Zinc.....	1,336.20	550.20
TSS.....	19,650.01,	15,720.01
pH.....	(¹)	(¹)

¹Within the range of 7.5 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
Metric units—mg/kg of zinc processed through leaching		
English units—pounds per billion pounds of zinc processed through leaching		
Cadmium.....	0	0
Copper.....	0	0
Lead.....	0	0
Zinc.....	0	0
TSS.....	0	0
pH.....	(¹)	(¹)

¹Within the range of 7.5 to 10.0 at all times.

(d) Subpart H—Cathode and Anode Washing NSPS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of cathode zinc produced		
English units—pounds per billion pounds of cathode zinc produced		
Cadmium.....	3,970.0	1,588.0
Copper.....	25,408.0	12,108.50
Lead.....	1,985.0	1,786.50
Zinc.....	20,247.0	8,337.0
TSS.....	297,750.0	238,200.0
pH.....	(¹)	(¹)

¹Within the range of 7.5 to 10.0 at all times.

(e) Subpart H—Casting Wet Air Pollution Control NSPS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of zinc cast		
English units—pounds per billion pounds of zinc cast		
Cadmium.....	51.40	20.58
Copper.....	328.96	156.77
Lead.....	25.70	23.13
Zinc.....	262.14	107.94
TSS.....	3,855.0	3,084.0
pH.....	(¹)	(¹)

¹Within the range of 7.5 to 10.0 at all times.

(f) Subpart H—Casting Contact Cooling NSPS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of zinc cast		
English units—pounds per billion pounds of zinc cast		
Cadmium.....	36.20	14.38
Copper.....	231.68	110.41
Lead.....	18.10	16.29
Zinc.....	184.62	76.02
TSS.....	2,715.0	2,172.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(g) Subpart H—Cadmium Plant NSPS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of cadmium produced		
English units—pounds per billion pounds of cadmium produced		
Cadmium.....	1,234.20	493.68
Copper.....	7,896.88	3,764.31
Lead.....	617.10	555.39
Zinc.....	6,294.42	2,591.82
TSS.....	92,565.0	74,052.0
pH.....		

¹ Within the range of 7.5 to 10.0 at all times.

§ 421.85 [Reserved]

§ 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
Metric units—mg/kg of zinc reduced		
English units—pounds per billion pounds of zinc reduced		
Cadmium.....	333.66	133.46
Copper.....	2,135.42	1,017.66
Lead.....	166.83	150.15
Zinc.....	1,701.67	700.69

(b) Subpart H—Leaching PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of zinc processed through leaching		
English units—pounds per billion pounds of zinc processed through leaching		
Cadmium.....	262.0	104.80
Copper.....	1,676.80	799.10
Lead.....	131.0	117.90
Zinc.....	1,336.20	550.20

(c) Subpart H—Leaching Wet Air Pollution Control PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of zinc processed through leaching		
English units—pounds per billion pounds of zinc processed through leaching		
Cadmium.....	0	0
Copper.....	0	0
Lead.....	0	0
Zinc.....	0	0

(d) Subpart H—Cathode and Anode Washing PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of cathode zinc produced		
English units—pounds per billion pounds of cathode zinc produced		
Cadmium.....	3,970.0	1,588.0
Copper.....	25,408.0	12,108.50
Lead.....	1,985.0	1,786.50
Zinc.....	20,247.0	8,337.0

(e) Subpart H—Casting Wet Air Pollution Control PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of zinc cast		
English units—pounds per billion pounds of zinc cast		
Cadmium.....	51.40	20.56
Copper.....	328.96	156.77
Lead.....	25.70	23.13
Zinc.....	262.14	107.94

(f) Subpart H—Casting Contact Cooling PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of zinc cast		
English units—pounds per billion pounds of zinc cast		
Cadmium.....	36.20	14.48
Copper.....	231.68	110.41
Lead.....	18.10	16.29
Zinc.....	184.62	76.02

(g) Subpart H—Cadmium Plant PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of cadmium produced		
English units—pounds per billion pounds of cadmium produced		
Cadmium.....	1,234.20	493.68
Copper.....	7,896.88	3,764.31
Lead.....	617.10	555.39
Zinc.....	6,294.42	2,591.82

§ 421.87 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology.

Except as provided in §§ 125.30 through 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 conventional pollutant control technology:

(a) Subpart H—Zinc Reduction Furnace Wet Air Pollution Control.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of zinc reduced		
English units—pounds per billion pounds of zinc reduced		
TSS.....	68,400.30	33,366.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(b) Subpart H—Leaching.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kkg of zinc processed through leaching	
	English units—pounds per billion pounds of zinc processed through leaching	
TSS.....	53,710.0	26,200.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(c) Subpart H—Leaching Wet Air Pollution Control.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kkg of zinc processed through leaching	
	English units—pounds per billion pounds of zinc processed through leaching	
TSS.....	0	0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(d) Subpart H—Cathode and Anode Washing.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kkg of cathode zinc produced	
	English units—pounds per billion pounds of cathode zinc produced	
TSS.....	813,850.0	397,000.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(e) Subpart H—Casting Wet Air Pollution Control.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kkg of zinc cast	
	English units—pounds per billion pounds of zinc cast	
TSS.....	105,370.0	51,400.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(f) Subpart H—Casting Contact Cooling.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kkg of zinc cast	
	English units—pounds per billion pounds of zinc cast	
TSS.....	79,827.0	38,940.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(g) Subpart H—Cadmium Plant.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kkg of cadmium produced	
	English units—pounds per billion pounds of cadmium produced	
TSS.....	253,011.0	123,420.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

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 byproduct 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, H₂SO₄, 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 through 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.....	0.305	0.002
Cadmium.....	0.30018	0.00009
Lead.....	0.0018	0.00079
Zinc.....	0.3036	0.0009
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 through 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 I—Acid Plant Blowdown.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kkg of 100 pct sulfuric acid capacity	
	English units—pounds per billion pounds of 100 pct sulfuric acid capacity	
Arsenic.....	3,550.06	1,455.78
Cadmium.....	510.80	204.32
Copper.....	3,269.12	1,557.94
Lead.....	255.40	229.86
Zinc.....	2,305.08	1,072.68

§ 421.94 Standards of performance for new sources.

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

(a) Subpart I—Acid Plant Blowdown NSPS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kkg of 100 pct sulfuric acid capacity	
	English units—pounds per billion pounds of 100 pct sulfuric acid capacity	
Arsenic.....	3,550.06	1,455.78
Cadmium.....	510.80	204.32
Copper.....	3,269.12	1,557.94
Lead.....	255.40	229.86

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Zinc.....	2,605.08	1,072.68
TSS.....	38,310.0	30,648.0
pH.....	(¹)	(¹)

¹Within the range of 7.5 to 10.0 at all times.

§421.95. [Reserved]

§ 421.96 Pretreatment standards for new sources.

Except as provided in 40 CFR 403.7, any new source subject to this subpart which introduces pollutions 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:

(a) Subpart I—Acid Plant Blowdown PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of 100 pt sulfuric acid capacity		
English units—pounds per billion pounds of 100 pt sulfuric acid capacity		
Arsenic.....	3,550.06	1,455.78
Cadmium.....	510.80	204.32
Copper.....	3,269.12	1,557.94
Lead.....	255.40	229.96
Zinc.....	2,605.08	1,072.68

§ 421.97 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology.

Except as provided in § 125.30 through 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 conventional pollutant control technology.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of product		
English units—pounds per billion pounds of product		
TSS.....	249,239.0	121,580.0
pH.....	(¹)	(¹)

¹Within the range of 7.5 to 10.0 at all times.

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 purposes 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 through 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—Tungsten Acid Rinse.

BPT Effluent Limitations

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric unit—mg/kg of tungstic acid produced		
English units—pounds per billion pounds of tungstic acid produced		
Lead.....	7,140.0	6,188.0
Selenium.....	58,548.0	26,180.0
Zinc.....	63,308.0	26,656.0
Ammonia (as N).....	6,330,800.0	789,360.0
TSS.....	1,951,600.0	952,000.0
pH.....	(¹)	(¹)

¹Within the range of 7.5 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
Metric unit—mg/kg of tungstic acid produced		
English units—pounds per billion pounds of tungstic acid produced		
Lead.....	5,655.0	4,901.0
Selenium.....	46,371.0	2,735.0
Zinc.....	50,141.0	21,112.0
Ammonia (as N).....	5,014,100.0	2,209,220.0
TSS.....	1,545,700.0	754,000.0
pH.....	(¹)	(¹)

¹Within the range of 7.5 to 10.0 at all times.

(c) Subpart J—Alkali Leach Wash.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric Units—mg/kg of sodium tungstate produced		
English Units—pounds per billion pounds of sodium tungstate produced		
Lead.....	7,005.0	6,071.0
Selenium.....	57,441.0	25,685.0
Zinc.....	62,111.0	26,152.0
Ammonia (as N).....	6,211,100.0	2,736,620.0
TSS.....	1,914,700.0	934,000.0
pH.....	(¹)	(¹)

¹Within the range of 7.5 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
Metric Units—mg/kg of ammonium tungstate produced		
English Units—pounds per billion pounds of ammonium tungstate produced		
Lead.....	7,680.0	6,656.0
Selenium.....	62,976.0	28,160.0
Zinc.....	68,096.0	28,672.0
Ammonia (as N).....	6,809,600.0	3,000,320.0
TSS.....	2,099,200.0	1,024,000.0
pH.....	(¹)	(¹)

¹Within the range of 7.5 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
Metric units—mg/kg of calcium tungstate produced		
English Units—pounds per billion pounds of calcium tungstate produced		
Lead.....	5,580.0	4,836.0
Selenium.....	45,756.0	20,460.0
Zinc.....	49,476.0	20,832.0
Ammonia (as N).....	4,947,800.0	2,179,920.0
TSS.....	1,525,200.0	744,000.0
pH.....	(¹)	(¹)

¹Within the range of 7.5 to 10.0 at all times.

(f) Subpart J—Crystallization and Drying of Ammonium Paratungstate.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric Units—mg/kg of ammonium paratungstate produced		
English Units—pounds per billion pounds of ammonium paratungstate produced		
Lead.....	0	0

BPT EFFLUENT LIMITATIONS—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Selenium	0	0
Zinc	0	0
Ammonia (as N)	0	0
TSS	0	0
pH	(¹)	(¹)

¹ Within the range of 7.5 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
Metric Units—mg/kg of "blue" oxide (WO ₃) produced		
English Units—pounds per billion pounds of "blue" oxide (WO ₃) produced		
Lead	3,135.0	2,717.0
Selenium	25,707.0	11,495.0
Zinc	27,797.0	11,704.0
Ammonia (as N)	2,779,700.0	1,224,740.0
TSS	856,900.0	418,000.0
pH	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(h) 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
Metric Units—mg/kg of tungsten produced		
English Units—pounds per billion pounds of tungsten produced		
Lead	10,980.0	9,516.0
Selenium	90,036.0	40,260.09
Zinc	97,356.0	40,992.0
Ammonia (as N)	9,735,600.0	4,289,520.0
TSS	3,001,200.0	1,484,000.0
pH	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(i) Subpart J—Reduction to Tungsten Water of Formation.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric Units—mg/kg of tungsten reduced		
English Units—pounds per billion pounds of tungsten reduced		
Lead	2,910.0	2,522.0
Selenium	23,862.0	10,670.0
Zinc	25,802.0	10,984.0
Ammonia (as N)	2,580,200.0	1,136,840.0
TSS	795,400.0	388,000.0
pH	(¹)	(¹)

¹ Within the range of 7.5 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 through 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—Tungsten Acid Rinse.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric Units—mg/kg of tungstic acid produced		
English Units—pounds per billion pounds of tungstic acid produced		
Lead	4,760.0	4,284.0
Selenium	1,428.0	476.0
Zinc	48,552.0	19,992.0
Ammonia (as N)	6,330,800.0	2,789,360.0

(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
Metric Units—mg/kg of tungstic acid produced		
English Units—pounds per billion pounds of tungstic acid produced		
Lead	337.0	339.30
Selenium	113.10	37.70
Zinc	3,845.40	1,583.40
Ammonia (as N)	501,410.0	220,922.0

(c) Subpart J—Alkali Leach Wash.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric Units—mg/kg of sodium tungstate produced		
English Units—pounds per billion pounds of sodium tungstate produced		
Lead	4,670.0	4,203.0
Selenium	1,401.0	467.0
Zinc	47,834.0	19,614.0
Ammonia (as N)	6,211,100.0	2,736,620.0

(d) Subpart J—Ion-Exchange Raffinate.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric Units—mg/kg of ammonium tungstate produced		
English Units—pounds per billion pounds of ammonium tungstate produced		
Lead	5,120.0	4,608.0
Selenium	1,536.0	512.0
Zinc	52,224.0	21,504.0
Ammonia (as N)	6,809,600.0	3,000,320.0

(e) Subpart J—Calcium Tungstate Precipitate Wash.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric Units—mg/kg of calcium tungstate produced		
English units—pounds per billion pounds of calcium tungstate produced		
Lead	3,720.0	3,348.0
Selenium	1,116.0	372.0
Zinc	37,944.0	15,624.0
Ammonia (as N)	4,947,600.0	2,179,920.0

(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
Metric Units—mg/kg of ammonium paratungstate produced		
English Units—Pounds per billion pounds of ammonium paratungstate produced		
Lead	0	0
Selenium	0	0
Zinc	0	0
Ammonia (as N)	0	0

(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
Metric Units—mg/kg of "blue" oxide (WO ₃) produced		
English Units—Pound per billion pounds of "blue" Oxide (WO ₃) produced		
Lead	3,135.0	2,717.0
Selenium	25,707.0	11,495.0
Zinc	27,797.0	11,704.0
Ammonia (as N)	2,779,700.0	1,224,740.0

(h) 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
Metric Units—mg/kg of tungsten produced		
English Units—Pounds per billion pounds per of tungsten produced		
Lead.....	732.0	658.60
Selenium.....	219.60	73.20
Zinc.....	7,466.40	3,074.40
Ammonia (as N).....	973,560.0	428,952.0

(i) Subpart J—Reduction to Tungsten Water of Formation.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of tungsten reduced		
English units—pounds per billion pounds of tungsten reduced		
Lead.....	1,940.0	1,746.0
Selenium.....	582.0	194.0
Zinc.....	19,788.0	8,148.0
Ammonia (as N).....	2,580,200.0	1,136,840.0

§ 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—Tungsten Acid Rinse NSPS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of tungstic acid produced		
English units—pounds per billion pounds of tungstic acid produced		
Lead.....	4,760.0	4,284.0
Selenium.....	1,428.0	476.0
Zinc.....	48,552.0	19,992.0
Ammonia (as N).....	6,330,800.0	2,789,360.0
TSS.....	174,000.0	571,200.0
pH.....	(¹)	(¹)

¹Within the range of 7.5 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
Metric units—mg/kg of tungstic acid produced		
English units—pounds per billion pounds of tungstic acid produced		
Lead.....	377.0	339.30
Selenium.....	113.10	37.70
Zinc.....	3,845.40	1,583.40
Ammonia (as N).....	501,410.0	220,922.0
TSS.....	58,550.0	45,240.0
pH.....	(¹)	(¹)

¹Within the range of 7.5 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
Metric units—mg/kg of sodium tungstate produced		
English units—pounds per billion pounds of sodium tungstate produced		
Lead.....	4,670.0	4,203.0
Selenium.....	1,401.0	467.0
Zinc.....	47,834.0	10,614.0
Ammonia (as N).....	6,211,100.00	2,736,620.0
TSS.....	700,500.0	560,400.0
pH.....	(¹)	(¹)

¹Within the range of 7.5 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
Metric units—mg/kg of ammonium tungstate produced		
English units—pounds per billion pounds of ammonium tungstate produced		
Lead.....	5,120.0	4,608.0
Selenium.....	1,538.0	512.0
Zinc.....	52,224.0	21,504.0
Ammonia (as N).....	6,809,800.0	3,000,320.0
TSS.....	768,000.0	614,400.0
pH.....	(¹)	(¹)

¹Within the range of 7.5 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
Metric units—mg/kg of calcium tungstate produced		
English units—pounds per billion pounds of calcium tungstate produced		
Lead.....	3,720.0	3,348.0
Selenium.....	1,116.0	372.0
Zinc.....	37,944.0	15,824.0
Ammonia (as N).....	4,947,600.0	2,179,920.0
TSS.....	558,000.0	446,400.0
pH.....	(¹)	(¹)

¹Within the range of 7.5 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
Metric units—mg/kg of ammonium paratungstate produced		
English units—pounds per billion pounds of ammonium paratungstate produced		
Lead.....	0	0
Selenium.....	0	0
Zinc.....	0	0
Ammonia (as N).....	0	0
TSS.....	0	0
pH.....	(¹)	(¹)

¹Within the range of 7.5 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
Metric units—mg/kg of "blue" oxide (WO ₃) produced		
English units—pounds per billion pounds of "blue" oxide (WO ₃) produced		
Lead.....	3,135.0	2,717.0
Selenium.....	25,707.0	11,495.0
Zinc.....	27,797.0	11,704.0
Ammonia (as N).....	2,779,700.0	1,224,740.0
TSS.....	658,900.0	418,000.0
pH.....	(¹)	(¹)

¹Within the range of 7.5 to 10.0 at all times.

(h) Subpart J—Reduction to Tungsten Wet Air Pollution Control NSPS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of tungsten produced		
English units—pounds per billion pounds of tungsten produced		
Lead.....	732.0	658.80
Selenium.....	219.60	73.20
Zinc.....	7,466.40	3,074.40
Ammonia (as N).....	973,560.0	428,952.0
TSS.....	109,800.0	87,840.0
pH.....	(¹)	(¹)

¹Within the range of 7.5 to 10.0 at all times.

(i) Subpart J—Reduction to Tungsten Water of Formation NSPS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of tungsten reduced	
	English units—pounds per billion pounds of tungsten reduced	
Lead.....	1,940.0	1,746.0
Selenium.....	582.0	194.0
Zinc.....	19,788.0	8,148.0
Ammonia (as N).....	2,580,200.0	1,136,840.0
TSS.....	291,000.0	232,800.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 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—Tungsten Acid Rinse PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of tungstic acid produced	
	English units—pounds per billion pounds of tungstic acid produced	
Lead.....	4,760.0	4,284.0
Selenium.....	1,428.0	476.0
Zinc.....	48,552.0	19,992.0
Ammonia (as N).....	6,330,800.0	2,789,360.0

(b) Subpart J—Acid Leach Wet Air Pollution Control PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of tungstic acid produced	
	English units—pounds per billion pounds of tungstic acid produced	
Lead.....	377.0	339.30
Selenium.....	113.10	37.70
Zinc.....	3,845.40	1,583.40
Ammonia (as N).....	501,410.0	220,922.0

(c) Subpart J—Alkali Leach Wash PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of sodium tungstate produced	
	English units—pounds per billion pounds of sodium tungstate produced	
Lead.....	4,670.0	4,203.0
Selenium.....	1,401.0	467.0
Zinc.....	47,634.0	19,614.0
Ammonia (as N).....	6,211,100.0	2,736,620.0

(d) Subpart J—Ion-Exchange Raffinate PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of ammonium tungstate produced	
	English units—pounds per billion pounds of ammonium tungstate produced	
Lead.....	5,120.0	4,608.0
Selenium.....	1,536.0	512.0
Zinc.....	52,224.0	21,504.0
Ammonia (as N).....	6,809,600.0	3,000,320.0

(e) Subpart J—Calcium Tungstate Precipitate Wash PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of calcium tungstate produced	
	English units—pounds per billion pounds of calcium tungstate produced	
Lead.....	3,720.0	3,348.0
Selenium.....	1,116.0	372.0
Zinc.....	37,944.0	15,624.0
Ammonia (as N).....	4,947,600.0	2,179,920.0

(f) Subpart J—Crystallization and Drying of Ammonium paratungstate PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of ammonium paratungstate produced	
	English units—pounds per billion pounds of ammonium paratungstate produced	
Lead.....	0	0
Selenium.....	0	0
Zinc.....	0	0
Ammonia (as N).....	0	0

(g) Subpart J—Ammonium Paratungstate Convention to Oxides Wet Air Pollution Control PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of "blue" oxide (WO ₃) produced	
	English units—pounds per billion pounds of "blue" oxide (WO ₃) produced	
Lead.....	3,135.0	2,717.0
Selenium.....	25,707.0	11,495.0
Zinc.....	27,797.0	11,704.0
Ammonia (as N).....	2,779,700.0	1,224,740.0

(h) Subpart J—Reduction to Tungsten Wet Air Pollution Control PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of tungsten produced	
	English units—pounds per billion pounds of tungsten produced	
Lead.....	732.0	656.80
Selenium.....	219.60	73.20
Zinc.....	7,466.40	3,074.40
Ammonia (as N).....	973,560.0	428,952.0

(i) Subpart J—Reduction to Tungsten Water of Formation PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of tungsten reduced	
	English units—pounds per billion pounds of tungsten produced	
Lead.....	1,940.0	1,746.0
Selenium.....	582.0	194.0
Zinc.....	19,788.0	8,148.0
Ammonia (as N).....	2,580,200.0	1,136,840.0

§ 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—Tungsten Acid Rinse PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of tungstic acid produced	
	English units—pounds per billion pounds of tungstic acid produced	
Lead.....	4,760.0	4,284.0
Selenium.....	1,428.0	476.0
Zinc.....	48,552.0	19,992.0
Ammonia (as N).....	6,330,800.0	2,789,360.0

(b) Subpart J—Acid Leach Wet Air Pollution Control PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of tungstic acid produced	
	English units—pounds per billion pounds of tungstic acid produced	
Lead.....	377.0	339.30
Selenium.....	113.10	37.70
Zinc.....	3,845.40	1,583.40
Ammonia (as N).....	501,410.0	220,922.0

(c) Subpart J—Alkali Leach Wash PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of sodium tungstate produced	
	English units—pounds per billion pounds of tungstate produced	
Lead.....	4,670.0	4,203.0
Selenium.....	1,401.0	467.0
Zinc.....	47,634.0	19,614.0
Ammonia (as N).....	6,211,100.0	2,736,620.0

(d) Subpart J—Ion-Exchange Raffinate PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of ammonium tungstate produced	
	English units—pounds per billion pounds of ammonium tungstate produced	
Lead.....	5,120.0	4,608.0
Selenium.....	1,536.0	512.0
Zinc.....	52,224.0	21,504.0
Ammonia.....	6,809,600.0	3,000,320.0

(e) Subpart J—Calcium Tungstate Precipitate Wash PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of calcium tungstate produced	
	English units—pounds per billion pounds of calcium tungstate produced	
Lead.....	3,720.0	3,348.0
Selenium.....	1,116.0	372.0
Zinc.....	37,944.0	15,624.0
Ammonia (as N).....	4,947,600.0	2,179,920.0

(f) Subpart J—Crystallization and Drying of Ammonium Paratungstate PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of ammonium paratungstate produced	
	English units—pounds per billion pounds of ammonium paratungstate produced	
Lead.....	0	0
Selenium.....	0	0
Zinc.....	0	0
Ammonia (as N).....	0	0

(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
	Metric units—mg/kg of "blue" oxide (WO ₃) produced	
	English units—pounds per billion pounds of "blue" oxide (WO ₃) produced	
Lead.....	3,135.0	2,717.0
Selenium.....	25,707.0	11,495.0
Zinc.....	27,797.0	11,704.0
Ammonia (as N).....	2,779,700.0	1,224,740.0

(h) Subpart J—Reduction to Tungsten Wet Air Pollution Control PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of tungsten produced	
	English units—pounds per billion pounds of tungsten produced	
Lead.....	732.0	658.80
Selenium.....	219.60	73.20
Zinc.....	7,466.40	3,074.40
Ammonia (as N).....	973,560.0	428,952.0

(i) Subpart J—Reduction to Tungsten Water of Formation PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of tungsten reduced	
	English units—pounds per billion pounds of tungsten reduced	
Lead.....	1,940.0	1,746.0
Selenium.....	582.0	194.0
Zinc.....	19,788.0	8,148.0
Ammonia (as N).....	2,580,200.0	1,136,840.0

§ 421.107 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology.

Except as provided in 40 CFR 125.30 through 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 conventional pollutant control technology:

(a) Subpart J—Tungsten Acid Rinse.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of tungstic acid reduced	
	English units—pounds per billion pounds of tungstic acid produced	
TSS.....	1,951,600.0	952,000.0
pH.....	(¹)	(¹)

¹Within the range of 7.5 to 10.0 at all times.

(b) Subpart J—Acid Leach Wet Air Pollution Control.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of tungstic acid produced	
	English units—pounds per billion pounds of tungstic acid produced	
TSS.....	1,545,700.0	754,000.0
pH.....	(¹)	(¹)

¹Within the range of 7.5 to 10.0 at all times.

(c) Subpart J—Alkali Leach Wash.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of sodium tungstate produced	
	English units—pounds per billion pounds of sodium tungstate produced	
TSS.....	1,914,700.0	934,000.0

BCT EFFLUENT LIMITATIONS—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(d) Subpart J—Ion-Exchange Raffinate.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of ammonium tungstate produced	
	English units—pounds per billion pounds of ammonium tungstate produced	
TSS.....	2,099,200.0	1,024,000.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(e) Subpart J—Calcium Tungstate Precipitate Wash.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of Calcium tungstate produced	
	English units—pounds per billion pounds of calcium tungstate produced	
TSS.....	1,525,200.0	744,000.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(f) Subpart J—Crystallization and Drying of Ammonium Paratungstate.

BCT EFFLUENT LIMITATION

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of ammonium paratungstate produced	
	English units—pounds per billion pounds of ammonium paratungstate produced	
TSS.....	0	0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(g) Subpart J—Ammonium Paratungstate Conversion to Oxides Wet Air Pollution Control.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of "blue" oxide (WO ₃) produced	
	English units—pounds per billion pounds of "blue" oxide (WO ₃) produced	
TSS.....	856,900.0	418,000.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(h) Subpart J—Reduction to Tungsten Wet Air Pollution Control.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of tungsten produced	
	English units—pounds per billion pounds of tungsten produced	
TSS.....	3,001,200.0	1,464,000.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(i) Subpart J—Reduction to Tungsten Water of Formation.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of tungsten reduced	
	English units—pounds per billion pounds of tungsten reduced	
TSS.....	795,400.0	388,000.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

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 through 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
	Metric units—mg/kg of columbium-tantalum salt produced from digestion	
	English units—pounds per billion pounds of columbium-tantalum salt produced from digestion	
Lead.....	1,637.25	1,418.95
Zinc.....	14,518.95	6,112.40
Ammonia (as N).....	1,451,695.0	639,619.0
Fluoride.....	649,442.50	288,158.0
Total Suspended Solids.....	447,515.0	218,300.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 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
	Metric units—mg/kg of columbium or tantalum salt extracted	
	English units—pounds per billion pounds of columbium or tantalum salt extracted	
Lead.....	4,037.40	3,499.08
Zinc.....	35,788.28	15,072.96
Ammonia (as N).....	3,579,828.0	1,577,277.60
Fluoride.....	1,601,502.0	710,562.40
Total Suspended Solids.....	1,103,556.0	538,320.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 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
	Metric units—mg/kg of columbium or tantalum salt extracted	
	English units—pounds per billion pounds of columbium or tantalum salt extracted	
Lead.....	645.21	559.18
Zinc.....	5,720.86	2,408.78
Ammonia (as N).....	572,086.20	252,062.04
Fluoride.....	255,933.30	113,556.96
Total Suspended Solids.....	176,357.40	86,028.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(d) Subpart K—Precipitation and Filtration of Metal Salts.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of columbium or tantalum salt precipitated		
English units—pounds per billion pounds of columbium or tantalum salt precipitated		
Lead	37,083.45	32,138.99
Zinc	329,806.59	138,444.88
Ammonia (as N)	32,880,659.0	14,487,267.80
Fluoride	14,709,768.50	6,526,687.20
Total Suspended Solids	10,136,143.0	4,944,460.0
pH	(¹)	(¹)

¹Within the range of 7.5 to 10.0 at all times.

(e) Subpart K—Metal Salt Drying Wet Air Pollution Control.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of columbium or tantalum salt dried		
English units—pounds per billion pounds of columbium or tantalum salt dried		
Lead	12,546.45	10,873.59
Zinc	111,245.19	46,640.08
Ammonia (as N)	11,124,519.0	4,901,479.80
Fluoride	4,976,758.50	2,208,175.20
Total Suspended Solids	3,429,363.0	1,672,860.00
pH	(¹)	(¹)

¹Within the range of 7.5 to 10.0 at all times.

(f) Subpart K—Reduction of Salt to Metal.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1-day	Maximum for monthly average
Metric units—mg/kg of columbium or tantalum reduced		
English units—pounds per billion pounds of columbium or tantalum reduced		
Lead	52,899.45	45,848.19
Zinc	469,041.79	197,491.28
Ammonia (as N)	48,904,179.0	20,666,051.80
Fluoride	20,983,448.50	9,310,303.20
Total Suspended Solids	14,459,183.0	7,053,260.0
pH	(¹)	(¹)

¹Within the range of 7.5 to 10.0 at all times.

(g) Subpart K—Reduction of Salt to Metal Wet Air Pollution Control.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of columbium or tantalum reduced		
English units—pounds per billion pounds of columbium or tantalum reduced		
Lead	3,228.15	2,797.73

BPT EFFLUENT LIMITATIONS—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Zinc	28,822.93	12,051.76
Ammonia (as N)	2,862,293.0	1,261,130.60
Fluoride	1,280,499.50	568,154.40
Total Suspended Solids	882,361.0	430,420.0
pH	(¹)	(¹)

¹Within the range of 7.5 to 10.0 at all times.

(h) Subpart K—Consolidation and Casting Contact Cooling.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of columbium or tantalum cast or consolidated		
English units—pounds per billion pounds of columbium or tantalum cast or consolidated		
Lead	0	0
Zinc	0	0
Ammonia (as N)	0	0
Fluoride	0	0
Total Suspended Solids	0	0
pH	(¹)	(¹)

¹Within the range of 7.5 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 through 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
Metric units—mg/kg of columbium or tantalum salt produced from digestion		
English units—pounds per billion pounds of columbium or tantalum salt produced from digestion		
Lead	515.63	464.07
Zinc	5,259.43	2,165.65
Ammonia (as N)	685,787.90	302,159.18
Fluoride	200,064.44	81,469.54

(b) Subpart K—Solvent Extraction Raffinate.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of columbium or tantalum salt extracted		
English units—pounds per billion pounds of columbium or tantalum salt extracted		
Lead	2,691.60	2,422.44
Zinc	27,454.32	11,304.72
Ammonia (as N)	3,579,828.0	1,577,277.60
Fluoride	1,044,340.80	425,272.80

(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
Metric units—mg/kg of columbium or tantalum salt extracted		
English units—pounds per billion pounds of columbium or tantalum salt extracted		
Lead	43.01	38.71
Zinc	438.70	180.64
Ammonia (as N)	57,203.30	25,203.86
Fluoride	16,687.88	6,795.58

(d) Subpart K—Precipitation and Filtration of Metal Salts.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of columbium or tantalum salt precipitated		
English units—pounds per billion pounds of columbium or tantalum salt precipitated		
Lead	24,722.30	22,250.07
Zinc	252,167.46	103,833.69
Ammonia (as N)	32,880,659.0	14,487,267.80
Fluoride	9,592,252.40	3,908,123.40

(e) Subpart K—Metal Salt Drying Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of columbium or tantalum salt dried		
English units—pounds per billion pounds of columbium or tantalum salt dried		
Lead	1,647.90	1,483.11
Zinc	16,808.58	6,921.18
Ammonia (as N)	2,191,707.0	965,669.40
Fluoride	639,365.20	260,368.20

(f) Subpart K—Reduction of Salt to Metal.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of columbium or tantalum reduced		
English units—pounds per billion pounds of columbium or tantalum reduced		
Lead.....	35,266.30	31,739.67
Zinc.....	359,716.26	148,118.46
Ammonia (as N).....	46,904,179.0	20,666,051.80
Fluoride.....	13,683,324.40	5,572,075.40

(g) Subpart K—Reduction of salt to Metal Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of columbium or tantalum reduced		
English units—pounds per billion pounds of columbium or tantalum reduced		
Lead.....	2,152.10	1,936.89
Zinc.....	21,951.42	9,038.82
Ammonia (as N).....	2,862,293.0	1,261,130.60
Fluoride.....	835,014.80	340,031.80

(h) Subpart K—Consolidation and Casting Contact Cooling.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly coverage
Metric units—mg/kg of columbium or tantalum cast or consolidated		
English units—pounds per billion pounds of columbium or tantalum cast or consolidated		
Lead.....	0	0
Zinc.....	0	0
Ammonia (as N).....	0	0
Fluoride.....	0	0

§ 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 coverage
Metric units—mg/kg of columbium or tantalum salt produced from digestion		
English units—pounds per billion pounds of columbium or tantalum salt produced from digestion		
Lead.....	515.63	464.07
Zinc.....	5,259.43	2,165.65
Ammonia (as N).....	685,787.90	302,159.18
Fluoride.....	200,064.44	81,469.54
Total Suspended Solids.....	77,344.50	61,875.60
pH.....	(¹)	(¹)

¹ Within the range of 7.5 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
Metric units—mg/kg of columbium or tantalum salt extracted		
English units—pounds per billion pounds of columbium or tantalum salt extracted		
Lead.....	2,691.60	2,422.44
Zinc.....	27,454.32	11,304.72
Ammonia (as N).....	3,579,828.0	1,577,277.60
Fluoride.....	1,044,340.80	425,272.80
Total Suspended Solids.....	403,740.0	322,992.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 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
Metric units—mg/kg of columbium or tantalum salt extracted		
English units—pounds per billion pounds of columbium or tantalum salt extracted		
Lead.....	43.01	38.71
Zinc.....	438.70	180.64
Ammonia (as N).....	57,203.30	25,203.86
Fluoride.....	16,687.88	6,795.58
Total Suspended Solids.....	6,451.50	5,161.20
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(d) Subpart K—Precipitation and Filtration of Metal Salts NSPS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of columbium or tantalum salt precipitated		
English units—pounds per billion pounds of columbium or tantalum salt precipitated		
Lead.....	24,722.30	22,250.07
Zinc.....	252,167.46	103,833.66

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Ammonia (as N).....	32,880,659.0	14,487,267.80
Fluoride.....	9,592,252.40	3,906,123.40
Total Suspended Solids.....	3,708,345.0	2,966,676.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(e) Subpart K—Metal Salt Drying Wet Air Pollution Control NSPS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of columbium or tantalum salt dried		
English units—pounds per billion pounds of columbium or tantalum salt dried		
Lead.....	1,647.90	1,483.11
Zinc.....	16,808.58	6,921.18
Ammonia (as N).....	2,191,707.0	965,669.40
Fluoride.....	639,385.20	260,368.20
Total suspended solids.....	247,185.0	197,748.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(f) Subpart K—Reduction of Salt to Metal NSPS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of columbium or tantalum reduced		
English units—pounds per billion pounds of columbium or tantalum reduced		
Lead.....	35,266.30	31,739.67
Zinc.....	359,716.26	148,118.46
Ammonia (as N).....	46,904,179.0	20,666,051.80
Fluoride.....	13,683,324.40	5,572,075.40
Total suspended solids.....	5,289,945.0	4,231,956.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(g) Subpart K—Reduction of Salt to Metal Wet Air Pollution Control NSPS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of columbium or tantalum reduced		
English units—pounds per billion pounds of columbium or tantalum reduced		
Lead.....	2,152.10	1,936.89
Zinc.....	21,951.42	9,038.82
Ammonia (as N).....	2,862,293.0	1,261,130.60
Fluoride.....	835,014.80	340,031.80
Total suspended solids.....	322,815.0	258,252.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(h) Subpart K—Consolidation and Casting Contact Cooling NSPS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kkg of columbium or tantalum, cast or consolidated	
	English units—Pounds per billion pounds of columbium or tantalum cast or consolidated	
Lead.....	0	0
Zinc.....	0	0
Ammonia (as N).....	0	0
Fluoride.....	0	0
TSS.....	0	0
pH.....	(1)	(1)

¹ Within the range of 7.5 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
	Metric units—mg/kkg of columbium-tantalum salt produced from digestion	
	English units—Pounds per billion pounds of columbium-tantalum salt produced from digestion	
Lead.....	515.63	464.07
Zinc.....	5,259.43	2,165.65
Ammonia (as N).....	685,787.90	302,159.18
Fluoride.....	200,064.44	81,469.54

(b) Subpart K—Solvent Extraction Raffinate PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kkg of columbium or tantalum salt extracted	
	English units—pounds per billion pounds of columbium or tantalum salt extracted	
Lead.....	2,691.60	2,422.44
Zinc.....	27,454.32	11,304.72
Ammonia (as N).....	3,579,828.00	1,577,277.60
Fluoride.....	1,044,340.80	425,272.80

(c) Subpart K—Solvent Extraction Wet Air Pollution Control PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kkg of columbium or tantalum salt extracted	
	English units—pounds per billion pounds of columbium or tantalum salt extracted	
Lead.....	43.01	38.71
Zinc.....	438.70	180.64
Ammonia (as N).....	57,203.30	25,203.86
Fluoride.....	16,687.88	6,795.58

(d) Subpart K—Precipitation and Filtration of Metal Salts PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kkg of columbium or tantalum salt precipitated	
	English units—pounds per billion pounds of columbium or tantalum salt precipitated	
Lead.....	24,722.30	22,250.07
Zinc.....	252,167.46	103,833.66
Ammonia (as N).....	32,880,659.00	14,487,267.80
Fluoride.....	9,592,252.40	3,906,123.40

(e) Subpart K—Metal Salt Drying Wet Air Pollution Control PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kkg of columbium or tantalum salt dried	
	English units—pounds per billion pounds of columbium or tantalum salt dried	
Lead.....	1,647.90	1,483.11
Zinc.....	16,808.58	6,921.18
Ammonia (as N).....	2,191,707.0	965,669.40
Fluoride.....	639,385.20	260,368.20

(f) Subpart K—Reduction of Salt to Metal PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kkg of columbium or tantalum reduced	
	English units—pounds per billion pounds of columbium or tantalum reduced	
Lead.....	35,266.30	31,739.67
Zinc.....	359,716.26	148,118.48
Ammonia (as N).....	48,904,179.0	20,666,051.80
Fluoride.....	13,683,324.40	5,572,075.40

(g) Subpart K—Reduction of Salt to Metal Wet Air Pollution Control PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kkg of columbium or tantalum reduced	
	English units—pounds per billion pounds of columbium or tantalum reduced	
Lead.....	2,152.10	1,936.89
Zinc.....	21,951.42	9,038.82
Ammonia (as N).....	2,862,293.0	1,281,130.60
Fluoride.....	835,014.80	340,031.80

(h) Subpart K—Consolidation and Casting Contact Cooling PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kkg of columbium or tantalum cast or consolidated	
	English units—pounds per billion pounds of columbium or tantalum cast or consolidated	
Lead.....	0	0
Zinc.....	0	0
Ammonia (as N).....	0	0
Fluoride.....	0	0

§ 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
	Metric Units—mg/kkg of columbium or tantalum salt produced from digestion	
	English Units—pounds per billion pounds of columbium or tantalum salt produced from digestion	
Lead.....	515.83	464.07
Zinc.....	5,259.43	2,165.65
Ammonia (as N).....	685,787.90	302,159.18
Fluoride.....	200,064.44	81,469.54

(b) Subpart K—Solvent Extraction Raffinate PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of columbium or tantalum salt extracted	
	English units—pounds per billion pounds of columbium or tantalum salt extracted	
Lead.....	2,691.60	2,422.44
Zinc.....	27,454.32	11,304.72
Ammonia (as N).....	3,579,828.0	1,577,277.60
Fluoride.....	1,044,340.80	425,272.80

(c) Subpart K—Solvent Extraction Wet Air Pollution Control PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of columbium or tantalum salt extracted	
	English units—pounds per billion pounds of columbium or tantalum salt extracted	
Lead.....	43.01	38.71
Zinc.....	438.70	180.64
Ammonia (as N).....	57,203.30	25,203.86
Fluoride.....	16,687.88	6,795.58

(d) Subpart K—Precipitation and Filtration of Metal Salts PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of columbium or tantalum salt extracted	
	English units—pounds per billion pounds of columbium or tantalum salt extracted	
Lead.....	24,722.30	22,250.07
Zinc.....	252,167.46	103,833.68
Ammonia (as N).....	32,880,659.0	14,487,267.80
Fluoride.....	9,592,252.40	3,906,123.40

(e) Subpart K—Metal Salt Drying Wet Air Pollution Control PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of columbium or tantalum salt dried	
	English units—pounds per billion pounds of columbium or tantalum salt dried	
Lead.....	1,647.90	1,483.11
Zinc.....	16,808.58	6,921.18
Ammonia (as N).....	2,191,707.0	985,669.40
Fluoride.....	639,385.20	260,368.20

(f) Subpart K—Reduction of Salt to Metal PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of columbium or tantalum reduced	
	English units—pounds per billion pounds of columbium or tantalum reduced	
Lead.....	35,266.30	31,739.67
Zinc.....	359,716.26	148,118.46
Ammonia (as N).....	46,904,179.0	20,666,051.80
Fluoride.....	13,683,324.40	5,572,075.40

(g) Subpart K—Reduction of Salt to Metal Wet Air Pollution Control PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of columbium or tantalum reduced	
	English units—pounds per billion pounds of columbium or tantalum reduced	
Lead.....	2,152.10	1,938.89
Zinc.....	21,951.42	9,038.82
Ammonia (as N).....	2,862,293.0	1,261,130.60
Fluoride.....	835,014.80	340,031.80

(h) Subpart K—Consolidation and Casting Contact Cooling PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of columbium or tantalum cast or consolidated	
	English units—pounds per billion pounds of columbium or tantalum cast or consolidated	
Lead.....	0	0
Zinc.....	0	0
Ammonia (as N).....	0	0
Fluoride.....	0	0

§ 421.117 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology.

Except as provided in 40 CFR 125.30 through 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 conventional pollutant control technology:

(a) Subpart K—Concentrate Digestion Wet Air Pollution Control.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of columbium-tantalum salt produced from digestion	
	English units—pounds per billion pounds of columbium-tantalum salt produced from digestion	
Total Suspended Solids.....	447,515.0	218,300.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(b) Subpart K—Solvent Extraction Raffinate.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of columbium or tantalum salt extracted	
	English units—pounds per billion pounds of columbium or tantalum salt extracted	
Total Suspended Solids.....	1,103,556.0	538,320.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(c) Subpart K—Solvent Extraction Wet Air Pollution Control.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of columbium or tantalum salt extracted	
	English units—pounds per billion pounds of columbium or tantalum salt extracted	
Total Suspended Solids.....	176,357.40	86,028.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(d) Subpart K—Precipitation and Filtration of Metal Salts.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of columbium or tantalum salt precipitated	
	English units—pounds per billion pounds of columbium or tantalum salt precipitated	
Total Suspended Solids.....	10,158,143.0	4,944,460.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(e) Subpart K—Metal Salt Drying Wet Air Pollution Control.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of columbium or tantalum salt dried	
	English units—pounds per billion pounds of columbium or tantalum salt dried	
Total Suspended Solids.....	3,429,363.0	1,672,860.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(f) Subpart K—Reduction of Salt to Metal.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of columbium or tantalum reduced	
	English units—pounds per billion pounds of columbium or tantalum reduced	
Total Suspended Solids.....	14,459,183.0	7,053,260.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(g) Subpart K—Reduction of Salt to Metal Wet Air Pollution Control.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of columbium or tantalum reduced	
	English units—pounds per billion pounds of columbium or tantalum reduced	
Total Suspended Solids.....	882,361.0	430,420.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(h) Subpart K—Consolidation and Casting Contact Cooling.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of columbium or tantalum cast or consolidated	
	English units—pounds per billion pounds of columbium or tantalum cast or consolidated	
Total Suspended Solids.....	0	0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

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 photographic 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 through 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
	Metric units—mg/kg of silver produced from film stripping	
	English units—pounds per billion pounds of silver produced from film stripping	
Copper.....	3,076,100.0	1,619,000.0
Zinc.....	2,153,270.0	906,640.0
Ammonia (as N).....	215,327,000.0	94,873,400.0
Total Suspended Solids.....	66,379,000.0	32,380,000.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(b) Subpart L—Film Stripping Wet Air Pollution Control.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of silver produced from film stripping	
	English units—pounds per billion pounds of silver produced from film stripping	
Copper.....	29,602.0	15,580.0
Zinc.....	20,721.40	6,724.80
Ammonia (as N).....	2,072,140.0	912,988.0
Total Suspended Solids.....	638,780.0	311,600.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(c) Subpart L—Precipitation and Filtration of Film Stripping Solutions.

BPT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of silver precipitated	
	English units—pounds per billion pounds of silver precipitated	
Copper.....	3,516,900.0	1,851,000.0
Zinc.....	2,461,830.0	1,036,560.0
Ammonia (as N).....	248,183,000.0	108,468,600.0
Total Suspended Solids.....	75,891,000.0	37,020,000.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(d) Subpart L—Precipitation and Filtration of Film Stripping Solutions Wet Air Pollution Control.

BPT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of silver precipitated	
	English units—pounds per billion pounds of silver precipitated	
Copper.....	29,602.0	15,580.0
Zinc.....	20,721.40	6,724.80
Ammonia (as N).....	2,072,140.0	912,988.0
Total Suspended Solids.....	638,780.0	311,600.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(e) Subpart L—Precipitation and Filtration of Photographic Solutions

BPT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of silver precipitated	
	English units—pounds per billion pounds of silver precipitated	
Copper.....	1,622,600.0	854,000.0
Zinc.....	1,135,820.0	478,240.0
Ammonia (as N).....	113,562,000.0	50,044,400.0
Total Suspended Solids.....	35,014,000.0	17,080,000.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(f) 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
	Metric units—mg/kg of silver precipitated	
	English units—pounds per billion pounds of silver precipitated	
Copper.....	741,570.0	390,300.0
Zinc.....	519,099.0	218,568.0
Ammonia (as N).....	51,909,900.0	22,871,580.0
Total Suspended Solids.....	16,002,300.0	7,606,000.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(g) Subpart L—Electrolytic Refining.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver refined		
English units—pounds per billion pounds of silver refined		
Copper.....	46,200.40	24,316.0
Zinc.....	32,340.28	13,616.96
Ammonia (as N).....	3,234,028.0	1,424,917.60
Total Suspended Solids.....	996,956.0	488,320.0
pH.....	(¹)	(¹)

¹Within the range of 7.5 to 10.0 at all times.

(h) Subpart L—Furnace Wet Air Pollution Control.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver roasted, smelted, or dried		
English units—pounds per billion pounds of silver roasted, smelted, or dried		
Copper.....	40,888.10	21,519.0
Zinc.....	28,620.27	12,050.64
Ammonia (as N).....	2,862,027.0	1,261,013.40
Total Suspended Solids.....	882,279.0	430,380.0
pH.....	(¹)	(¹)

¹Within the range of 7.5 to 10.0 at all times.

(i) Subpart L—Casting Contact Cooling.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver cast		
English units—pounds per billion pounds of silver cast		
Copper.....	22,866.50	12,035.0
Zinc.....	18,006.55	6,739.60
Ammonia (as N).....	1,600,655.0	705,251.0
Total suspended solids.....	493,435.0	240,700.0
pH.....	(¹)	(¹)

¹Within the range of 7.5 to 10.0 at all times.

(j) Subpart L—Casting Wet Air Pollution Control.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver cast		
English units—pounds per billion pounds of silver cast		
Copper.....	9,007.90	4,741.0
Zinc.....	6,305.53	2,654.96
Ammonia (as N).....	630,553.0	277,822.80
Total suspended solids.....	194,381.0	94,820.0

BPT EFFLUENT LIMITATIONS—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
pH.....	(¹)	(¹)

¹Within the range of 7.5 to 10.0 at all times.

(k) Subpart L—Leaching.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver produced from leaching		
English units—pounds per billion pounds of silver produced from leaching		
Copper.....	5,282.0	2,780.0
Zinc.....	3,697.4	1,556.8
Ammonia (as N).....	369,740.0	162,908.0
Total suspended solids.....	113,980.0	55,600.0
pH.....	(¹)	(¹)

¹Within the range of 7.5 to 10.0 at all times.

(l) Subpart L—Leaching Wet Air Pollution Control.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver produced from leaching		
English units—pounds per billion pounds of silver produced from leaching		
Copper.....	270,539.10	142,389.0
Zinc.....	189,377.37	79,737.84
Ammonia (as N).....	18,937,737.0	8,343,995.40
Total suspended solids.....	5,837,949.0	2,847,780.0
pH.....	(¹)	(¹)

¹Within the range of 7.5 to 10.0 at all times.

(m) Subpart L—Precipitation and Filtration of Nonphotographic Solutions.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver precipitated		
English units—pounds per billion pounds of silver precipitated		
Copper.....	187,298.30	98,577.0
Zinc.....	131,107.41	55,203.12
Ammonia (as N).....	13,110,741.0	5,776,612.20
Total suspended solids.....	4,041,657.0	1,971,540.0
pH.....	(¹)	(¹)

¹Within the range of 7.5 to 10.0 at all times.

(n) Subpart L—Precipitation and Filtration of Nonphotographic Solutions Wet Air Pollution Control.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver precipitated		
English units—pounds per billion pounds of silver precipitated		
Copper.....	151,868.90	79,931.0
Zinc.....	106,308.23	44,761.38
Ammonia (as N).....	10,630,823.0	4,683,956.60
Total suspended solids.....	3,277,171.0	1,598,620.0
pH.....	(¹)	(¹)

¹Within the range of 7.5 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.

Alternative A

Except as provided in 40 CFR 125.30 through 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
Metric units—mg/kg of silver produced from film stripping		
English units—pounds per billion pounds of silver produced from film stripping		
Copper.....	3,076,100.0	1,619,000.0
Zinc.....	2,153,270.0	906,640.0
Ammonia (as N).....	215,327,000.0	

(b) Subpart L—Film Stripping Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver produced from film stripping		
English units—pounds per billion pounds of silver produced from film stripping		
Copper.....	29,602.0	15,580.0
Zinc.....	20,721.0	8,724.8
Ammonia (as N).....	2,072,140.0	912,988.0

(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
Metric units—mg/kg of silver precipitated		
English units—pounds per billion pounds of silver precipitated		
Copper.....	3,516,900.0	1,851,000.0
Zinc.....	2,461,830.0	1,036,560.0
Ammonia (as N).....	246,183,000.0	108,468,600.0

(d) *Subpart L—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
Metric units—mg/kg of silver precipitated		
English units—pounds per billion pounds of silver precipitated		
Copper.....	29,602.0	15,580.0
Zinc.....	20,721.0	8,724.8
Ammonia (as N).....	2,072,140.0	912,988.0

(e) *Subpart L—Precipitation and Filtration of Photographic Solutions*

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver precipitated		
English units—pounds per billion pounds of silver precipitated		
Copper.....	1,622,600.0	854,000.0
Zinc.....	1,135,820.0	478,240.0
Ammonia (as N).....	113,582,000.0	50,044,400.0

(f) *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
Metric units—mg/kg of silver precipitated		
English units—pounds per billion pounds of silver precipitated		
Copper.....	741,570.0	390,300.0
Zinc.....	519,099.0	218,568.0
Ammonia (as N).....	51,909,900.0	22,871,580.0

(g) *Subpart L—Electrolytic Refining.*

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver refined		
English units—pounds per billion pounds of silver refined		
Copper.....	46,200.4	24,316.0
Zinc.....	32,340.28	13,616.96
Ammonia (as N).....	3,234,028.0	1,424,917.60

(h) *Subpart L—Furnace Wet Air Pollution Control.*

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver roasted, smelted, or dried		
English units—pounds per billion pounds of silver roasted, smelted, or dried		
Copper.....	0	0
Zinc.....	0	0
Ammonia (as N).....	0	0

(i) *Subpart L—Casting Contact Cooling.*

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver cast		
English units—pounds per billion pounds of silver cast		
Copper.....	2,287.6	1,204.0
Zinc.....	1,601.32	674.24
Ammonia (as N).....	160,132.0	70,554.40

(j) *Subpart L—Casting Wet Air Pollution Control.*

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver cast		
English units—pounds per billion pounds of silver cast		
Copper.....	9,007.8	4,741.0
Zinc.....	6,305.53	2,654.96
Ammonia (as N).....	630,553.0	277,822.60

(k) *Subpart L—Leaching.*

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly coverage
Metric units—mg/kg of silver produced from leaching		
English units—pounds per billion pounds of silver produced from leaching		
Copper.....	5,282.0	2,780.0
Zinc.....	3,697.4	1,556.8
Ammonia (as N).....	369,740.0	165,662.20

(l) *Subpart L—Leaching Wet Air Pollution Control.*

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly coverage
Metric units—mg/kg of silver produced from leaching		
English units—pounds per billion pounds of silver produced from leaching		
Copper.....	270,539.1	142,389.0
Zinc.....	189,377.37	79,737.84
Ammonia (as N).....	18,937,737.0	8,343,995.40

(m) *Subpart L—Precipitation and Filtration of Nonphotographic.*

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly coverage
Metric units—mg/kg of silver precipitated		
English units—pounds per billion pounds of silver precipitated		
Copper.....	187,296.30	98,577.0
Zinc.....	131,107.41	55,203.12
Ammonia (as N).....	13,110,741.0	5,776,612.20

(n) *Subpart L—Precipitation and Filtration of Nonphotographic.*

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly coverage
Metric units—mg/kg of silver precipitated		
English units—pounds per billion pounds of silver precipitated		
Copper.....	151,868.9	79,931.0
Zinc.....	106,308.23	44,761.36
Ammonia (as N).....	10,630,823.0	4,683,956.60

Alternative B

Except as provided in 40 CFR 125.30 through 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
	Metric units—mg/kg of silver produced from film stripping	
	English units—pounds per billion pounds of silver produced from film stripping	
Copper.....	2,072,320.0	987,590.0
Zinc.....	1,651,380.0	679,980.0
Ammonia (as N).....	215,327,000.0	94,873,400.0

(b) *Subpart L—Film Stripping Wet Air Pollution Control.*

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of silver produced from film stripping	
	English units—pounds per billion pounds of silver produced from film stripping	
Copper.....	19,942.40	9,503.80
Zinc.....	15,891.60	6,543.60
Ammonia (as N).....	2,072,140.0	912,988.0

(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
	Metric units—mg/kg of silver precipitated	
	English units—pounds per billion pounds of silver precipitated	
Copper.....	2,369,280.0	1,129,110.0
Zinc.....	1,888,020.0	777,420.0
Ammonia (as N).....	246,183,000.0	108,468,600.0

(d) *Subpart L—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
	Metric units—mg/kg of silver precipitated	
	English units—pounds per billion pounds of silver precipitated	
Copper.....	19,942.40	9,503.80
Zinc.....	15,891.60	6,543.60
Ammonia (as N).....	2,072,140.0	912,988.0

(e) *Subpart L—Precipitation and Filtration of Photographic Solutions.*

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of silver precipitated	
	English units—pounds per billion pounds of silver precipitated	
Copper.....	1,093,120.0	520,940.0
Zinc.....	871,080.0	358,680.0
Ammonia (as N).....	113,582,000.0	50,044,400.0

(f) *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
	Metric units—mg/kg of silver precipitated	
	English units—pounds per billion pounds of silver precipitated	
Copper.....	499,584.0	238,083.0
Zinc.....	398,106.0	163,926.0
Ammonia (as N).....	51,909,900.0	22,871,580.0

(g) *Subpart L—Electrolytic Refining.*

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of silver refined	
	English units—pounds per billion pounds of silver refined	
Copper.....	31,124.48	14,832.76
Zinc.....	24,802.32	10,212.72
Ammonia (as N).....	3,234,028.0	1,424,917.60

(h) *Subpart L—Furnace Wet Air Pollution Control.*

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of silver roasted, smelted, or dried	
	English units—pounds per billion pounds of silver roasted, smelted, or dried	
Copper.....	0	0
Zinc.....	0	0
Ammonia (as N).....	0	0

(i) *Subpart L—Casting Contact Cooling.*

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of silver cast	
	English units—pounds per billion pounds of silver cast	
Copper.....	1,541.12	734.44
Zinc.....	1,228.08	505.68
Ammonia (as N).....	160,132.0	70,554.40

(j) *Subpart L—Casting Wet Air Pollution Control.*

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of silver cast	
	English units—pounds per billion pounds of silver cast	
Copper.....	6,068.48	2,892.01
Zinc.....	4,835.82	1,991.22
Ammonia (as N).....	630,553.0	277,822.60

(k) *Subpart L—Leaching.*

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of silver produced from leaching	
	English units—pounds per billion pounds of silver produced from leaching	
Copper.....	3,558.4	1,695.8
Zinc.....	2,835.6	1,167.6
Ammonia (as N).....	369,740.0	162,908.0

(l) *Subpart L—Leaching Wet Air Pollution Control.*

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of silver produced from leaching	
	English units—pounds per billion pounds of silver produced from leaching	
Copper.....	162,257.82	86,857.29
Zinc.....	145,236.78	59,803.38
Ammonia (as N).....	18,937,737.00	8,343,995.40

(m) *Subpart L—Precipitation and Filtration of Nonphotographic Solutions.*

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver precipitated		
English units—pounds per billion pounds of silver precipitated		
Copper.....	126,178.56	60,131.97
Zinc.....	100,548.54	41,402.34
Ammonia (as N).....	13,110,741.00	5,776,612.20

(n) Subpart L—Precipitation of Nonphotographic Solutions Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver precipitated		
English units—pounds per billion pounds of silver precipitated		
Copper.....	102,311.68	48,757.91
Zinc.....	81,529.62	33,571.02
Ammonia (as N).....	10,630,823.0	4,683,956.60

§ 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
Metric units—mg/kg of silver produced from film stripping		
English units—pounds per billion pounds of silver produced from film stripping		
Copper.....	2,072,320.0	987,590.0
Zinc.....	1,651,380.0	679,980.0
Ammonia (as N).....	215,327,000.0	94,873,400.0
Total Suspended Solids.....	24,285,000.0	19,428,000.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(b) Subpart L—Film Stripping Wet Air Pollution Control NSPS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver produced from film stripping		
English units—pounds per billion pounds of silver produced from film stripping		
Copper.....	19,942.40	9,503.80
Zinc.....	15,891.60	6,543.60
Ammonia (as N).....	2,072,140.0	912,988.0
Total Suspended Solids.....	233,700.0	186,960.0

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
pH.....	(¹)	(¹)

¹ Within the range of 7.5 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
Metric units—mg/kg of silver precipitated		
English units—pounds per billion pounds of silver precipitated		
Copper.....	2,369,280.0	1,129,110.0
Zinc.....	1,888,020.0	777,420.0
Ammonia (as N).....	248,183,000.0	108,468,600.0
Total Suspended Solids.....	27,765,000.0	22,212,000.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(d) Subpart L—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
Metric units—mg/kg of silver precipitated		
English units—pounds per billion pounds of silver precipitated		
Copper.....	19,942.40	9,503.80
Zinc.....	15,891.60	6,543.60
Ammonia (as N).....	2,072,140.0	912,988.0
Total Suspended Solids.....	233,700.0	186,960.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(e) Subpart L—Precipitation and Filtration of Photographic Solutions NSPS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver precipitated		
English units—pounds per billion pounds of silver precipitated		
Copper.....	1,093,120.0	520,940.0
Zinc.....	871,080.0	358,680.0
Ammonia (as N).....	113,582,000.0	50,044,400.0
Total Suspended Solids.....	12,810,000.0	10,248,000.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(f) 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
Metric units—mg/kg of silver precipitated		
English units—pounds per billion pounds of silver precipitated		
Copper.....	499,584.0	238,083.0
Zinc.....	398,106.0	163,926.0
Ammonia (as N).....	51,909,900.0	22,871,580.0
Total Suspended Solids.....	5,854,500.0	4,683,600.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(g) Subpart L—Electrolytic Refining NSPS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver precipitated		
English units—pounds per billion pounds of silver precipitated		
Copper.....	31,124.48	14,832.76
Zinc.....	24,802.32	10,212.72
Ammonia (as N).....	3,234,028.0	1,424,917.60
Total Suspended Solids.....	364,740.0	291,792.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(h) Subpart L—Furnace Wet Air Pollution Control NSPS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver precipitated		
English units—pounds per billion pounds of silver precipitated		
Copper.....	0	0
Zinc.....	0	0
Ammonia (as N).....	0	0
Total Suspended Solids.....	0	0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(i) Subpart L—Casting Contact Cooling NSPS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver cast		
English units—pounds per billion pounds of silver cast		
Copper.....	1,541.12	734.44
Zinc.....	1,228.08	505.68
Ammonia (as N).....	160,132.0	70,554.40
Total Suspended Solids.....	18,060.0	14,448.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(j) Subpart L—Casting Wet Air Pollution Control NSPS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver cast		
English units—pounds per billion pounds of silver cast		
Copper.....	6,068.48	2,892.01
Zinc.....	4,835.82	1,991.22
Ammonia (as N).....	630,553.0	277,822.60
Total Suspended Solids.....	71,115.0	56,692.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(k) Subpart L—Leaching NSPS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver produced from leaching		
English units—pounds per billion pounds of silver produced from leaching		
Copper.....	3,558.4	1,695.8
Zinc.....	2,835.6	1,167.6
Ammonia (as N).....	369,740.0	182,908.0
Total Suspended Solids.....	41,700.0	33,360.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(l) Subpart L—Leaching Wet Air Pollution Control NSPS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver produced from leaching		
English units—pounds per billion pounds of silver produced from leaching		
Copper.....	182,257.92	86,857.29
Zinc.....	145,236.78	59,803.38
Ammonia (as N).....	18,937,737.0	8,343,995.40
Total Suspended Solids.....	2,135,835.0	1,708,668.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(m) Subpart L—Precipitation and Filtration of Nonphotographic Solutions NSPS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver precipitated		
English units—pounds per billion pounds of silver precipitated		
Copper.....	126,178.56	60,131.97
Zinc.....	100,548.54	41,402.34
Ammonia (as N).....	13,110,741.0	5,776,812.20
Total Suspended Solids.....	1,478,655.0	1,182,924.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(n) Subpart L—Precipitation and Filtration of Nonphotographic Solutions Wet Air Pollution Control NSPS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver precipitated		
English units—pounds per billion pounds of silver precipitated		
Copper.....	102,311.68	48,757.91
Zinc.....	81,529.62	33,571.02
Ammonia (as N).....	10,630,823.0	4,683,956.60
Total Suspended Solids.....	1,198,965.0	959,172.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

§ 421.125 Pretreatment standards for existing sources.

Alternative A

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
Metric units—mg/kg of silver produced from film stripping		
English units—pounds per billion pounds of silver produced from film stripping		
Copper.....	3,078,100.0	1,619,000.0
Zinc.....	2,153,270.0	906,640.0
Ammonia (as N).....	215,327,000.0	94,873,400.0

(b) Subpart L—Film Stripping Wet Air Pollution Control PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver produced from film stripping		
English units—pounds per billion pounds of silver produced from film stripping		
Copper.....	29,602.0	15,560.0
Zinc.....	20,721.0	8,724.6
Ammonia (as N).....	2,072,140.0	912,988.0

(c) Subpart L—Precipitation and Filtration of Film Stripping Solutions PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver precipitated		
English units—pounds per billion pounds of silver precipitated		
Copper.....	3,516,900.0	1,851,000.0
Zinc.....	2,401,830.0	1,036,560.0
Ammonia (as N).....	246,133,000.0	108,468,6000.0

(d) Subpart L—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
Metric units—mg/kg of silver precipitated		
English units—pounds per billion pounds of silver precipitated		
Copper.....	29,602.0	15,560.0
Zinc.....	20,721.0	8,724.8
Ammonia (as N).....	2,072,140.0	912,988.0

(e) Subpart L—Precipitation and Filtration of Photographic Solutions PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver precipitated		
English units—pounds per billion pounds of silver precipitated		
Copper.....	1,622,600.0	854,000.0
Zinc.....	1,135,820.0	478,240.0
Ammonia (as N).....	113,582,000.0	50,044,400.0

(f) 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
Metric units—mg/kg of silver precipitated		
English units—pounds per billion pounds of silver precipitated		
Copper.....	741,570.0	390,300.0
Zinc.....	519,099.0	218,568.0
Ammonia (as N).....	51,909,900.0	22,871,580.0

(g) Subpart L—Electrolytic Refining PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kkg of silver refined	
	English units—pounds per billion pounds of silver refined	
Copper.....	46,200.4	24,316.0
Zinc.....	32,304.28	13,616.96
Ammonia (as N).....	3,234,028.0	1,424,917.60

(h) Subpart L—Furnace Wet Air Pollution Control PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kkg of silver roasted, smelted, or dried	
	English units—pounds per billion pounds of silver roasted, smelted, or dried	
Copper.....	0	0
Zinc.....	0	0
Ammonia (as N).....	0	0

(i) Subpart L—Casting Contact Cooling PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kkg of silver cast	
	English units—pounds per billion pounds of silver cast	
Copper.....	2,287.6	1,204.0
Zinc.....	1,601.32	674.24
Ammonia (as N).....	160,132.0	70,554.40

(j) Subpart L—Casting Wet Air Pollution Control PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kkg of silver cast	
	English units—pounds per billion pounds of silver cast	
Copper.....	9,007.8	4,741.0
Zinc.....	6,305.53	2,654.96
Ammonia (as N).....	630,553.0	277,822.60

(k) Subpart L—Leaching PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kkg of silver produced from leaching	
	English units—pounds per billion pounds of silver produced from leaching	
Copper.....	5,282.0	2,780.0
Zinc.....	3,697.4	1,556.8
Ammonia (as N).....	369,740.0	165,662.20

(l) Subpart L—Leaching Wet Air Pollution Control PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kkg of silver produced from leaching	
	English units—pounds per billion pounds of silver produced from leaching	
Copper.....	270,539.1	142,389.0
Zinc.....	189,377.37	79,737.84
Ammonia (as N).....	18,937,737.0	8,343,995.40

(m) Subpart L—Precipitation and Filtration of Nonphotographic Solutions PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kkg of silver precipitated	
	English units—pounds per billion pounds of silver precipitated	
Copper.....	187,296.30	98,577.0
Zinc.....	131,107.41	55,203.12
Ammonia (as N).....	13,110,741.0	5,776,612.20

(n) Subpart L—Precipitation and Filtration of Nonphotographic Solutions Wet Air Pollution Control PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kkg of silver precipitated	
	English units—pounds per billion pounds of silver precipitated	
Copper.....	151,868.9	79,931.0
Zinc.....	106,306.23	44,761.36
Ammonia (as N).....	10,630,823.0	4,683,956.60

Alternative B

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
	Metric units—mg/kkg of silver produced from film stripping	
	English units—pounds per billion pounds of silver produced from film stripping	
Copper.....	2,072,320.0	987,590.0
Zinc.....	1,651,380.0	679,980.0
Ammonia (as N).....	215,327,000.0	94,873,400.0

(b) Subpart L—Film Stripping Wet Air Pollution Control PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kkg of silver produced from film stripping	
	English units—pounds per billion pounds of silver produced from film stripping	
Copper.....	19,942.40	9,503.80
Zinc.....	15,891.60	8,543.60
Ammonia (as N).....	2,072,140.0	912,988.0

(c) Subpart L—Precipitation and Filtration of Film Stripping Solutions PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kkg of silver precipitated	
	English units—pounds per billion pounds of silver precipitated	
Copper.....	2,369,280.0	1,129,110.0
Zinc.....	1,888,020.0	777,420.0
Ammonia (as N).....	246,183,000.0	108,468,600.0

(d) Subpart L—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
	Metric units—mg/kkg of silver precipitated	
	English units—pounds per billion pounds of silver precipitated	
Copper.....	19,942.40	9,503.80
Zinc.....	15,891.60	6,543.60

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Ammonia (as N)	2,072,140.0	912,988.0

(e) Subpart L—Precipitation and Filtration of Photographic Solutions PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver precipitated		
English units—pounds per billion pounds of silver precipitated		
Copper	1,093,120.0	520,840.0
Zinc	871,080.0	358,680.0
Ammonia (as N)	113,582,000.0	50,044,400.0

(f) 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
Metric units—mg/kg of silver precipitated		
English units—pounds per billion pounds of silver precipitated		
Copper	499,584.0	238,083.0
Zinc	398,106.0	163,926.0
Ammonia (as N)	51,909,900.0	22,871,580.0

(g) Subpart L—Electrolytic Refining PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver refined		
English units—pounds per billion pounds of silver refined		
Copper	31,124.48	14,832.76
Zinc	24,802.32	10,212.72
Ammonia (as N)	3,234,028.0	1,424,917.60

(h) Subpart L—Furnace Wet Air Pollution Control PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver roasted, smelted, or dried		
English units—pounds per billion pounds of silver roasted, smelted or dried		
Copper	0	0
Zinc	0	0

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Ammonia (as N)	0	0

(i) Subpart L—Casting Contact Cooling PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver cast		
English units—pounds per billion pounds of silver cast		
Copper	1,541.12	734.44
Zinc	1,228.08	505.68
Ammonia (as N)	160,132.0	70,554.40

(j) Subpart L—Casting Wet Air Pollution Control PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver cast		
English units—pounds per billion pounds of silver cast		
Copper	6,068.48	2,892.01
Zinc	4,835.82	1,991.22
Ammonia (as N)	630,553.0	277,822.60

(k) Subpart L—Leaching PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver produced from leaching		
English units—pounds per billion pounds of silver produced from leaching		
Copper	3,558.40	1,695.80
Zinc	2,835.60	1,167.60
Ammonia (as N)	369,740.0	162,908.0

(l) Subpart L—Leaching Wet Air Pollution Control PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver produced from leaching		
English units—pounds per billion pounds of silver produced from leaching		
Copper	182,257.92	86,857.29
Zinc	145,236.78	59,803.38
Ammonia (as N)	18,937,737.0	8,343,995.40

(m) Subpart L—Precipitation and Filtration of Nonphotographic Solutions PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver precipitated		
English units—pounds per billion pounds of silver precipitated		
Copper	126,178.56	60,131.97
Zinc	100,548.54	41,402.34
Ammonia (as N)	13,110,741.0	5,776,612.20

(n) Subpart L—Precipitation and Filtration of Nonphotographic Solutions Wet Air Pollution Control PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver precipitated		
English units—pounds per billion pounds of silver precipitated		
Copper	102,311.68	48,757.91
Zinc	81,529.62	33,571.02
Ammonia (as N)	10,630,823.0	4,683,956.60

§ 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
Metric units—mg/kg of silver produced from film stripping		
English units—pounds per billion pounds of silver produced from film stripping		
Copper	2,072,320.0	987,590.0
Zinc	1,651,380.0	679,980.0
Ammonia (as N)	2*5,327,000.0	84,873,400.0

(b) Subpart L—Film Stripping Wet Air Pollution Control PSNS.

(f) 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
Metric units—mg/kg of silver precipitated		
English units—pounds per billion pounds of silver precipitated		
Copper.....	499,584.0	238,083.0
Zinc.....	398,106.0	163,926.0
Ammonia (as N).....	51,909,900.0	22,871,580.0

(g) Subpart L—Electrolytic Refining PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver refined		
English units—pounds per billion pounds of silver refined		
Copper.....	31,124.48	14,832.76
Zinc.....	24,802.32	10,212.72
Ammonia (as N).....	3,234,028.00	1,424,917.60

(h) Subpart L—Furnace Wet Air Pollution Control PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver roasted, smelted, or dried		
English units—pounds per billion pounds of silver roasted, smelted, or dried		
Copper.....	0	0
Zinc.....	0	0
Ammonia (as N).....	0	0

(i) Subpart L—Casting Contact Cooling PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver cast		
English units—pounds per billion pounds of silver cast		
Copper.....	1,541.12	734.44
Zinc.....	1,228.08	505.68
Ammonia (as N).....	160,132.0	70,554.40

(j) Subpart L—Casting Wet Air Pollution Control PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver cast		
English units—pounds per billion pounds of silver cast		
Copper.....	126,178.56	60,131.97
Zinc.....	100,548.54	41,402.34
Ammonia (as N).....	13,110,741.0	5,776,612.20

(n) Subpart L—Precipitation and Filtration of Nonphotographic Solutions Wet Air Pollution Control PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver produced from leaching		
English units—pounds per billion pounds of silver produced from leaching		
Copper.....	3,558.40	1,695.80
Zinc.....	2,835.60	1,167.60
Ammonia (as N).....	369,740.0	162,908.0

(l) Subpart L—Leaching Wet Air Pollution Control PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver produced from leaching		
English units—pounds per billion pounds of silver produced from leaching		
Copper.....	182,257.92	86,857.29
Zinc.....	145,236.78	59,803.38
Ammonia (as N).....	18,937,737.0	8,343,995.40

(m) Subpart L—Precipitation and Filtration of Nonphotographic Solutions PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver precipitated		
English units—pounds per billion pounds of silver precipitated		
Copper.....	126,178.56	60,131.97
Zinc.....	100,548.54	41,402.34
Ammonia (as N).....	13,110,741.0	5,776,612.20

(k) Subpart L—Leaching PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver cast		
English units—pounds per billion pounds of silver cast		
Copper.....	6,068.48	2,892.01
Zinc.....	4,835.82	1,991.22
Ammonia (as N).....	630,553.0	277,822.60

(c) Subpart L—Precipitation and Filtration of Film Stripping Solutions PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver produced from film stripping		
English units—pounds per billion pounds of silver produced from film stripping		
Copper.....	19,942.40	9,503.80
Zinc.....	15,891.60	6,543.60
Ammonia (as N).....	2,072,140.0	912,988.0

(d) Subpart L—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
Metric units—mg/kg of silver precipitated		
English units—pounds per billion pounds of silver precipitated		
Copper.....	2,369,280.0	1,129,110.0
Zinc.....	1,888,020.0	777,420.0
Ammonia (as N).....	246,183,000.0	108,468,600.0

(e) Subpart L—Precipitation and Filtration of Photographic Solutions PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver precipitated		
English units—pounds per billion pounds of silver precipitated		
Copper.....	19,942.40	9,503.80
Zinc.....	15,891.60	6,543.60
Ammonia (as N).....	2,072,140.00	912,988.00

(e) Subpart L—Precipitation and Filtration of Photographic Solutions PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver precipitated		
English units—pounds per billion pounds of silver precipitated		
Copper.....	1,093,120.0	520,940.0
Zinc.....	871,080.0	358,680.0
Ammonia (as N).....	113,582,000.0	50,044,400.0

(e) Subpart L—Precipitation and Filtration of Photographic Solutions PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver precipitated		
English units—pounds per billion pounds of silver precipitated		
Copper.....	1,093,120.0	520,940.0
Zinc.....	871,080.0	358,680.0
Ammonia (as N).....	113,582,000.0	50,044,400.0

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver precipitated		
English units—pounds per billion pounds of silver precipitated		
Copper.....	102,311.68	48,757.91
Zinc.....	81,529.62	33,571.02
Ammonia (as N).....	10,630,823.0	4,683,956.60

§ 421.27 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology.

Except as provided in 40 CFR 125.30 through 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 conventional pollution control technology:

(a) Subpart L—Film Stripping.

BCT EFFLUENT LIMITATIONS

Pollutants or pollutants property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver produced from film stripping		
English units—pounds per billion pounds of silver produced from film stripping		
Total suspended solids.....	66,379,000.0	32,380,000.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(b) Subpart L—Film Stripping Wet Air Pollution Control.

BCT EFFLUENT LIMITATIONS

Pollutants or pollutants property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver produced from film stripping		
English units—pounds per billion pounds of silver produced from film stripping		
Total suspended solids.....	638,780.0	311,600.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(c) Subpart L—Precipitation and Filtration of Film Stripping Solutions.

BCT EFFLUENT LIMITATIONS

Pollutants or pollutants property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver precipitated		
English units—pounds per billion pounds of silver precipitated		
Total suspended solids.....	75,891,000.0	37,020,000.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(d) Subpart L—Precipitation and Filtration of Film Stripping Solutions Wet Air Pollution Control.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver precipitated		
English units—pounds per billion pounds of silver precipitated		
Total suspended solids.....	638,780.0	311,600.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(e) Subpart L—Precipitation and Filtration of Photographic Solutions.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver precipitated		
English units—pounds per billion pounds silver precipitated		
Total suspended solids.....	35,014,000.0	17,080,000.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(f) Subpart L—Precipitation and Filtration of Photographic Solutions Wet Air Pollution Control.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver precipitated		
English units—pounds per billion pounds of silver precipitated		
Total suspended solids.....	16,002,300.0	7,806,000.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(g) Subpart L—Electrolytic Refining.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver refined		
English units—pounds per billion pounds of silver refined		
Total Suspended Solids.....	896,856.0	486,320.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(h) Subpart L—Furnace Wet Air Pollution Control.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver roasted, smelted, or dried		
English units—pounds per billion pounds of silver roasted, smelted or dried		
Total Suspended Solids.....	882,279.0	430,380.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(i) Subpart L—Casting Contact Cooling.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver cast		
English units—pounds per billion pounds of silver cast		
Total Suspended Solids.....	493,435.0	240,700.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(j) Subpart L—Casting Wet Air Pollution Control.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of silver cast		
English units—pounds per billion pounds of silver cast		
Total Suspended Solids.....	194,381.0	94,820.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(k) Subpart L—Leaching.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of silver produced from leaching	
	English units—pounds per billion pounds of silver produced from leaching	
Total Suspended Solids.....	113,980.0	55,600.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(l) Subpart L—Leaching Wet Air Pollution Control.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of silver produced from leaching	
	English units—pounds per billion pounds of silver produced from leaching	
Total Suspended Solids.....	5,837,949.0	2,847,780.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(m) Subpart L—Precipitation and Filtration of Nonphotographic Solutions.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of silver precipitated	
	English units—pounds per billion pounds of silver precipitated	
Total Suspended Solids.....	4,041,657.0	1,971,540.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(n) Subpart L—Precipitation and Filtration of Nonphotographic Solutions Wet Air Pollution Control.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of silver precipitated	
	English units—pounds per billion pounds of silver precipitated	
Total Suspended Solids.....	3,277,171.0	1,598,620.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

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 through 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
	Metric units—mg/kg of lead scrap produced	
	English units—pounds per billion pounds of lead scrap produced	
Antimony.....	2,697.80	1,193.80
Arsenic.....	1,964.60	808.40
Lead.....	141.0	122.20
Zinc.....	1,250.20	528.40
Ammonia (as N).....	0.0	0.0
Total Suspended Solids.....	38,540.0	18,800.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(b) Subpart M—Blast and Reverberatory Furnace Wet Air Pollution Control.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of lead produced from smelting	
	English units—pounds per billion pounds of lead produced from smelting	
Antimony.....	9,700.60	4,292.60
Arsenic.....	7,064.20	2,908.80
Lead.....	507.0	439.40
Zinc.....	4,495.40	1,892.80
Ammonia (as N).....	0.0	0.0
Total Suspended Solids.....	138,580.0	67,600.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 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
	Metric units—mg/kg of lead produced from kettle furnaces	
	English units—pounds per billion pounds of lead produced from kettle furnaces	
Antimony.....	0	0
Arsenic.....	0	0
Lead.....	0	0
Zinc.....	0	0
Ammonia (as N).....	0	0
Total Suspended Solids.....	0	0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(d) Subpart M—Casting Contact Cooling.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of lead cast	
	English units—pounds per billion-pounds of lead cast	
Antimony.....	634.84	280.92
Arsenic.....	462.31	190.23
Lead.....	33.18	28.76
Zinc.....	294.20	123.87
Ammonia (as N).....	0.0	0.0
Total Suspended Solids.....	9,069.20	4,424.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 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.

Alternate A

Except as provided in 40 CFR 125.30 through 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
	Metric units—mg/kg of lead scrap produced	
	English units—pounds per billion pounds of lead scrap produced	
Antimony.....	1,931.51	654.71
Arsenic.....	1,406.57	578.78
Lead.....	100.95	87.49
Zinc.....	895.09	376.88
Ammonia (as N).....	0.0	0.0

(b) Subpart M—Blast and Reverberatory Furnace Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of lead produced from smelting	
	English units—pounds per billion pounds of lead produced from smelting	
Antimony.....	7,490.7	3,314.7
Arsenic.....	5,454.9	2,244.6
Lead.....	391.5	339.3
Zinc.....	3,471.30	1,461.6
Ammonia (as N).....	0.0	0.0

(c) Subpart M—Kettle Wet Air Pollution Control.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of lead produced from kettle furnaces	
	English units—pounds per billion pounds of lead produced from kettle furnaces	
Antimony.....	0	0
Arsenic.....	0	0
Lead.....	0	0
Zinc.....	0	0
Ammonia (as N).....	0	0

(d) Subpart M—Casting Contact Cooling.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of lead cast	
	English units—pounds per billion pounds of lead cast	
Antimony.....	63.43	28.07
Arsenic.....	46.19	19.01
Lead.....	3.32	2.67
Zinc.....	29.39	12.38
Ammonia (as N).....	0.0	0.0

Alternative B

Except as provided in 40 CFR 125.30 through 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 LIMITATION

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of lead scrap produced	
	English units—pounds per billion pounds of lead scrap produced	
Antimony.....	94.22	40.38
Arsenic.....	935.47	383.61
Lead.....	67.30	60.57
Zinc.....	686.46	282.66
Ammonia (as N).....	0.0	0.0

(b) Subpart M—Blast and Reverberatory Furnace Wet Air Pollution Control.

BAT EFFLUENT LIMITATION

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of lead produced from smelting	
	English units—pounds per billion pounds of lead produced from smelting	
Antimony.....	365.40	156.60
Arsenic.....	3,627.90	1,487.70
Lead.....	261.0	234.90
Zinc.....	2,662.20	1,096.20
Ammonia (as N).....	0.0	0.0

(c) Subpart M—Kettle Wet Air Pollution Control.

BAT EFFLUENT LIMITATION

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of lead produced from kettle furnaces	
	English units—pounds per billion pounds of lead produced from kettle furnaces	
Antimony.....	0	0
Arsenic.....	0	0
Lead.....	0	0
Zinc.....	0	0
Ammonia (as N).....	0	0

(d) Subpart M—Casting Contact Cooling.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of lead cast	
	English units—pounds per billion pounds of lead cast	
Antimony.....	3.09	1.33
Arsenic.....	30.72	12.60
Lead.....	2.21	1.99
Zinc.....	22.54	9.28
Ammonia (as N).....	0.0	0.0

§ 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
	Metric units—mg/kg of lead scrap produced	
	English units—pounds per billion pounds of lead scrap produced	
Antimony.....	94.22	40.38
Arsenic.....	935.47	383.61
Lead.....	67.30	60.57
Zinc.....	686.46	282.66
Ammonia (as N).....	0.0	0.0
Total Suspended Solids.....	10,095.0	8,076.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(b) Subpart M—Blast and Reverberatory Furnace Wet Air Pollution Control NSPS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of lead produced from smelting	
	English units—pounds per billion pounds of lead produced from smelting	
Antimony.....	365.40	156.60
Arsenic.....	3,627.90	1,487.70
Lead.....	261.0	234.90
Zinc.....	2,662.20	1,096.20
Ammonia (as N).....	0	0
Total Suspended Solids.....	39,150.0	31,320.0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 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
	Metric units—mg/kg of lead produced from kettle furnaces	
	English units—pounds per billion pounds of lead produced from kettle furnaces	
Antimony.....	0	0
Arsenic.....	0	0
Lead.....	0	0
Zinc.....	0	0
Ammonia (as N).....	0	0
Total Suspended Solids.....	0	0
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(d) Subpart M—Casting Contact Cooling NSPS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of cast		
English units—pounds per billion pounds of lead cast		
Antimony.....	3.09	1.33
Arsenic.....	30.72	12.60
Lead.....	2.21	1.99
Zinc.....	22.54	9.28
Ammonia (as N).....	0.0	0.0
Total Suspended Solids.....	331.50	265.20
pH.....	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

§ 421.135 Pretreatment standards for existing sources.

Alternative A.

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
Metric units—mg/kg of lead scrap produced		
English units—pounds per billion pounds of lead scrap produced		
Antimony.....	1,931.51	854.71
Arsenic.....	1,406.57	578.78
Lead.....	100.85	87.49
Zinc.....	895.09	376.88
Ammonia (as N).....	0.0	0.0

(b) Subpart M—Blast and Reverberatory Furnace Wet Air Pollution Control PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of lead scrap produced		
English units—pounds per billion pounds of lead scrap produced		
Antimony.....	1,931.51	854.71
Arsenic.....	1,406.57	578.78
Lead.....	100.85	87.49
Zinc.....	895.09	376.88
Ammonia (as N).....	0.0	0.0

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of lead produced from smelting		
English units—pounds per billion pounds of lead produced from smelting		
Antimony.....	7,490.7	3,314.7
Arsenic.....	5,454.9	2,244.6
Lead.....	391.5	339.3
Zinc.....	3,471.30	1,461.6
Ammonia (as N).....	0.0	0.0

(c) Subpart M—Kettle Wet Air Pollution Control PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of lead produced from kettle furnaces		
English units—pounds per billion pounds of lead produced from kettle furnaces		
Antimony.....	0	0
Arsenic.....	0	0
Lead.....	0	0
Zinc.....	0	0
Ammonia (as N).....	0	0

(d) Subpart M—Casting Contact Cooling PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of lead cast		
English units—pounds per billion pounds of lead cast		
Antimony.....	63.43	28.07
Arsenic.....	46.19	19.01
Lead.....	3.32	2.87
Zinc.....	29.39	12.38
Ammonia (as N).....	0.0	0.0

Alternative B

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
Metric units—mg/kg of lead scrap produced		
English units—pounds per billion pounds of lead scrap produced		
Antimony.....	94.22	40.38
Arsenic.....	935.47	383.61
Lead.....	67.30	60.57
Zinc.....	686.46	282.66
Ammonia (as N).....	0.0	0.0

(b) Subpart M—Blast and Reverberatory Furnace Wet Air Pollution Control PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of lead produced from smelting		
English units—pounds per billion pounds of lead produced from smelting		
Antimony.....	365.40	156.60
Arsenic.....	3,627.90	1,487.70
Lead.....	261.0	234.90
Zinc.....	2,662.20	1,096.20
Ammonia (as N).....	0.0	0.0

(c) Subpart M—Kettle Wet Air Pollution Control PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of lead produced from kettle furnaces		
English units—pounds per billion pounds of lead produced from kettle furnaces		
Antimony.....	0	0
Arsenic.....	0	0
Lead.....	0	0
Zinc.....	0	0
Ammonia (as N).....	0	0

(d) Subpart M—Casting Contact Cooling PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of lead cast		
English units—pounds per billion pounds of lead cast		
Antimony.....	3.09	1.33
Arsenic.....	30.72	12.60
Lead.....	2.21	1.99
Zinc.....	22.54	9.28
Ammonia (as N).....	0.0	0.0

§ 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 PSES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of lead scrap produced		
English units—pounds per billion pounds of lead scrap produced		
Antimony	94.22	40.38
Arsenic	935.47	383.61
Lead	67.30	60.57
Zinc	686.46	282.66
Ammonia (as N)	0.0	0.0

(b) Subpart M—Blast and Reverberatory Furnace Wet Air Pollution Control PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of lead produced from smelting		
English units—pounds per billion pounds of lead produced from smelting		
Antimony	365.4	156.6
Arsenic	3,627.9	1,487.7
Lead	261.0	234.9
Zinc	2,662.2	1,096.2
Ammonia (as N)	0	0

(c) Subpart M—Kettle Wet Air Pollution Control PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of lead produced from kettle furnaces		
English units—pounds per billion pounds of lead produced from kettle furnaces		
Antimony	0	0
Arsenic	0	0
Lead	0	0
Zinc	0	0
Ammonia (as N)	0	0

(d) Subpart M—Casting Contact Cooling PSNS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of lead cast		
English units—pounds per billion pounds of lead cast		
Antimony	3.09	1.33
Arsenic	30.72	12.60
Lead	2.21	1.99
Zinc	22.54	9.28
Ammonia (as N)	0.0	0.0

§ 421.137 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology.

Except as provided in 40 CFR 125.30 through 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 conventional pollution control technology:

(a) Subpart M—Battery Cracking.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of lead scrap produced		
English units—pounds per billion pounds of lead scrap produced		
Total Suspended Solids	36,540.0	18,600.0
pH	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all time.

(b) Subpart M—Blast and Reverberatory Furnace Wet Air Pollution Control.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of lead produced from smelting		
English units—pounds per billion pounds of lead produced from smelting		
Total Suspended Solids	136,580.0	87,600.0
pH	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(c) Subpart M—Kettle Wet Air Pollution Control.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of lead produced from kettle furnaces		
English units—pounds per billion pounds of lead produced from kettle furnaces		
Total Suspended Solids	0	0
pH	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

(d) Subpart M—Casting Contact Cooling.

BCT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Metric units—mg/kg of lead cast		
English units—pounds per billion pounds of lead cast		
Total Suspended Solids	9,069.20	4,424.0
pH	(¹)	(¹)

¹ Within the range of 7.5 to 10.0 at all times.

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