ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 421

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 and best available 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 August 27, 1984.

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 the National Technical Information Service, Springfield, Virginia 22161 (703/487-6000), or from Mr. James R. Berlow, Effluent Guidelines Division, U.S. Environmental Protection Agency 401 M Street, SW., Washington, DC 20460 or call 202/382-7151. The economic analysis may be obtained from Mr. Mark Kohorst, Economic Analysis Staff (WH-586), U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460, or call 202/382-5397

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 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.

These proposed regulations are supported by three major documents available on a limited basis from EPA and the National Technical Information Service. 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 Phase II Points Source Category* and the subcategory supplements. However, substantial portions of the subcategory supplements have been claimed confidential for fourteen subcategories. As a result, EPA cannot make those portions of these fourteen supplements public without first following the procedures set out in 40 CFR Part 2. 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.

Organization of This Notice

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.C.C. 1979), modified by additional orders of October 26, 1982, August 2, 1983, and January 6, 1984.

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 dischargers to publicly owned treatment works ("POTW") were subject to pretreatment standards under section 307 (b) and (c) of the Act. The requirements for direct dischargers were to be incorporated into National Pollutant Discharge Elimination System (NPDES) 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 dischargers 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, sections 304(c) and 306 of the Act required promulgation of regulations for NSPS, and sections 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 October 26, 1982, August 2, 1983, and January 6, 1984.

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 of 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 demanding pollutants (BOD5), total suspended solids (TSS), fecal 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.)

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

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 these proposed regulations is to provide effluent limitations guidelines for BPT and BAT, and to establish NSPS, pretreatment standards for existing sources (PSES), and pretreatment standards for new sources (PSNS), under section 301, 304, 306, 307, and 501 of the Clean Water Act.

B. Prior EPA Regulations

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

Nonferrous Phase I. On March 8, 1984 EPA promulgated rules for nonferrous metals manufacturing phase I (49 FR 8742), which established BPT, BAT, NSPS, PSES, and PSNS for 12 subcategories. They are: primary aluminum, copper smelting, copper electrolytic refining, lead, zinc, columbium-tantalum, and tungsten; secondary aluminum, silver, copper, lead and metallurgical acid plants.

Bauxite Refining Subcategory. EPA has promulgated BPT, BAT, NSPS, and PSNS in this subcategory 39 FR 12822 (March 26, 1974). BPT, BAT, NSPS, and PSNS are based on zero discharge of process wastewater, but do allow for a monthly net precipitation discharge from red mud impoundments. We are providing notice today that we are considering whether to establish more stringent effluent limitations controlling selected phenolic compounds contained in the net precipitation discharge currently allowed from bauxite refining plants.

Metallurgical Acid Plants. This subcategory was initially established in 1980, and at that time included only acid plants (*i.e.*, plants recovering byproduct 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; and consequently the applicability of the metallurgical acid plant subcategory was expanded to include these sources in the phase I regulation finalized on March 8, 1984 (49 FR 8742). We are proposing today to amend the existing regulation for metallurgical acid plants by modifying the applicability of the metallurgical acid plant subcategory to include molybdenum acid plants as well.

C. Overview of the Category

The nonferrous metals manufacturing category is comprised of plants that process ore concentrates and scrap metals contained in spent electroplating solutions, spent catalysts, old jewelry, and various other sources. These plants recover nonferrous metals by increasing the metal purity contained in these materials. Depending on the metal and the desired purity, hydrometallurgical or pyrometallurgical exchange operations may be used to purify and upgrade metal values.

The production of nonferrous metals sometimes occurs at plants that also have processes that are regulated as part of other point source categories. Many of the production operations characterizing the nonferrous metals manufacturing category follow mining and milling operations. The ore mining and dressing category includes the extraction of the ore from the ground and the subsequent beneficiation of the ore including gravity concentration, magnetic separation, electrostatic separation, froth flotation, and leaching to produce ore concentrates. The ore concentrates and scrap materials form the raw materials in the nonferrous metals manufacturing subcategories.

Following smelting, refining, or extraction of metal values included in the nonferrous metals manufacturing category, the metal or metal salt products are used as raw materials for such operations as forming, alloying, and the manufacture of inorganic chemicals. Operations such as these, where the metal purity is not increased, are covered by other point source categories. In many of the nonferrous metals manufacturing subcategories, the production operations cease with the casting of the smelted or refined metal. Recasting of the metal without refining for use in subsequent forming or alloying operations is covered by the Aluminum Forming, Nonferrous Metals Forming, or Metal Molding and Casting Point Source Categories.

EPA has divided the nonferrous metals category into separate segments (nonferrous metals manufacturing phase I and nonferrous metals manufacturing phase II), in keeping with Agency priorities to regulate initially those plants which generate the largest quantities of toxic pollutants. As a result, EPA promulgated regulations for nonferrous metals manufacturing phase I (49 FR 8742) on March 8, 1984. Twelve subcategories were addressed: primary aluminum, copper smelting, copper electrolytic refining, lead, zinc, columbium-tantalum, and tungsten; secondary aluminum, silver, copper, lead, and metallurgical acid plants.

EPA also has separately studied the forming or casting of nonferrous metals. EPA promulgated regulations for aluminum forming (48 FR 49126) in October, 1983, and for copper forming (48 FR 36942) in August, 1983. Proposed regulations for metal molding and casting (47 FR 51512) were published in November, 1982. Proposed regulations for forming of nonferrous metals other than aluminum and copper (49 FR 8112) were published on March 5, 1984.

Today's rulemaking focuses on the remaining segment of nonferrous metals manufacturing. The proposed regulatory strategy for nonferrous metals manufacturing phase II addresses the following 24 subcategories:

Primary antimony,
Bauxite refining,
Primary beryllium,
Primary boron,
Primary cesium and rubidium,
Primary and secondary germanium and gallium,
Secondary indium,
Primary lithium,
Primary magnesium,
Secondary mercury,
Primary molybdenum and rhenium,
Secondary molybdenum and vanadium,
Primary nickel and cobalt,
Secondary nickel,
Primary precious metals and mercury,
Secondary precious metals,
Primary rare earth metals,
Secondary tantalum,
Primary and secondary tin,
Primary and secondary titanium,
Secondary tungsten and cobalt,
Secondary uranium,
Secondary zinc, and
Primary zirconium and hafnium.

EPA is proposing to completely exclude three of these subcategories from regulation. Primary lithium and secondary zinc are excluded because the production of these metals does not require process water, and the production of magnesium does not produce wastewater with treatable concentrations of pollutants. The remaining 21 subcategories in nonferrous metals manufacturing phase II contain 34 primary metals and metal groups, 20 secondary metals and metal groups, and bauxite refining. 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. 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). Four of these metals which were excluded from regulation on May 10, 1979—primary antimony, primary tin, secondary molybdenum, and secondary tantalum—have since been reconsidered and are now included in this rulemaking based on information received during the data collection portion of the study basic to this rulemaking. An explanation of this, along with an explanation of the revised list of metal production processes proposed for exclusion from regulation is provided in section XVI.

There are 141 plants in the 21 regulated phase II subcategories which EPA estimates employ 13,500 people and annually generate raw wastes containing approximately 905,000 kilograms of toxic pollutants. There are 32 direct dischargers which currently discharge 307,000 kg/yr of toxic pollutants and there are 38 indirect dischargers which currently discharge an additional 67,000 kg/yr of toxics. There are 71 plants in this category that do not discharge process wastewater. In the three subcategories that we are proposing not to regulate there is one direct discharger and 13 plants that do not discharge wastewater.

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

A brief description of each of the 21 subcategories for which regulations are proposed is provided below, with particular emphasis on the sources of wasterwater 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 for each of the wastewater sources identified below. The effluent limitations for an individual plant would then be calculated by considering the discharge allowances for those wastewater sources actually present at the plant. (See discussion of building blocks in section VIII below.)

Primary Antimony. Seven of the eight primary antimony plants in the United States are zero dischargers. One primary antimony plant is a direct discharger. The eight plants are geographically scattered, located in seven states across the country. The oldest plant was built in the 1880's, and three others are more than 30 years old. Two plants have been built within the last 10 years. EPA data show that average plant production is approximately 500 kkg per year of antimony and antimony compounds.

The processes used at a primary antimony production facility depend largely on the raw material used and the final produce desired. Pyrometallurgical processing, practiced at five of the eight primary antimony plants, generates no process wastewater. Hydrometallurgical processing, practiced at the remaining three plants, includes the four basic steps which are discussed below.

The first step involves leaching of the ore concentrate with sodium hydroxide to dissolve the antimony. Solids are removed from the resulting slurry by thickening and filtration. The residue is either disposed of or further processed to recover other metals.

The second step involves autoclaving the clarified solution from the leaching process with oxygen. Autoclaving produces sodium antimonate which is dried, packaged, and sold.

The third step involves electrowinning to produce antimony metal from the clarified leaching liquor. Antimony is removed from the solution as cathode metal, and the spent electrolyte is recycled to the leaching operation.

In the fourth step, antimony metal is coverted to antimony trioxide in a fuming furnace. The product of this pyrometallurgical process is captured in a baghouse and sold.

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

(1) *Sodium antimonate autoclave* wastewater is generated when the clarified solution from leaching is autoclaved. Dissolved antimony is converted to sodium antimonate as a final product. This stream is similar to fouled anolyte and contains suspended solids and toxic metals.

(2) *Fouled anolyte* is generated when a portion of the barren electrowinning solution is discharged. This waste stream contains suspended solids and toxic metals.

Bauxite Refining. Of the eight bauxite refining plants in the United States, three are direct dischargers and five are zero dischargers. Seven of the plants are located in the states of Louisiana, Texas, Arkansas, and Alabama. The other plant is located in the U.S. Virgin Islands. Plant age ranges from 15 to 44 years with an average of about 30 years. EPA data show that plant production ranges from 37,000 to 570,000 kkg per year; one of the plants is closed but continues to discharge and four of the remaining eight plants produce between 200,000 and 300,000 kkg per year, measured as aluminum contained in refined bauxite.

The processes used at a bauxite refinery depend largely on the raw material used and the final product desired. In general, plants use the Bayer process or a variation known as the combination process. The four basic steps in the Bayer process which an individual plant may utilize are discussed below.

The first step involves bauxite grinding and digestion. Bauxite ore is crushed, wet-ground with a caustic solution, and digested with sodium hydroxide or lime and sodium carbonate to convert the alumina in the ore to soluble sodium aluminate. The resulting slurry is cooled in flash tanks from which steam is recovered and returned to the digestor.

The second step involves red mud removal and liquor purification. The digested bauxite suspension contains insoluble residue including iron oxides, silica, and undigested bauxite. This residue, known as red mud, is removed by settling, thickening, and filtration. After washing, the mud is disposed of in a mud impoundment. The combination process is a variation of the Bayer process in which the red mud from high-silica bauxites is sintered and leached to recover alumina. The resulting brown mud is disposed of in a mud impoundment.

In the third step, the purified sodium aluminate solution is cooled and aluminum hydroxide is precipitated in the presence of recycled seed crystals. The remaining spent caustic solution is separated from the hydrate crystals by filtration and recycled to the digestion step after concentration by evaporation and removal of excess salts.

The fourth step involves calcination to convert the hydroxide filter cake to anhydrous alumina. If hydrate is the desired final product, the filter cake is dried under less severe conditions than in calcining.

The principal source of wastewater in the bauxite refining subcategory is listed below, along with the pollutants typically found in it:

(1) *Mud impoundment effluent* is discharged from the mud disposal lake in areas of net precipitation. The effluent is characterized by high pH and the presence of phenolic compounds.

Primary Beryllium. The primary beryllium industry in the United States currently consists of two plants that are owned by the same company. One of the plants is located in Utah near the beryllium ore mining operations. This facility processes the raw materials to an intermediate product, beryllium hydroxide. The beryllium hydroxide is shipped to the second facility, located in Ohio, where it is further processed to final product forms. The plant which produces beryllium hydroxide in Utah began operations in 1979 and achieves zero discharge through the use of evaporation ponds. The facility in Ohio which produces beryllium metal and other products including beryllium oxide and beryllium copper alloy is a direct discharger which began operations in 1957.

The production of beryllium products can be divided into three distinct operations—production of beryllium hydroxide from beryllium ores, production of beryllium oxide from beryllium hydroxide, and production of beryllium metal from beryllium hydroxide.

Most domestic beryllium is extracted from bertrandite ore mined in Utah. Imported and domestically produced beryl ore is another potential raw material for the primary beryllium industry.

Bertrandite ore is first wet ground and screened to form a slurry which is leached with a sulfuric acid solution. The mixture is washed in countercurrent thickeners. The sludge from the thickeners is dewatered in a filter and discarded. The thickener supernatant next enters a solvent extraction process where beryllium is extracted from solution with an organic solvent. The barren raffinate solution is discarded as a waste stream.

The beryllium is stripped from the organic phase into an aqueous solution. Iron is precipitated from solution and the iron sludge is discarded. Beryllium is next precipitated from solution as beryllium carbonate which is separated from the liquid phase by filtration. The beryllium carbonate may be sold as a product or further processed to beryllium hydroxide.

The beryllium carbonate filter cake is redissolved in deionized water and beryllium hydroxide is precipitated and separated from the liquid phase by filtration. Beryllium hydroxide may be further processed to make beryllium copper alloy, beryllium oxide, or pure beryllium metal.

When beryl ore is processed, the ore is crushed and melted. The molten material is quenched with cold water to produce a glassy material called frit. The frit is dried, ground and leached with strong sulfuric acid, forming a mixture of beryllium sulfate, aluminum sulfate, and silica. Water is added to the mixture and the silica is separated in a series of countercurrent decantation steps. The resultant silica sludge is discarded. The beryllium solution is further processed by solvent extraction, purification and precipitation in an identical manner as beryllium solution from bertrandite ore.

The oxide is produced by dissolving beryllium hydroxide in water, sulfuric acid, and ammonium sulfide. The resulting beryllium sulfate solution is then filtered to remove impurities. The solution flows to an evaporator followed by a crystallizer where beryllium sulfate crystals are formed. The crystals are separated from the mother liquor and the mother liquor is recycled. The beryllium sulfate is calcined in gas-fired furnaces to beryllium oxide.

Beryllium hydroxide, $BeOH_2$, is added to a batch makeup tank along with an ammonium bifluoride solution. The resultant ammonium beryllium fluoride solution is filtered to remove insoluble impurities. The washed filter cake is a bifluoride sludge which is discarded.

The filtered ammonium beryllium fluoride solution is next treated with ammonium sulfide to precipitate dissolved impurities, particularly iron. The precipitated solids are removed in a filter and the resultant sulfide sludge is discarded.

The ammonium beryllium fluoride solution next flows to a crystallizer where ammonium beryllium fluoride crystals are formed. The solids are separated from the liquid phase and the supernatant is recycled.

The dried ammonium beryllium fluoride, $(NH_4)_2BeF_4$, is heated in a furnace to drive off ammonium fluoride (NH_4F) and produce beryllium fluoride (BeF_2).

Beryllium fluoride is reduced to beryllium metal by magnesium in a furnace, resulting in a matrix of beryllium metal and magnesium fluoride (MgF_2).

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

(1) *Solvent extraction raffinate from bertrandite ore processing* is generated when bertrandite ore is leached with sulfuric acid and beryllium is extracted from the resultant solution with an organic solvent. This stream is characterized by a low pH and the presence of toxic metals.

(2) *Solvent extraction raffinate from beryl ore processing* is generated when beryl ore is leached with sulfuric acid and beryllium is extracted from the resultant solution with an organic solvent. This wastewater has an acid pH and contains toxic metals.

(3) *Beryllium carbonate filtrate* results from the precipitation of beryllium carbonate which is separated from the aqueous phase by filtration. This wastewater stream is characterized by the presence of toxic metals.

(4) *Beryllium hydroxide filtrate* is generated when beryllium carbonate is redissolved in water and beryllium is reprecipitated as beryllium hydroxide. The resultant filtrate stream contains toxic metals.

(5) *Calcining furnace wet air pollution control* wastewater results from the use of wet scrubbing to control sulfur dioxide emissions from beryllium oxide calcining furnaces. This wastewater is characterized by the presence of toxic metals.

(6) *Beryllium hydroxide supernatant* from beryllium recovery is generated when beryllium is recovered from waste materials by dissolution in sulfuric acid and precipitation as beryllium hydroxide. The resultant supernatant stream is characterized by the presence of toxic metals.

(7) *Process condensates* are generated by crystallizers and evaporators used in the production of beryllium metal. These condensate streams are characterized by the presence of fluoride.

(8) *Fluoride furnace scrubber* wastewater results from the use of wet scrubbers to recover ammonium fluoride from the exhaust gases from the beryllium fluoride furnace. This wastewater contains toxic metals and fluoride.

(9) *Chip leaching* wastewater is generated when pure beryllium metal in the form of chips is leached with nitric acid and rinsed prior to being vacuum cast. This wastewater stream is characterized by a low pH and the presence of toxic metals.

Primary Boron. The primary boron industry consists of two plants operating in different areas of the United States. One plant is located east of the Mississippi and the other plant is in the west. Boron is produced in the form of the metal powder. Both of the boron plants currently achieve zero discharge.

There are two production processes presently employed in the primary boron industry to manufacture boron metal powder. The first is thermal reduction of a solid boron compound, and the second involves thermal decomposition of a boron gas.

In the thermal reduction process, the raw material is boric oxide (B_2O_3), also called boric anhydride. Boric acid is obtained from naturally occurring borate mineral deposits and can be derived by the action of sulfuric acid on borax, a common boron-containing ore. In the thermal reduction process, boric oxide and magnesium metal are placed in a reaction vessel and heated. Magnesium reduces boric oxide to boron metal. The reaction products are cooled, broken out of the reaction vessel, and crushed to a powder. Separation of boron powder from magnesium oxide is accomplished by sulfuric acid leaching. Magnesium oxide dissolves in the acid and insoluble boron powder is filtered from the solution and washed with water prior to drying and packaging.

The second boron production process, thermal decomposition, uses diborane as a raw material. The decomposition process takes advantage of the instability of diborane at high temperatures. As the gas is heated, it decomposes into its elemental constituents. Thus boron metal powder is produced. After decomposition and cooling, the boron metal product is recovered and packaged as a powder.

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

(1) *Reduction product acid leachate* results from acid leaching to facilitate boron metal separation from the magnesium reduction reaction products. Toxic metals and suspended solids are present in this waste stream.

(2) *Boron wash water* is generated when boron powder filtered from spent acid is rinsed prior to drying. This waste stream contains treatable levels of suspended solids and toxic metals.

Primary Cesium and Rubidium. One plant in the United States produces primary cesium and rubidium. That plant is classified as a zero discharger.

The production processes of primary cesium and rubidium are nearly identical and can be divided into three steps, as described below.

The first step involves digestion of cesium or rubidium ores. Pollucite (Cs) or lepidolite (Rb) ores are digested with strong sulfuric acid to dissolve the metal. The ore gangue is removed by filtration and the metal is crystallized out of the remaining solution by cooling. The spent acid is decanted, and the crystals are rinsed with water.

The metal is further purified by redissolution and selective precipitation of impurities. The third step involves reduction to cesium or rubidium metal.

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

(1) *Spent acid and crystallizer rinse water from cesium production* is generated when water used to wash cesium crystals is combined with spent pollucite ore digestion acid. This stream is characterized by low pH as well as the presence of toxic metals and suspended solids.

(2) *Spent acid and crystallizer rinse water from rubidium production* is generated when water used to wash rubidium crystals is combined with spent lepidolite ore digestion acid. This stream is characterized by low pH as well as the presence of toxic metals and suspended solids.

Primary and Secondary Germanium and Gallium. Of the five primary and secondary germanium and gallium plants in the United States, one is an indirect discharger and four are zero dischargers. There are no direct dischargers. One plant is located in Pennsylvania, two are in the Oklahoma-Texas region, and two are in the far western part of the country. Germanium and gallium plants are located near sources of raw materials, either zinc ore deposits or major electronics firms. All five plants were built within the last 25 years, with two built within the last three years. The average plant age is 12 years.

The processes used at a germanium or gallium production facility depend largely on the raw material used and the final product desired. The four basic germanium and gallium processing steps which an individual plant may utilize are discussed below. Germanium and gallium are produced from both primary and secondary raw materials, however the processing steps are essentially the same.

The first step involves chlorination of the germanium or gallium raw material to produce the tetra- or trichloride, respectively. Chlorination is effected with hydrochloric acid or chlorine gas. Germanium tetrachloride product is a vapor, and is recovered in a condenser. Both germanium tetrachloride and gallium trichloride may be purified by a series of distillation and stripping operations.

The second step involves hydrolysis of germanium tetrachloride to produce germanium dioxide, or gallium trichloride to produce a hydrated gallium compound.

In the third step, germanium dioxide and gallium hydroxide are reduced to metal. Germanium dioxide is reduced to metal powder in a hydrogen furnace, and then is melted and cast as bars. Gallium hydroxide is reduced to metal by dissolution and electrolytic recovery.

The fourth step involves further purification of the germanium and gallium products, to achieve purities in excess of 99.9999 percent. Further purification of germanium is effected by a zone refining process, aimed at removing dissolved oxygen from the metal. Gallium is purified using a crystallization process.

Gallium can also be recovered from scrap using a solvent extraction process. In solvent extraction, gallium scrap is dissolved in acid, and then the gallium is extracted into an organic phase, from which pure metal is recovered. The principal sources of wastewater in the germanium and gallium subcategory are listed below, along with the pollutants typically found in each:

(1) *Still liquor* wastewater results from the excess hydrochloric acid used to chlorinate germanium raw material, and from impurities in the germanium raw material. This wastewater contains toxic metals, low pH, and suspended solids.

(2) *Chlorinator wet air pollution control* wastewater results from wet scrubbers used to control acid and chlorine fumes generated during the reduction of germanium tetrachloride. Chlorinator wet air pollution control wastewater contains toxic metals, and suspended solids.

(3) *Germanium hydrolysis filtrate* wastewater results from the depleted solution after germanium tetrachloride is reacted with water to produce germanium dioxide solids. This wastewater is characterized by toxic metals and suspended solids.

(4) *Acid wash and rinse water* wastewater is produced by the hydrofluoric acid-nitric acid wash, followed by water rinse, of germanium bars prior to zone refining. This wastewater contains germanium, and has a low pH and high fluoride content.

(5) *Gallium hydrolysis filtrate* wastewater results from the depleted solution after gallium trichloride is reacted to produce hydrated gallium solids. This wastewater is characterized by toxic metals and suspended solids.

(6) *Solvent extraction raffinate* wastewater results from the acid solution in which gallium scrap is dissolved prior to being extracted into an organic phase, from which pure metal is recovered. This wastewater is expected to contain toxic organics, metals, and suspended solids.

Secondary Indium. There is one facility currently producing secondary indium in the United States. This facility is an indirect discharger located in the northeastern United States. Plant operations began approximately 50 years ago.

The principal raw materials used for secondary indium production are scrap indium metal and spent electrolyte solutions from secondary silver refining operations.

Leaching and precipitation are the principal operations in the production of secondary indium. Indium scrap is leached with hydrochloric acid to dissolve the indium and produce an indium-laden solution.

The indium-rich leachate then undergoes a series of precipitation steps to remove impurities. Spent electrolytic solutions from secondary silver refineries may be combined with the leachate at this point. Selected impurities such as lead and tin are precipitated out of the solution. The purified indium solution is then processed to precipitate out the indium. Zinc is added to the indium-rich solution and indium ions in solution are displaced by the zinc. The indium precipitate, called indium sponge, is then removed and sent to the melting and casting operation.

Electrolytic refining is used to produce high-purity indium (up to 99.9999 percent), and utilizes low purity indium as the raw material.

Successive electrolysis processes which use the pure indium cathode as the anode result in the production of indium of even higher purity. These process steps are repeated until the desired grade of indium is obtained.

Refined indium from the leaching, precipitation, and electrolytic refining processes as well as pure indium scrap can be melted down and cast into the desired product. All indium melting and casting operations are dry.

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

(1) *Displacement tank effluent* is generated when indium sponge is produced by displacing indium ions from solution with zinc. This wastewater is characterized by the presence of toxic metals and suspended solids.

(2) *Spent electrolyte* wastewater results from discharging contaminated electrolyte solution from electrolytic refining operations. This wastewater is characterized by an acid pH and the presence of toxic metals and suspended solids.

Secondary Mercury. All four of the secondary mercury plants in the United States are zero dischargers. One plant achieves this discharge status by contractor disposal of process wastewater, one by complete recycle, and two plants operate dry processes. Two of the four plants are located near the industrial centers of the Northeast, one is in Illinois, and one in California. All four secondary mercury plants were built after World War II. The average plant age is 30 years. EPA data show that plant production ranges from less than 25 tons of mercury per year to 100 tons per year, with mean production approximately 55 tons per year.

The processes used at a secondary mercury production facility depend largely on the raw material used and the purity of final product desired. The three basic secondary mercury processing steps which an individual plant may utilize are discussed below.

The first step involves physically or pyrometallurgically separating mercury from gross impurities in scrap. This step precedes distillation. Electrolyte in mercuric oxide batteries is drained prior to recovering the mercury from the battery. Raw materials such as thermometers, switches, filters, controls, zinc and silver amalgams, and soil samples have mercury separated from gross impurities by roasting in a furnace. This pyrometallurgical separation vaporizes the mercury, which is recovered in a condenser, and leaves the nonvolatile solids remaining in the furnace.

The second step involves purifying mercury by distillation, which is generally accomplished in columns, retorts, stills, or kettles. Distillation typically consists of charging raw, impure mercury into the bottom of a still, and heating the charge to a prescribed temperature. While heating the charge, air may be bubbled through the still to oxidize metallic impurities. When the charge reaches a certain temperature, the mercury begins to vaporize, and the purified mercury is recovered in an overhead, water cooled condensing system. Mercury distillation is run batchwise or continuously.

In the third step, distilled mercury may be further purified using either additional distillation steps, or an acid washing process. Multiple distillation can produce very high purity mercury. Final product can have purity as high as 99.999999 percent. Further purification can also be effected by an acid wash and water rinse method. In this method, a small amount of dilute nitric acid is used to wash the distilled mercury product, and then distilled water is used to wash the residual acid away from the mercury product.

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

(1) *Spent battery electrolyte* wastewater results from draining spent electrolyte from mercuric oxide batteries prior to recovering mercury by distillation. This wastewater is characterized by toxic metals, suspended solids, and a low pH.

(2) *Acid wash and rinse water* wastewater is generated by washing distilled mercury with dilute nitric acid and rinsing it with water in order to further purify the mercury product. This wastewater contains toxic metals and suspended solids.

(3) *Furnace wet air pollution control* wastewater results from controlling air emissions from the furnace used to separate mercury from gross impurities. Particulates and fumes not condensed with the mercury product are scrubbed prior to venting to the atmosphere. The scrubber liquor should contain mercury and other toxic metals, and suspended solids.

Primary Molybdenum and Rhenium. There are 13 plants in the United States which engage in primary molybdenum or rhenium production. Three plants are located in the western United States near copper and molybdenite mining operations. The remaining 10 plants are located east of the Mississippi River with five of them in the northeastern and east central United States. Four of the plants are direct dischargers and the remaining nine plants discharge no process wastewater. There are no indirect dischargers in the primary molybdenum and rhenium subcategory. The average plant age is between 25 and 35 years with a fairly even distribution of ages ranging from eight to 67 years.

Molybdenum is produced primarily as technical grade molybdic oxide which is consumed principally by the steel industry. Approximately 35,000 metric tons of molybdic oxide were produced domestically in 1982 by seven plants with an average plant production rate of 5,000 metric tons per year. Approximately 2,000 metric tons of pure molybdenum metal were produced in the United States in 1982 at six plants with an average plant production of 300 metric tons per year. Less than four metric tons per year of rhenium are produced in the United States. The production of molybdenum products can be divided into four general processes—roasting of molybdenum sulfide concentrates, production of pure molybdic oxide by sublimation, production of ammonium molybdate, and reduction of pure molybdic oxide or ammonium molybdate to produce molybdenum metal powder.

Rhenium is recovered from molybdenum roaster flue gases as crude ammonium perrhenate which can subsequently be purified and reduced to rhenium metal.

The primary source of molybdenum is a molybdenum sulfide (MoS_2) ore called molybdenite. Most domestic molybdenite is mined and concentrated at two large mines in Colorado and a smaller amount comes from a mine in New Mexico. Molybdenite is also recovered as a by-product from concentrating prophyry copper ores. Rhenium is produced only from molybdenite which is associated with copper mining operations.

Molybdenite concentrates, which are typically 90 percent molybdenum disulfide (MoS_2), are roasted in multiple hearth furnaces. The product is technical grade molybdic oxide consisting of 90 to 95 percent MoO_3. The flue gases contain products of combustion, sulfur dioxide, and rhenium heptoxide (Re_2O_7) when molybdenite concentrates from copper mining operations are roasted. Sulfur dioxide emissions are controlled with either a caustic scrubber or a sulfuric acid plant.

Pure molybdic oxide can be produced from technical grade molybdic oxide through sublimation and condensation. The tech oxide is heated in a muffle type furnace. The oxide is vaporized and carried in a stream of forced air through cooling ducts and the condensed oxide particles are collected in a fabric filter. The purified oxide contains greater than 99.5 percent MoO_3. The pure oxide may be sold as a product, reduced to molybdenum metal powder, or used to produce various molybdenum chemicals.

Technical grade molybdic oxide is dissolved in ammonium hydroxide solution and recrystallized as pure ammonium molybdate. Prior to dissolving, the tech oxide is leached with nitric acid and rinsed with water to remove impurities. Alternatively, the molybdenite may be leached prior to roasting. The ammonium molybdate may be sold as a product, calcined to form pure molybdic oxide, or reduced to form molybdenum metal powder.

Either pure molybdic oxide or ammonium molybdate may be reduced in a hydrogen atmosphere to produce molybdenum metal powder.

When molybdenite concentrates from copper mining operations are roasted, rhenium present in the concentrate is volatilized as rhenium heptoxide (Re_2O_7). The rhenium heptoxide is water soluble and is removed from the flue gas by wet scrubbing. The rhenium is then recovered from the scrubber liquor via selective ion exchange or solvent extraction. Rhenium is stripped from the resin or solvent and crude ammonium perrhenate, NH_4ReO_4, is crystallized from the resultant solution. The crude ammonium perrhenate may be sold as a product, further purified prior to reduction to rhenium metal, or used in the manufacture of various rhenium chemicals.

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

(1) *Molybdenum sulfide leachate and rinse water* is generated when molybdenite concentrates are leached with nitric acid and rinsed with water prior to roasting. This stream is characterized by low pH as well as the presence of toxic metals and suspended solids.

(2) *Roaster wet air pollution control* wastewater results from the use of alkaline wet scrubbing systems to control sulfur dioxide emissions from molybdenite roasting operations. This stream is characterized by high alkalinity and the presence of toxic metals and suspended solids.

(3) *Hydrogen reduction furnace scrubber* wastewater results from scrubbing hydrogen gas with water to cool and quench the gas prior to recycling the hydrogen to the reduction furnace. This wastewater stream is characterized by the presence of toxic metals and suspended solids.

(4) *Molybdic oxide leachate* wastewater results from the leaching of technical grade molybdic oxide with nitric acid, water or ammonium hydroxide prior to dissolving, purification and crystallization of ammonium molybdate. This leachate and rinse wastewater is characterized by the presence of toxic metals and ammonia.

(5) *Rhenium scrubber solution* results from scrubbing rhenium heptoxide from molybdenite roaster off-gases with water and recovering the rhenium from aqueous solution by solvent extraction or ion exchange. This wastewater stream is characterized by the presence of toxic metals.

Molybdenum Metallurgical Acid Plants. Metallurgical acid plants produce sulfuric acid from sulfur dioxide air emissions at primary molybdenum facilities. There are 3 metallurgical sulfuric acid plants associated with primary molybdenum plants in the United States. Of these two are direct dischargers, and one achieves zero discharge. One of the direct discharging facilities is in Iowa and the other two facilities are located in Pennsylvania. There are insufficient data to ascertain the age of acid plants independently of the molybdenum plants associated with them. The average production capacity for metallurgical acid plants associated with primary molybdenum operations is 50,000 to 100,000 tons per year of 100 percent sulfuric acid.

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,
—Box cooler, and
—Mist eliminator.

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

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

Secondary Molybdenum and Vanadium. The one secondary molybdenum and vanadium facility in the United States is a direct discharger. It is located in Southern Texas, and was built in 1973. This industry involves the recovery of molybdenum and vanadium from secondary sources using hydrometallurgical processes.

The basic secondary molybdenum and vanadium processing steps are discussed below.

After some dry preparation steps, the raw material is leached with water to remove impurities and then dissolved, producing a solution containing the molybdenum and vanadium, and a tailing waste stream.

Molybdenum and vanadium are separated by precipitating vanadium from solution. Molybdenum does not precipitate, and the filtrate is routed to the molybdenum purification process. The vanadium rich solids are washed to remove traces of molybdenum, and then are manufactured into their final product form. One product form is vanadium pentoxide (V_2O_5), produced by decomposing the solids in a furnace.

Finally, molybdenum is precipitated from solution. This produces molybdic acid solids, which are recovered by filtration. Molybdic acid solids are dried and converted to molybdenum trioxide product (MoO_3) in a furnace.

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

(1) *Leach tailings* wastewater results from the water leaching process used to remove inerts and other impurities from the raw material, and is characterized by toxic metals and suspended solids.

(2) *Molybdenum filtrate* wastewater is generated by the precipitation of molybdenum from a molybdenum-rich liquid produced by the vanadium recovery process. This wastewater is characterized by toxic metals, ammonia, and suspended solids.

(3) *Vanadium decomposition wet air pollution control* wastewater results from air emissions control on the furnace used to produce vanadium oxide

from vanadium solids. This wastewater contains ammonia, toxic metals, and suspended solids.

(4) *Molybdenum drying wet air pollution control* wastewater results from air emissions control on the furnace used to dry molybdic acid and to produce molybdenum trioxide from the molybdic acid. This wastewater contains molybdenum, toxic metals, and suspended solids.

Primary Nickel and Cobalt. The one primary and nickel and cobalt plant in the United States is a direct discharger. It is located in southern Louisiana and was built in 1959.

The processes used at a primary nickel and cobalt production facility depend largely on the raw material used and the final product desired. The three basic primary nickel and cobalt processing steps which an individual plant may utilize are discussed below.

The first step involves crushing and grinding the ore concentrate, which contains copper, nickel, cobalt, and various impurities. Raw material is crushed and ground in a wet ball mill, and then fed to a sulfuric acid leaching system.

The second step involves separating copper from the nickel and cobalt. This is effected by leaching with a sulfuric acid-copper sulfate solution. Nickel and cobalt are leached into solution, while copper remains in the solid phase. The copper-containing solids are routed to the copper recovery system.

In the third step, nickel and cobalt are separated from each other, and each metal is purified. Separation is accomplished by precipitating cobalt out of solution with an ammonia compound. Nickel powder is recovered from the nickel-rich solution by reduction in a hydrogen autoclave. The excess solution is routed to an ammonium sulfate recovery process. Purification of cobalt is effected by the pentammine method, where nickel and other impurities are removed. Cobalt pentammine is reduced to cobalt powder in a hydrogen autoclave. The excess solution from cobalt purification is also routed to an ammonium sulfate byproduct recovery system.

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

(1) *Raw material dust control* wastewater results from slurrying the baghouse dust generated by crushing and grinding ore concentrate in the mill. This wastewater is characterized by toxic metals (mainly copper and nickel), and suspended solids.

(2) *Nickel wash water* wastewater is generated by washing the nickel powder product produced by hydrogen reduction. This wastewater contains toxic metals and suspended solids.

(3) *Nickel reduction decant* wastewater is generated by reducing the nickel-rich solution to metal powder in an autoclave. This waste stream is characterized by a neutral pH, several toxic metals, and a high ammonia (as ammonium sulfate) content.

(4) *Cobalt reduction decant* wastewater is generated by reducing the cobalt-rich solution to metal powder in an autoclave. This waste steam has similar characteristics to the nickel reduction decant waste stream.

Secondary nickel. Of the two secondary nickel plants in the United States, one is an indirect discharger and one is a zero discharger. Both plants are located near the industrial centers of Western Pennsylvania. One plant was built in 1923, and the other plant was built in 1976.

The processes used at a secondary nickel production facility depend largely upon the raw material used and the final product desired. Secondary nickel production processes can be discussed in the context of three sources of raw materials: nickel melt furnace slag, nickel carbonate produced from acidic waste streams and sludges generated during forming operations, and solid scrap. Nickel alloy scrap generated at steel mills may also be recycled within the mill, however, no refining of the nickel scrap takes place prior to recycle.

The objective of slag reclamation is to recover the nickel values from the dross or slag produced in the nickel melt furnaces of a nickel forming plant. When nickel ingots are melted in the presence of fluxing agents, oxidized metals and impurities rise to the surface of the liquid metal and are removed from the furnace. This slag is approximately 10 percent metallics.

The dross or slag is first cooled and solidified, and then mechanically granulated with a jaw crusher and a wet rod mill, in order to facilitate nickel separation. It is then fed into a mineral jig, which is a wet operation. The jig uses specific gravity differences to recover the nickel-rich material which is recycled to the nickel melt furnace.

In the acid reclaim process, a vessel filled with soda ash (Na_2CO_3) has the spent acids, pickling wastes, and wastewater treatment sludges from nickel forming operations added to it. This pH adjustment step precipitates the nickel out of the dissolved phase into the solid phase. The depleted nickel forming waste solutions are removed by filtration, and the nickel carbonate solids are recovered. The impure nickel carbonate is the raw material for the acid reclaim process.

Impure nickel carbonate is slurried with water to produce a homogeneous solution, and then roasted in an open hearth furnace. Roasting drives off the water, and oxidizes the nickel.

The nickel oxide product from roasting is then leached with water to remove impurities, and filtered. The nickel oxide product is approximately 35 percent nickel, and is returned to the nickel melting furnaces.

Scrap generated by a manufacturing facility may be recycled to recover the nickel values. The scrap is fed into a digestion unit with nitric acid and water. The acid removes silver and other impurities, and a 95 percent nickel product is either sold or returned to the manufacturing facility. The spent solution containing significant silver values is routed to a silver recovery process. There are no waste streams associated with scrap reclaim.

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

(1) *Slag reclaim tailings* wastewater results from the wet operation used to reclaim nickel from melt furnace slags, and contains toxic metals and suspended solids.

(2) *Acid reclaim leaching filtrate* wastewater results from the water leaching process where nickel oxide, produced by roasting nickel carbonate, is purified by leaching away impurities. Toxic metals and suspended solids are found in this waste stream.

(3) *Acid reclaim leaching belt filter backwash* wastewater is produced by backwashing the belt filter used to recover purified nickel oxide, and contains toxic metals and suspended solids.

Primary Precious Metals and Mercury. Seven of the eight primary precious metals and mercury plants in the United States are zero dischargers. One primary precious metals plant is a direct discharger. Six of the plants achieve zero discharge via permanent lagooning and reuse of process wastewater, and one plant does not generate process wastewater. All eight plants are located west of the Mississippi River, with four plants in Nevada, one in South Dakota, one in Montana, one in Idaho, and one in Colorado. Seven primary precious metals and mercury plants began operations within the last 20 years, and one plant began operations more than 75 years ago. EPA data show that plant production of gold ranges from less than 10,000 troy ounces per year to 200,000 troy ounces per year, with average production approximately 70,000 troy ounces per year; plant production of silver ranges from less than 10,000 troy ounces per year to more than 500,000 troy ounces per year, with average production approximately 220,000 troy ounces per year. The production of mercury is not presented to protect confidential data supplied to the Agency.

The processes used at a primary precious metals and mercury production facility depend largely on the raw material used and the final product desired. Primary precious metals produced as a by-product of primary copper manufacturing are regulated under nonferrous phase I in the primary copper refining subcategory. In nonferrous phase II, the primary precious metals raw material is not copper-based. The three basic primary precious metals and mercury processing steps which an individual plant may utilize are discussed below.

The first step involves smelting or calcining the ore mining beneficiation product in a furnace. This pyrometallurgical step is used to separate the primary precious metals or mercury from the base metals and waste ore. If there is mercury in the raw material, it is vaporized, and recovered as a product in a condenser. The calcined ore waste product is removed from the furnace. No further purification of mercury is necessary. Gold and silver containing raw materials are smelted in the presence of fluxing agents to produce a gold- and silver-rich doré metal intermediate product. Slag, containing base metals such as zinc, lead, and copper, is skimmed off the smelting furnace. Doré metal may be cast and sold as a product, or it may be refined.

The second step involves separating gold from silver, and this can be done either electrolytically or with a chlorine parting furnace. In the electrolytic method, gold and silver containing Doré metal is cast as an anode, and electrolytically refined using a silver nitrate electrolyte. Silver crystals are recovered on the cathode, and are cast as a product, and gold remains as slimes in the canvas anode bags. Gold slimes are washed with acid and rinsed with water before being cast as a product.

Gold and silver can also be separated in a parting furnace by forcing chlorine gas through molten Dore metal. Silver is converted to silver chloride, which rises to the surface of the melt and is skimmed. The gold product remains in the furnace.

In the third step, gold and silver are further purified using various methods. Gold can be further purified electrolytically, using a chloride solution. As described above, gold slimes can be further purified using an acid wash and water rise process. Silver chloride can be reduced to silver metal by dissolution and displacement from solution with iron. Silver metal is then melted with a flux and cast as silver product.

The principal sources of wastewater in the primary precious metals and mercury subcategory are listed below, along with the pollutants typically found in each.

(1) *Smelter wet air pollution control* wastewater results from control of air emissions from the precious metals doré smelter using a wet scrubber. This waste stream is characterized by toxic metals and suspended solids.

(2) *Silver chloride reduction spent solution* wastewater results from the reduction of silver chloride to silver metal by dissolution and displacement with iron. This wastewater contains toxic metals, chloride, suspended solids, oil and grease, and a low pH.

(3) *Electrolytic cells wet air pollution control* wastewater results from control of air emissions from the electrolytic cells used to further purify gold, which has already been separated from silver, using a wet scrubber. This wastewater has similar characteristics to the smelter scrubber wastewater.

(4) *Electrolyte preparation wet air pollution control* results from air emissions control on the reaction vessel used to produce silver nitrate electrolyte from pure silver and nitric acid, using a wet scrubber. This wastewater should have characteristics similar to smelter wet air pollution control wastewater.

(5) *Silver crystal wash water* wastewater results from washing the silver crystals deposited on the cathode in the electrolytic refinig of Doré metal. This wastewater should contain toxic metals and suspended solids.

(6) *Gold slimes acid wash and rinse water* wastewater is generated by the dilute nitric acid wash and water rinse of the gold slimes produced by the electrolysis of Doré metal. This wastewater is expected to contain toxic metals and suspended solids.

(7) *Calciner wet air pollution control* wastewater results from control of air emissions from the calcining furnace where mercury-containing raw material is roasted. Fumes and particulates passing through the mercury condenser are controlled with a wet scrubber, or series of scrubbers. This wastewater contains high concentrations of mercury, plus some toxic metals and suspended solids.

(8) *Calciner quench water* wastewater is generated by the water quench used to cool the calcined ore from the mercury roasting furnace. This wastewater contains toxic metals and suspended solids.

(9) *Calciner stack gas cooling water* wastewater results from the contact cooling water used to cool the gas emissions from the mercury roasting furnace. This wastewater contains mercury and suspended solids.

(10) *Mercury calcining condensate* wastewater results from the blowdown of water from the condenser where vaporized mercury is collected. This wastewater is characterized by mercury and suspended solids.

(11) *Mercury cleaning bath* wastewater is generated by the water cleaning bath through which condensed mercury is passed prior to being sold as a product. This wastewater contains mercury, some other toxic metals, and suspended solids.

Secondary Precious Metals. There are 48 plants in the United States that recovery gold, platinum, palladium, iridium, rhodium, osmium, or ruthenium from recycled materials. The plants are concentrated in the Northeast and California, with plants also located in Arizona, Florida, Illinois, Ohio, Virginia, Minnesota, and Washington. EPA data show that a small minority (three) of secondary precious metals plants are direct dischargers. Of the remainder, 29 are indirect dischargers, and 16 are zero dischargers. Most of the plants began operating within the last 15 years.

One-third of the 48 secondary precious metals plants that reported data produce less than 10,000 troy ounces of total precious metals per year; all three of the direct dischargers produce in excess of 50,000 troy ounces per year, as well as 10 of the indirect dischargers.

The processes used at a secondary precious metals production facility depend largely upon the raw materials used and the plant's final products. Secondary precious metals production processes can be divided into two stages: raw material preparation and refining steps.

Depending on the raw material being processed, a plant may use one or more raw material preparation steps to prepare the raw material for the refinery. Plants which process dental scrap, optical scrap, electrical scrap, or spent catalysts may use a pyrometallurgical process. These raw materials may be crushed, ground, and incinerated or smelted in a furnace in order to remove the carbonaceous material and volatile fraction.

Incineration produces a precious-metal bearing residue which may then be fed directly to the refinery. Smelting usually produces a copper based bullion product which can either be sold or further processed in the refinery.

Gold-containing electrical scrap can be stripped with sodium or potassium cyanide solution. Cyanide stripping works best where gold is exposed on the surface of the scrap. The gold is recovered from the cyanide solution by precipitation as a gold-laden sludge, and the sludge is routed to the refinery.

Gold, rhodium or palladium can be recovered from spent or contaminated electroplater's solutions by either a precipitation or electrolysis process. Precious metals are precipitated as a precious metal-bearing sludge from spent plating solutions using zinc or sodium hydrosulfite, and the sludge is routed to the refinery. Gold is also recovered from spent plating solutions electrolytically, and the electolysis product is routed to the refinery.

Some plants do not use any of the raw material preparation steps described above on their raw materials, and proceed directly with the refining steps. Other plants may only melt and granulate their raw material prior to refining. Granulation is a common practice with jewelry scrap.

Refining steps are taken to produce high-purity precious metals (generally 99.9–99.99 percent) from lower purity raw materials, which may have undergone raw material preparation steps. The hydrometallurgical refining process involves dissolving raw materials in strong acid, such as aqua regia (one part concentrated nitric acid: three or four parts concentrated hydrochloric acid), filtering away silver chloride solids, and precipitating gold with sulfur dioxide or chlorine gas. The filtrate from gold precipitation is the raw material for recovering platinum group metals. Platinum group metals are precipitated out of solution using ammonium chloride, and are selectively dissolved in either acid or base and recovered. These refining processes are often repeated to increase the purity of the final product. Each of the metals produced is washed with water to remove any traces of acid or base.

Other hydrometallurgical refining processes, such as electrolysis or solvent extraction, are also used to recover gold. Electrolysis involves casting the raw material as an anode, and using an acidic electrolyte to recover gold on the cathode.

Solvent extraction involves dissolving raw material in acid, and extracting gold into an organic phase. Gold is recovered from the organic phase as a pure metal, and the organic solution is reused. The gold product is washed with water.

After precious metals are refined, they may be further processed in one of three ways. Gold and platinum group metals are cast as bars; gold is granulated to form shot; and gold is reacted with potassium cyanide solution to form potassium gold cyanide (PGC) salt. PGC salt is a raw material used in the electroplating industry. The principal sources of wastewater in the secondary precious metals subcategory are listed below, along with pollutants typically found in each.

(1) *Furnace wet air pollution control* wastewater results from the scrubbing of incinerator and smelting furnace off-gases. This wastewater contains toxic organics, toxic metals, cyanide, and suspended solids.

(2) *Raw material granulation* wastewater is produced by granulating melted raw material with water in a manner similar to shot casting. The wastewater is characterized by toxic metals and suspended solids.

(3) *Spent plating solutions* wastewater is a result of recovering gold, palladium or rhodium from spent or contaminated electroplater's solutions, and is characterized by toxic metals, free and complexed cyanide, and suspended solids.

(4) *Spent cyanide stripping solution* wastewater is produced by stripping gold away from electronic scrap and then recovering the gold from solution. This wastewater consists of free and complexed cyanide, toxic metals, and suspended solids.

(5) *Refinery wet air pollution control* wastewater is a result of air emissions from basic and acid dissolution and precipitation reactions in the refinery. Pollutants found in this wastewater include toxic organics and metals, cyanide, ammonia, and suspended solids.

(6) *Gold solvent extraction raffinate and wash water* wastewater is produced by dissolving raw material in acid, and then recovering it by extraction into an organic solvent. After recovering pure gold, the product is washed with water. This wastewater is characterized by toxic organics and metals, and suspended solids.

(7) *Gold spent electrolyte* wastewater results from the electrolytic recovery of gold from raw material cast as an anode. This wastewater consists of toxic metals and suspended solids.

(8) *Gold precipitation and filtration* wastewater results from the dissolution of raw material in aqua regia, filtering away silver chloride, precipitating gold, and recovering gold by filtration.The gold product is washed with water, which is included in this effluent. This wastewater is contains toxic metals, ammonia, and suspended solids.

(9) *Platinum precipitation and filtration* wastewater results from dissolution of platinum-bearing raw material, precipitation of platinum, and water wash of the product. This wastewater is contains toxic metals, ammonia, and suspended solids.

(10) *Palladium precipitation and filtration* wastewater results from the dissolution of palladium bearing raw material, precipitation of palladium, and a water wash of the product. This wastewater contains toxic metals, ammonia, and suspended solids.

(11) *Other platinum group metals precipitation and filtration* wastewater results from dissolution of platinum group metals (PGM) bearing raw material, precipitation of the PGM, and a water wash of the product. This wastewater contains toxic metals, ammonia, and suspended solids.

(12) *Spent solutions from PGC salt manufacturing* wastewater is a result of adding excess potassium cyanide solution to pure gold in order to produce PGC salt. The excess, or spent solution contains toxic metals, free and complexed cyanide, and suspended solids.

(13) *Equipment and floor wash* wastewater results from the need for plants to recover product which would normally be lost in spills and leaks, and is characterized by toxic metals, ammonia, and suspended solids.

Primary Rare Earth Metals. The primary rare earth metals industry consists of four plants; one is located in southwest United States and the remaining three are in the northeast United States. Of these four facilities, two were built in the past 20 years, while two were built nearly 70 years ago. The average production of rare earth metals from these plants is 270 tons per year. One of the plants is a direct discharger, one is an indirect discharger, and two are zero dischargers.

Rare earth metal production can be divided into two types of metals produced: pure rare earth metals, and mischmetal, an alloy of various rare earth metals and iron. The two types of rare earth metals production processing steps which an individual plant may utilize are discussed below.

Pure rare earth metals are produced through reduction processes. Calcium reduction is used for rare earth fluoride raw materials and mischmetal reduction is used for rare earth oxide raw materials.

In calcium reduction, the pure metal fluoride is placed with calcium into a reaction vessel in which a heat-driven reaction produces the pure rare earth metal and calcium fluoride slag. The metal is further purified by melting in a vacuum to remove impurities. Final product casting is dependent upon the desired product form.

Rare earth metal oxides are reduced to metal by using mischmetal as a reducing agent. The reduced rare earth metal vaporizes and the vapor is condensed into a crystalline mass. This solid metal product may be crushed into powder or melted and cast.

Mischmetal is produced by electrolysis using rare earth chlorides as raw materials. Rare earth chlorides are often in a hydrated form. Drying furnaces are used to dehydrate the metal chlorides prior to electrolytic reduction. The off-gases from the furnace pass through a continuous spray quench and are then either discharged into the atmosphere or passed through a caustic scrubber. Mischmetal is made by mixing the desired quantities of different dry rare earth chlorides and electrolytically reducing the molten chlorides to metal. The molten mischmetal is collected from the electrolytic cell and cast into ingots.

A principal by-product of electrolytic reduction is a gas containing chlorine. This gas is first quenched to remove particulates and then passed through a caustic scrubber. The reaction between sodium hydroxide and chlorine gas produces sodium hypochlorite which is concentrated by recycling scrubber liquor and sold for industrial use.

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

(1) *Dehydration furnace quench and wet air pollution control* wastewater results from air pollution control systems on the wet rare earth chloride drying furnaces. This wastewater contains suspended solids and toxic metals.

(2) *Electrolytic reduction cell quench* wastewater results from cooling gas emissions from electrolytic reduction of rare earth chlorides. This wastewater contains some toxic metals, hexachlorobenzene, and has a low pH.

(3) *Electrolytic reduction cell wet air pollution control* wastewater is presently used for by-product recovery involving sodium hypochlorite produced from sodium hydroxide and chlorine gas from the electrolytic reduction cell. Because of the recovery operation, no wastewater is discharged.

Secondary Tantalum. There are three plants in the United States that recover tantalum from secondary sources. The plants are located in the northeastern part of the United States. EPA data show that all of the plants are direct dischargers. The average age of the plants is 60 years; the oldest plant was built in 1900 while the newest plant was constructed just prior to World War II. Secondary tantalum is produced in the form of tantalum metal powder. Average tantalum powder production for the three plants is 12 tons per year.

The processes used at a secondary tantalum production facility depend upon the raw materials used. Secondary tantalum production can be discussed in the context of three raw materials: scrap tantalum alloy metal, electrical components such as capacitors, and tantalum-bearing sludge.

Scrap tantalum alloy metal is material that is generated from forming and stamping operations. This scrap is immersed in acid causing dissolution of all metal components of the alloy except tantalum. When the batch of scrap tantalum has been sufficiently leached of impurties it is filtered from the spent acid and washed with water.

Another significant raw material is scrap electrical components. Of these, capacitors make up the majority. The recovery of tantalum from capacitors is effected by acid leaching. A mixture of acids is poured into a digestor filled with the scrap. The mixture is agitated until the acid becomes spent, at which time it is decanted, and replaced with fresh acid. The procedure is repeated until pure tantalum powder remains. In order to further purify the powder, it is melted by an electron beam refining process to remove impurities. The pure tantalum is solidified and crushed into powder. Finally, it is washed with acid to remove surface oxides. After rinsing with water, the powder is dried and packaged.

Tantalum-bearing sludge is another significant raw material used for tantalum recovery. In addition to upgrading the tantalum content of the sludge, other metals of value are derived through the tantalum recovery process. The procedure involves successive leachings. After washing the leached sludge, it is dried and packaged. The resulting powder contains 25 percent tantalum.

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

(1) *Tantalum alloy leach and rinse* wastewater results from leaching tantalum alloy scrap metal, contains dissolved toxic metals such as copper and nickel, suspended solids, and has a low pH.

(2) *Capacitor leach and rinse* wastewater results from leaching of scrap electrical components which are predominantly capacitors. This wastewater has a low pH and contains suspended solids and toxic metals.

(3) *Tantalum sludge leach and rinse* wastewater results from leaching and rinsing tantalum-bearing sludge during tantalum upgrading operations. It contains toxic metals such as copper and lead, suspended solids, and has a low pH.

(4) *Tantalum powder acid wash and rinse* wastewater results from final purification of tantalum powder to remove surface oxides. This wastewater contains toxic metals, suspended solids, and has a low pH.

(5) *Leaching wet air pollution control* wastewater is the scrubber liquor resulting from acid leaching of raw materials for tantalum recovery. This wastewater contains total suspended solids and toxic metals.

Primary and Secondary Tin. There is one plant in the United States which produces primary tin and 11 plants which recover tin from secondary sources such as tin plated steel scrap and tin plating solutions and sludges. Five of the 12 plants which produce primary or secondary tin are located in the west or southwestern United States. Five of the remaining seven plants are located in the east central United States. One plant is located in Indiana and one plant is located Florida. The average plant age is between 16 and 25 years. All of the plants have been built since 1940. The one plant which produces primary tin has a production level between 1,000 and 5,000 metric tons per year. This facility is a direct discharger. Approximately 1,700 metric tons of secondary tin were produced in 1982 at 11 plants with an average plant production of approximately 150 metric tons per year. Seven of the 11 secondary tin plants achieve zero discharge; two are direct dischargers and two discharge to POTW.

Primary tin is produced by smelting tin concentrates with limestone and coke. The crude tin is then electrolytically refined and cast. Secondary tin may also be produced by smelting tin residues, particularly detinners mud from alkaline detinning operations. Most secondary tin, however, is produced by dissolving tin from tin plated steel scrap, and recovering the tin by electrowinning. Tin may also be recovered from solution by precipitation of tin as tin hydroxide. A smaller amount of secondary tin is recovered from tin plating sludges which are generated by tin plated steel production operations.

Secondary tin production can be divided into four major operations: alkaline detinning, electrowinning, tin hydroxide precipitation, and reduction to tin metal.

The principal raw material for the secondary tin industry is tin plated steel scrap. Virtually all of this scrap comes from fabrication plants which produce cans and a variety of other tin plated steel products. Such scrap may include punched sheets, rolls and bundles. One producer also reported tin recovery from tin plated steel separated from municipal solid waste. Two producers reported that they recovered tin from spent tin electroplating solutions and plating sludges.

Primary tin is produced by smelting tin concentrates and residues in a reverberatory furnace. Sulfur dioxide emissions from the smelting furnace are controlled with a caustic scrubber. Crude molten tin is removed from the furnace, fire refined and cast into anodes. The anodes are consumed in an electrolytic refining process and the purified tin is cast into ingots.

The first step in recovering secondary tin from tin plated scrap is hot alkaline detinning. Tin plated scrap is loaded into perforated steel detinning baskets and placed in a detinning tank which contains a solution of sodium hydroxide and sodium nitrate. The solution is heated to near the boiling point and the tin dissolves into solution as sodium stannate.

Scrap containing aluminum is pretreated in a solution of sodium hydroxide, in which the aluminum dissolves. After rinsing, the dealuminized scrap is sent to the detinning tanks.

There are two variations of the alkaline detinning process: the saturated process and the unsaturated process. In the saturated process, the sodium stannate solution is allowed to become supersaturated and sodium stannate crystals precipitate from solution. The sodium stannate is recovered from the solution in a filter press and the solution is returned to the detinning tanks. The sodium stannate filter cake may then be sold as a product or redissolved in water for further processing or electrowinning.

In the unsaturated process, the sodium stannate concentration in the solution is kept below the saturation point and the solution is pumped directly to further processing or electrowinning. In both the saturated and the unsaturated process, the sodium stannate solution is purified by adding sodium sulfide or sodium hydrosulfide to precipitate lead and other metal impurities as insoluble metal sulfides.

The precipitated residue is called tin mud or detinners mud and is sold to smelters. Detinners mud may also include residues removed from the bottoms of detinning tanks. This mud contains three to five percent tin and is sold as a by-product to smelters. The tin mud is usually rinsed to recover any soluble tin which may be present. The rinse water is recycled to the detinning tanks. One producer reported an acid neutralization step in which acid is added to the mud. The neutralized mud is then dewatered in a filter press and sold to smelters.

When the detinning cycle is complete, the detinned steel is removed from the detinning tanks. The steel is then rinsed to recover any tin solution which may be adhering to it, pressed or baled, and sold as a product. The rinse water is recycled to the detinning tanks to recover tin.

The purified sodium stannate solution is sent to electrolytic cells where pure tin metal is deposited onto cathodes. The tin is then removed from the cathodes, melted and cast. The electrowinning solution is then recycled to the detinning tanks. A blowdown stream must periodically be discharged from the electrowinning circuit in order to control the concentration of aluminum, carbonates, and other impurities in the solution.

One producer reported the use of tin hydroxide as a raw material for electrowinning of tin metal. The tin hydroxide is first washed with water and then dissolved in a solution of sodium hydroxide. The resultant sodium stannate solution is then purified and added to the sodium stannate solution from alkaline detinning and the combined solution enters the electrowinning tanks.

As an alternative to recovering tin metal by electrowinning, tin can be recovered from solution as tin hydroxide. One plant which uses this process precipitates tin from a solution which is a mixture of alkaline detinning solution and a solution generated by dissolving tin plating sludge solids in water. The other plant which precipitates tin hydroxide uses spent tin electroplating solution as a raw material.

The tin hydroxide is dried and calcined in a furnace to produce tin dioxide. The tin dioxide is then charged to a reduction furnace with carbon where it is reduced to tin metal.

The primary sources of wastewater in the primary and secondary tin subcategory are listed below along with the pollutants typically found in each.

(1) *Tin smelter wet air pollution coantrol* wastewater results from the use of wet scrubbing systems to control sulfur dioxide emissions from tin smelting operations. This wastewater is characterized by the presence of toxic metals and suspended solids.

(2) *Dealuminizing rinse* wastewater results from dissolving aluminum from municipal solid waste derived scrap prior to alkaline detinning. This stream is characterized by an alkaline pH and the presence of cyanide, toxic metals, aluminum, and suspended solids.

(3) *Tin hydroxide wash* wastewater is generated when tin hydroxide is used as a raw material in the electrowinning operations and is washed with water to remove impurities prior to dissolving and electrowinning. This waste stream contains toxic metals and suspended solids.

(4) *Tin mud acid neutalization filtrate* is generated when tin mud is upgraded by acid addition and dewatering prior to sale to tin smelters. This wastewater contains cyanide and toxic metals.

(5) *Spent electrowinning solution from new scrap* results from discharging water from the electrowinning circuit to control the buildup of impurities when new tin plated steel scrap is processed. This stream has a very alkaline pH and contains cyanide, toxic metals and suspended solids.

(6) *Spent electrowinning from municipal solid waste* is required to account for the larger volume of spent electrowinning solution which must be discharged when municipal solid waste is used as a raw material in alkaline detinning and electrowinning. This extra discharge is necessitated by impurities which are introduced into the electrowinning solution by the municipal solid waste. This wastewater is characterized by an alkaline pH and the presence of cyanide, toxic metals and suspended solids.

(7) *Tin hydroxide supernatant from scrap* is generated when tin hydroxide is precipitated from alkaline detinning solution and separated from the aqueous phase by gravity separation. This wastewater contains toxic metals, cyanide, and suspended solids.

(8) *Tin hydroxide supernatant from spent plating solutions* is generated when tin hydroxide is precipitated from spent tin electroplating solutions and separated from the aqueous phase by gravity separation. This wastewater is characterized by the presence of toxic metals, cyanide, suspended solids, and high concentrations of fluoride.

(9) *Tin hydroxide supernatant from sludge solids* results when tin hydroxide is precipitated from a solution generated

by dissolving tin plating sludge solids in water. The resultant supernatant stream is characterized by the presence of toxic metals, cyanide, fluoride and suspended solids.

(10) *Tin hydroxide filtrate* results from dewatering tin hydroxide slurry in a filter press. The resultant filtrate stream contains toxic metals, cyanide, fluoride, and suspended solids.

Primary and Secondary Titanium. Of the eight primary and secondary titanium plants in the United States, four are direct dischargers, two are indirect dischargers, and two are zero dischargers. The plants are located mostly in the eastern and northwestern states. Three plants were built around 1940, three were built between 1956 and 1958, and two have been built since 1975. EPA data show that five of the eight plants produce less than 500 kkg per year while, of the remaining three plants, two produce more than 5,000 kkg per year.

The processes used at a primary and secondary titanium production facility depend largely on the raw material used and the final product desired. The four basic primary and secondary titanium processing steps which an individual plant may utilize are discussed below.

The first step involves chlorination of rutile or ilmenite ore in a fluidized bed reactor. The resulting titanium tetrachloride is condensed from the reaction gas and purified by distillation.

The second step involves reduction by one of three methods to produce titanium metal sponge. Four plants use the Kroll process in which titanium tetrachloride ($TiCl_4$) is added to magnesium in a reduction furnace where it is converted to titanium metal and magnesium chloride. Molten magnesium chloride is tapped off as it is formed and recovered electrolytically. One plant uses the Hunter process to reduce titanium tetrachloride to the metal by sodium in an inert atmosphere. One plant reports the production of titanium sponge by reducing rutile ore in a hydrogren atmosphere without forming the chlorinated intermediate.

Titanium metal sponge is crushed and purified by leaching or by vaccum distillation. The purified metal may be sold as titanium sponge, crushed and sold as titanium powder, or further processed by alloying and casting.

Titanium is also recovered from secondary sources, particularly scrap titanium metal which is washed with acid prior to being melted and cast along with titanium from primary sources.

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

(1) *Chlorination off-gas wet air pollution control* wastewater results from wet scrubbers on the fluidized bed reactors used to convert rutile ore to the titanium tetrachloride. This waste stream may contain chlorine, suspended solids, and toxic metals.

(2) *Chlorination area vent wet air pollution control* wastewater results from wet scrubbers used to control fumes from the ore chlorination operation. This waste stream contains chlorine, suspended solids, and toxic metals.

(3) *$TiCl_4$ handling wet air pollution control* wastewater results from wet scrubbers used to control fumes from the handling and storage of titanium tetrachloride. The characteristics of this stream are similar to those of the reduction area scrubber water, which contains suspended solids and toxic metals.

(4) *Reduction area wet air pollution control* wastewater resulting from wet scrubbers used to control fumes generated from the reduction furnace when titanium tetrachloride is reduced to the metal sponge by magnesium. No wet air pollution control is reported to be associated with reduction by sodium or CaH_2. This wastewater is characterized by the presence of magnesium, chloride, and toxic metals.

(5) *Melt cell wet air pollution control* wastewater results from wet scrubbers used to control fumes from molten magnesium chloride which is stored in a melt cell prior to electrolytic recovery. This stream is characterized by low pH and low concentrations of toxic metals.

(6) *Cathode gas wet air pollution control* wastewater results from air pollution control devices on the electrolytic cells used for magnesium recovery. This waste stream is similar to the wastewater from the melt cell scrubber, which contains low concentrations of toxic metals.

(7) *Chlorine liquefaction wet air pollution control* wastewater results from wet scrubbers used to control vapors which escape during the liquefaction of the chlorine gas generated by the electrolytic recovery of magnesium. This stream is characterized by a low pH and the presence of toxic metals.

(8) *Sodium reduction container reconditioning wash water* is generated when water is used to rinse the containers used for the reduction of titanium tetrachloride by sodium. This stream contains chlorides, suspended solids, and toxic metals.

(9) *Chip crushing wet air pollution control* wastewater results from wet scrubbers used to control dust when titanium sponge chips are crushed prior to purification. This stream contains titanium and suspended solids.

(10) *Acid leachate and rinse water* is generated when titanium sponge is purified by leaching. Purification by vaccum distillation does not generate a wastewater. This waste stream is characterized by the presence of suspended solids and toxic metals.

(11) *Sponge crushing and screening wet air pollution control* waterwater results from wet scrubbers used to control dust from the crushing, screening, and storage of leached titanium. This waste stream contains suspended solids and toxic metals.

(12) *Acid pickle and wash water* is generated when large surface area titanium scrap is pickled and rinsed before alloying and casting. This low pH waste stream contains fluoride and toxic metals.

(13) *Scrap milling wet air pollution control* wastewater results from wet scrubbers used to control dust from the milling of titanium scrap and turnings. This waste stream contains suspended solids and toxic metals.

(14) *Scrap detergent wash water* is generated when scrap titanium is washed to remove oil and dirt before alloying and casting. This waste stream contains suspended solids, oil and grease, and toxic metals.

(15) *Casting crucible wash water* is generated when water is used to clean the crucibles used in casting operations. This stream is similar to casting contact cooling water and should contain oil and grease and toxic metals.

(16) *Casting contact cooling water* is generated during the casting operations. This stream is characterized by the presence of oil and grease; suspended solids, and toxic metals.

Secondary Tungsten and Cobalt. Of the five secondary tungsten and cobalt plants in the United States, four are direct dischargers, and one is a zero discharger. All five plants are located in the northeastern part of the country, near industrial centers, and all are in areas of net precipitation. One secondary tungsten and cobalt plant was built prior to World War I, two were built during World War II, and two plants were built in the last 20 years. EPA data show that average plant production of tungsten products is about 100 tons per year. Average plant production of cobalt products is also about 100 tons per year.

The processes used at a secondary tungsten and cobalt production facility depend largely on the raw material used and the final product desired. The basic hydrometallurgical processing steps which an individual plant may use to recover tungsten, tungsten carbide, cobalt, and synthetic scheelite ($CaWO_4$) are discussed below.

The major hydrometallurgical processing step used to recover tungsten and tungsten carbide from scrap is to leach impurities such as cobalt, copper, nickel, silver, and zinc away from the product. Leaching usually occurs in an agitated reaction vessel with an acid solution. Tungsten, which is relatively insoluble in acid, is separated from the liquid phase by either filtration or decantation.

Prior to leaching, both tungsten and tungsten carbide scrap may be washed with detergent and rinsed with water. Washing removes surface oils and grease from the scrap in order to facilitate the leaching process.

After leaching, both tungsten and tungsten carbide powder may be washed with dilute acid or base, and rinsed with water. This wash step neutralizes and removes any residual leaching acid or impurities from the tungsten product.

Cobalt is recoverd as a by-product of tungsten carbide via a hydrometallurgical process. Cobalt is used as a binder alloy in tungsten carbide manufacturing and is recovered from tungsten carbide leaching acid.

Both tungsten and tungsten carbide scrap may be used to produce synthetic scheelite instead of pure tungsten or tungsten carbide powder. Synthetic scheelite ($CaWO_4$) is used in a primary tungsten refinery as a supplemental feed material to natural scheelite ore.

Pure tungsten scrap is smelted or roasted in a furnace to produce tungsten oxide (WO_3). Tungsten oxide is dissolved with caustic solution. After filtering away impurities, calcium chloride is added to the solution, and synthetic scheelite is produced. Synthetic scheelite is recovered by filtration.

The principal sources of wastewater in the secondary tungsten and cobalt subcategory are listed below, along with the pollutants typically found in each.

(1) *Tungsten detergent wash and rinse* wastewater is a result of washing oil and grease off the surface of tungsten scrap prior to leaching, and this stream contains toxic metals, oil and grease, and suspended solids.

(2) *Tungsten leaching acid* wastewater is generated when tungsten scrap is leached with an acid solution in order to remove impurities from the scrap. This stream is characterized by toxic metals, suspended solids, and a low pH.

(3) *Tungsten post-leaching wash and rinse* wastewater is a result of washing residual leaching acid and impurities away from the tungsten powder product. This stream consists of toxic metals and suspended solids.

(4) *Synthetic scheelite filtrate* wastewater is produced by the dissolution process where tungsten oxide produced from scrap is converted to synthetic scheelite. This waste stream is charcterized by toxic metals and suspended solids.

(5) *Tungsten carbide leaching wet air pollution control* wastewater results from the wet scrubbers used to control acid fumes generated during tungsten carbide leaching. This scrubber liquor contains toxic metals, ammonia and suspended solids.

(6) *Tungsten carbide wash water* is generated when tungsten carbide powder is washed with dilute acid and rinsed with water in order to remove residual leaching acid and impurities. This waste stream is similar to tungsten post-leaching wash and rinse wastewater, and has similar characteristics.

(7) *Cobalt sludge leaching wet air pollution control* wastewater results from the wet scrubber used to control acid fumes generated during cobalt sludge leaching. This waste stream and tungsten carbide leaching wet air pollution control should have similar characteristics.

(8) *Crystallization decant* wastewater is produced by plants which recover cobalt from tungsten carbide leaching acid by crystallization. This waste stream is characterized by toxic metals and suspended solids.

(9) *Acid wash decant* wastewater results from the purification steps used on the cobalt crystals, and contains toxic metals and suspended solids.

(10) *Cobalt hydroxide filtrate* wastewater is generated by the alkaline dissolution and precipitation process used to produce cobalt hydroxide. This waste stream is characterized by toxic metals and suspended solids.

(11) *Cobalt hydroxide filter cake wash water* is produced by washing the cobalt hydroxide filter cake with water in order to remove any traces of caustic or other impurities. This waste stream contains toxic metals.

Secondary Uranium. There are three plants in the United States that produce secondary uranium metal. Of these three, two plants are zero dischargers and the third is a direct discharger. The plants are all located east of the Mississippi River. Two plants were built in the 1950s when the uranium industry first began large scale production. The third plant was built nearly 15 years ago to supplement the growing need for uranium for commercial projects.

The uranium production process can be divided into two phases. The first phase is processing uranium scrap materials into uranium tetrafluoride (UF_4). The second phase is reduction of uranium tetrafluoride to uranium metal.

Raw materials available to uranium producers include scrap from forming operations, material that does not meet specifications for quality or purity, tailings from machining operations, and residuals present in magnesium fluoride slag from the final uranium tetrafluoride reduction processes.

The initial step in processing uranium from secondary sources is acid leaching. Uranium dissolves in nitric acid to form a nitrate compound, uranyl nitrate ($UO_2(NO_3)_2$). Recovery of uranyl nitrate from the spent acid is accomplished by addition of ammonia which precipitates ammonium diuranate. The solid is filtered and the filtrate discharged. After redissolving the precipitate in acid, the uranyl nitrate is purified by extraction into an organic solvent, leaving the impurities in the aqueous phase to be discharged. Reextraction into an aqueous phase is followed by evaporation to form concentrated uranyl nitrate. Calcination of the concentrate produces uranium trioxide (UO_3). The nitrates driven off in calcination combine with hydrogen in the air to produce nitric acid gases which are scrubbed and recycled to the acid leaching operations.

The next process step reduces uranium trioxide to uranium dioxide (UO_2). Ammonia is used to supply hydrogen for the reduction. The reaction gases are passed through a KOH scrubber to neutralize any acidity. The final step in preparation of uranium tetrafluoride is hydrofluorination of uranium dioxide. Hot hydrofluoric acid vapors are contacted with uranium dioxide. The ensuing reaction produces uranium tetrafluoride which is used for reduction to uranium metal. Unreacted gases are water scrubbed to collect residual hydrofluoric acid. The scrubber liquor is recycled to concentrate its acid content, and when a desired concentration is achieved, the solution is drawn off and sold for industrial use.

Magnesium reduction is the process converting uranium tetrafluoride to uranium metal. Magnesium metal and uranium tetrafluoride are laced in a bomb reduction vessel where at elevated temperatures the reduction reaction occurs. After cooling, the products are broken out and separated. The uranium metal product is remelted and cast into forms suitable for forming operations.

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

(1) *Refinery filtrate* wastewater results from the digestion of uranium scrap with nitric acid, and contains toxic metals and suspended solids.

(2) *Slag leach slurry* wastewater is generated by nitric acid digestion of recycled magnesium fluoride slag. The waste stream contains suspended solids and has a low pH.

(3) *Solvent extraction raffinate* wastewater results from purification of an intermediate uranium compound by extraction into an organic phase. The discharged aqueous solution contains organics and metals, and suspended solids.

(4) *Digestion operation wet air pollution control* wastewater results from wet scrubbers which control the process emissions from acid leaching. The waste stream contains suspended solids and toxic metals.

(5) *Evaporation and calcination wet air pollution control* produces no wastewater discharge. Scrubber liquors resulting from control of emissions in the evaporation and calcination operations were reported to be 100 percent reused in the digestion operation.

(6) *Hydrogen reduction and hydrofluorination KOH wet air pollution control* wastewater results from wet scrubbers that control acid fumes from the hydrogen reduction and hydrofluorination operations. The wastewater contains suspended solids and has an acidic pH.

(7) *Hydrofluorination wet air pollution control* produces no wastewater discharge. Scrubber liquor that absorbs unreacted hydrofluoric acid gases is recycled to concentrate the acid content. The acid scrubber liquor is drawn off and sold for its hydrofluoric acid content.

Primary Zirconium and Hafnium. Of the three primary zirconium and hafnium plants in the United States, one is a direct discharger, one is an indirect discharger, and one is a zero discharger. The plants are located in the states of Massachusetts, Utah, and Washington. Plant age covers a 42 year span, the oldest plant having been built in 1937

The processes used at a primary zirconium and hafnium production facility depends largely on the raw material used. The five basic processing steps which an individual plant may utilize are discussed below.

The first step involves chlorination of zircon sand to form zirconium-hafnium tetrachloride. The sand may require drying prior to chlorination to remove excess moisture. The crude tetrachloride is recovered and separated from silicon tetrachloride ($SiCl_4$) impurities by fractional distillation. It is then dissolved in water and filtered to remove suspended solids.

The second step involves the separation of zirconium from hafnium. Several liquid-liquid extraction operations are used to separate the zirconium and hafnium while removing iron impurities. The separated zirconium and hafnium are precipitated as their hydroxides and dewatered by filtration or drying. From this point in the process, zirconium and hafnium are processed separately but identically.

In the third step, the zirconium or hafnium filter cakes are calcined to produce zirconium oxide or hafnium oxide.

The fourth step involves pure chlorination to convert the zirconium or hafnium oxides to the tetrachloride. This process is essentially the same as the first step, sand chlorination.

The fifth step involves reduction of the tetrachloride to their respective metals. The tetrachloride is reacted with magnesium in a retort furnace where it is converted to zirconium or hafnium metal and magnesium chloride. When zirconium oxide is used as a raw material instead of the tetrachloride, it is mixed with magnesium powder and retorted to produce zirconium metal sponge and magnesium oxide. Zirconium oxide can also be used to produce zirconium-nickel alloys. In that reduction process, nickel is added directly to the zirconium oxide, and the mixture is reduced by calcium in a hydrogen atmosphere.

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

(1) *Sand drying wet air pollution control* wastewater results from wet scrubbers used in the zircon sand drying operation. This stream is characterized by the presence of suspended solids and toxic metals.

(2) *Sand chlorination off-gas wet air pollution control* wastewater results from wet scrubbers used to control off-gases from the chlorinators. This wastewater is characterized by the presence of solids and chlorine.

(3) *Sand chlorination area-vent wet air pollution control* wastewater results from wet scrubbers used to control fumes in the sand chlorination area. This wastewater is characterized by the presence of solids and chlorine.

(4) *$SiCl_4$ purification wet air pollution control* wastewater is generated when wet scrubbers are used to control fumes from the purification of the silicon tetrachloride formed during sand chlorination. This stream contains suspended solids and cyanide.

(5) *$SiCl_4$ purification waste acid* results from the purification of silicon tetrachloride formed during sand chlorination. This stream may contain solids and toxic metals.

(6) *Feed makeup wet air pollution control* wastewater results from wet scrubbers used to control fumes generated when crude zirconium-hafnium tetrachloride is dissolved in water and filtered to remove solids. This stream is characterized by the presence of suspended solids and cyanide.

(7) *Iron extraction steam stripper bottoms* are generated during the steam stripping process which removes iron from hafnium, following the liquid-liquid extraction process which separates zirconium from hafnium. This waste stream contains ammonia, solids, and toxic metals.

(8) *Zirconium filtrate* wastewater results from the precipitation and filtration of zirconium hydroxide during the separation process. This waste stream contains cyanide, MIBK, solids, and toxic metals.

(9) *Hafnium filtrate* wastewater results from the precipitation and filtration of hafnium hydroxide during the separation process. This waste stream contains suspended solids and cyanide.

(10) *Calcining caustic wet air pollution control* wastewater results from wet scrubbers on the zirconium and hafnium calcining kilns. This stream is characterized by the presence of sodium sulfite.

(11) *Pure chlorination wet air pollution control* wastewater results from wet scrubbers used to control fumes from the chlorination of calcined zirconium oxide or hafnium oxide. This waste stream is similar to the sand chlorination off-gas scrubber wastewater and contains solids and chlorine.

(12) *Reduction area-vent wet air pollution control* wastewater results from water scrubbers on the reduction furnaces used for the magnesium reduction of zirconium and hafnium tetrachlorides. This stream contains solids and metals.

(13) *Magnesium recovery area wet air pollution control* wastewater results from wet scrubbers used to control fumes from the recovery of magnesium for the reduction process. This stream is characterized by low pH and the presence of magnesium and solids.

(14) *Zirconium chip crushing wet air pollution control* wastewater is generated by wet scrubbers used for dust control when zirconium metal sponge is chipped out of the reduction container and crushed prior to purification. This stream contains solids and metals.

(15) *Acid leachate* wastewater is generated when remaining impurities are removed from crushed zirconium metal sponge or zirconium alloy by leaching with hydrochloric or acetic acid. This stream is characterized by low pH and the presence of solids and toxic metals.

(16) *Leaching rinse* wastewater is generated when water is used to rinse leached zirconium sponge or zirconium alloy. This waste stream is characterized by low pH and the presence of solids and toxic metals.

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 of the best available technology economically achievable (BAT), which will result in reasonable further progress toward the national goal of eliminating 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 this 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 constitutents, 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 volumes 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 a cost model developed by standard engineering analyses. EPA derived unit process costs for 70 discharging plants (plus one plant that does not discharge but has stated an intention to discharge in the future) 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 one means of evaluating each technology option, the Agency developed estimates of the pollutant removals and the compliance costs associated with each option. Our methodologies are described below.

A. *Pollutant Removal Estimates.* In calculating pollutant removal estimates, 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/kkg of production), we computed the mass loading associated with the unit operation (expressed in mg/kkg, *i.e.*, pollutant concentration x production normalized flow), and took the means 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 is 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 achieveable concentrations associated with the option (mg/l) and compute mass loadings using either the production normalized flow associated with that option (for example, BAT regulatory flow), or the actual flow, whichever is smaller, on a plant-by-plant basis. This mass (mg/kkg of each plant's production) is then multiplied by the production for each plant in the subcategory (from dcp's, as before), which are then summed to give total mass discharged.

We used similar methods to estimate current discharge. We first identified from dcp responses what treatment is in place at each discharging facility. We then determined whether the treatment technology was being operated in a manner that would result in the pollutant mass discharge level considered achievable at each plant with the technolgy they have in place. Based on this determination, the current pollutant mass discharge at each facility was set equal to either the raw waste generated by the plant or to the mass discharge considered achievable by the treatment technology in place. The mass discharges for each facility were then summed to attain the total current discharge for a subcategory.

B. *Compliance Costs.* In estimating subcategory-wide compliance costs our first step was to develop a uniformly-applicable cost model, relating total plant costs associated with installation and operation of wastewater treatment technologies to production and flow data specific to each plant. Section VIII of the General Development Document provides additional discussion of our cost estimates.

The first step in developing our cost estimates is to perform material balances (pollutant loadings) for the plant's wastewater treatment processes. These material balances are used to determine the type and size of the treatment system needed. The resulting equipment and process selections are then used to calculate investment as well as operation and maintenance (O&M) costs for each component in the treatment system. We then add 37.5 percent system capital costs for engineering, contingency, and contractor's fees to arrive at the total investment cost. Annual costs for the plant to comply with this regulation are determined as the sum of the O&M costs, monitoring costs, taxes, and amortized investment cost. The cost model data base used relies heavily on actual practice reported in this category and on equipment vendor quotes.

Our estimates include capital costs for only those processes that a plant has not yet installed; the annual costs (without depreciation or interest) for each process are included regardless of whether or not this process has been installed. We believe this is a very conservative assumption since most plants have installed treatment to meet NPDES or other requirements rather than in anticipation of this regulation.

The second step is the calculation of flow to the treatment system. For each regulatory option and wastewater source, the Agency has established a flow allowance. The actual wastewater flow (reported in plant dcps) from each production operation is compared to the corresponding regulatory flow for that operation and the lower of the two is selected as the basis for cost estimation (i.e., treatment equipment size, amount of treatment chemicals needed, etc.). This procedure eliminates the overestimation of end-of-pipe treatment system costs for plants that are currently below the regulatory flow allowances. For plants with flows currently above the regulatory flow allowances, costs for installation and operation of equipment necessary to achieve flow reductions to the regulatory flow are included.

Third, several cost and design assumptions are inherent in the computations. Among the most significant of these are the following:

(1) The dollar base is March of 1982;

(2) Twenty percent excess capacity is included in cost estimations;

(3) Unless otherwise specified, all wastewater treatment sludges are considered to be nonhazardous;

(4) Costs for segregation of wastewaters not included in this regulation (e.g., noncontact cooling water) or for routing regulated waste streams not currently treated to the treatment system are estimated on the basis of purchase and installation of 500 feet of four-inch piping (with valves, pipe racks, and elbows) for each stream. Storm water is segregated by including costs for installation of 300 feet of two-foot diameter underground concrete pipe to route storm water around the treatment system;

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

(6) Where a plant has wastewater sources from two nonferrous phase II subcategories (e.g., secondary tantalum and secondary tungsten and cobalt plant wastewater), the costs are normally apportioned between subcategories on a flow-weighted basis, since hydraulic flow is the primary determinant for equipment size and cost. At a specific plant, however, no incremental costs are incurred by a subcategory for flow reduction, if the waste streams associated with that subcategory do not undergo flow reduction. Thus if only the tungsten leaching scrubber from a combined secondary tantalum and secondary tungsten and cobalt plant undergoes flow reduction, all incremental costs are assigned to the secondary tungsten and cobalt subcategory, and the compliance costs estimated for the secondary tantalum subcategory remain the same. Where waste streams from both subcategories undergo flow reduction, a new flow ratio is calculated to apportion costs. (This in essence is only a bookkeeping exercise of how to allot this cost; the total costs calculated remain the same); and

(7) In most cases, where a plant has wastewater sources from the nonferrous phase II category and a category other than nonferrous manufacturing (for example, nonferrous forming) we calculated the costs of segregating these different wastewaters. The only exception is for overlap plants between nonferrous phase I and nonferrous phase II, where we estimated costs for combined treatment, and then flow-apportioned the costs to each category. This means of cost estimation accounts for the possibility that respective regulations for each category are based on different technologies (and may control different pollutants). (We assumed the costs of segregation even if combined treatment, in practice, is a less costly means of compliance. This is one of a number of areas where the Agency was knowingly conservative in estimating compliance costs.)

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 on May 6, 1983, 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. Several plants were sampled in order to obtain wastewater characterization data. Supplemental data were obtained from NPDES permit files, engineering studies on treatment technologies, and a one-page version of the dcp (called the "mini-dcp") which was mailed out in 1977

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. The dcp's also requested economic information including plant capacity, employment, sales, and existing regulatory costs for the base year of 1982. This information was requested in data collection portfolios (dcp's) mailed to all companies known or believed to be engaged in nonferrous metals manufacturing activities. 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 the corporate headquarters (where they were known) of 220 firms (276 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. 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, more than 99 percent of the industry was contacted 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 location, and name of the firm dcp was sent to;
—Plant discharge status as direct (to surface water), indirect (to POTW), or zero discharge;
—Production process and waste streams present at the plant, as well as associated flow rates, production rates, operating hours, wastewater treatment, reuse, or disposal methods, and the quality and nature of process chemicals;
—Capital and annual wastewater treatment costs; and
—Availability of pollutant monitoring data provided by the plant.

Plants in all the nonferrous metals manufacturing phase II subcategories submitted their questionnaires to the EPA and were covered by the Agency's standard confidentiality procedures. Confidential information was handled in accordance with 40 CFR Part 2.

To aid in the economic analysis, additional industry and market information was obtained from trade associations, Bureau of Mines minerals specialists and several publicly available data bases. Also, a number of the plants are corporations and therefore provide annual reports to their stockholders, and to the Security and Exchange Commission, as required by law. To the extent possible, copies of these reports were obtained and used to estimate financial parameters needed for the economic impact analyses. Finally, further plant-specific information was acquired by calling a number of the plants directly. Details of these phone conversations are available in the record for this proposed rulemaking.

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 data collection portfolios was used to select sites for wastewater sampling. The plants sampled were selected taking into account 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. Generally, a pre-sampling site visit was made in order to acquire facility information necessary for efficient on-site sampling. The information resulted in selection of the sources of wastewater to be sampled at each plant and the sampling techniques to be used. The sample points included, but were not limited to, untreated and treated discharges, process wastewater, and partially treated wastewater.

During this program, 29 nonferrous metals manufacturing plants were sampled.

Wastewater samples were collected in two phases. In the first phase, a large number of plants (21) were sampled in an attempt to characterize all the significant waste streams and production processes in these industries. In the second phase, we sampled a smaller number of plants (eight), in an attempt to fill any gaps in the data base, and to confirm data acquired during the first phase of sampling. Samples were generally analyzed for 128 of the 129 toxic pollutants and other pollutants deemed appropriate. (Because no safe analytical standard was available for TCDD, samples were never analyzed for this pollutant, although there is no reason that it would be present in nonferrous metals manufacturing wastewater.) At least one plant in every major subcategory was sampled during the data collection effort, with some subcategories sampled at more than one plant, when the production processes were different. For example, both molybdenum sulfide roasting and molybdic oxide reduction plants were sampled in the primary molybdenum and rhenium subcategory. Appendix C details those pollutants not analyzed for.

To avoid unnecessary expense and direct the scope of the sampling program, analyses were not performed for a number of pollutants not expected to be present in a plant's wastewater. This determination was based on raw materials and production processes used. Two sources of information were used for selecting the analyzed pollutants: the pollutants that industry believes or knows are present in their wastewater based on dcp responses, and the pollutants the Agency believes should be present after studying the processes and materials used by the industry. If industry and the Agency did not believe a pollutant or class of pollutants would likely be present in the wastewater after studying the processes and materials used, 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 or believed to be present. If the pollutant had been analyzed for and detected, the facility was to indicate that it was known to be present. If the pollutant had not been analyzed, but might be present in the wastewater, the facility was to indicate that it was believed to be present. 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 (40 FR 69464).

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, raw materials 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 effecting 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. 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.

On February 17, 1983, EPA proposed to amend 40 CFR Part 421 by adding four new subcategories, primary tungsten, primary columbium-tantalum, secondary silver, and secondary lead (48 FR 7032). Again, the manufacturing processes were considered to be the most significant factor in subcategorizing the industry. These same subcategories were retained in the final rule promulgated on March 8, 1984 (49 FR 8742).

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, nonwater quality environmental impacts, energy costs, and solid waste generation. Our conclusion, as before, is that subcategorization should be based on manufacturing process alone. We are proposing that sulfuric acid plants associated (i.e., on-site) with primary molybdenum roasters be included as part of the metallurgical acid plants subcategory finalized for primary copper, primary lead, and primary zinc metallurgical acid plants on March 8, 1984 (49 FR 8742) (see Section VIII—New Subcategorizations). With respect to the other plants covered by this regulation, 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 new and existing sources for the following subcategories: primary antimony subcategory (Subpart N), primary beryllium subcategory (Subpart O), primary boron subcategory (Subpart P), primary cesium and rubidium subcategory (Subpart Q), primary and secondary germanium and gallium subcategory (Subpart R), secondary indium subcategory (Subpart S), secondary mercury subcategory (Subpart T), primary molybdenum and rhenium subcategory (Subpart U), secondary molybdenum and vanadium subcategory (Subpart V), primary nickel and cobalt subcategory (Subpart W), secondary nickel subcategory (Subpart X), primary precious metals and mercury subcategory (Subpart Y), secondary precious metals subcategory (Subpart Z), primary rare earth metals subcategory (Subpart AA), secondary tantalum subcategory (Subpart AB), primary and secondary tin subcategory (Subpart AC), primary and secondary titanium subcategory (Subpart AD), secondary tungsten and cobalt subcategory (Subpart AE), secondary uranium subcategory (Subpart AF), and primary zirconium and hafnium subcategory (Subpart AG). As discussed in Section II, EPA is proposing minor technical amendments to the bauxite refining subcategory (Subpart A). We are also considering establishing concentration limits for three pollutants (2-chlorophenol, phenol, and phenols (4AAP) in the net precipitation discharges from bauxite red-mud ponds and soliciting comments on limitations for these three pollutants in these discharges. (See Section XI for a detailed discussion of the limitations under consideration).

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 for 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 wastewater flow reduction through the practice of recycle. Recycling of process water is the practice of returning water to the process to be used again for the same purpose either with or without treatment. In establishing BPT for secondary precious metals and other subcategories, EPA considered complete recycle and reuse of equipment and floor wash water after treatment with chemical 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.

Dry scrubbing can be used in specific applications as an alternative to wet air pollution control, thereby avoiding the discharge of wastewater. It's application is generally limited to control of particulate emissions and has only been considered in that context in this rulemaking. Dry scrubbing, as it was considered in this rulemaking, is accomplished through the use of baghouses.

End-of-pipe treatment includes technologies 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 through chemical addition 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; however, sulfide, caustic or acid are also used depending on the specific situation.

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 is 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 lime so that the pH of the wastewater is elevated in order to remove more stable ammonia compounds.

Cyanide Precipitation. Cyanide can be precipitated out of solution using ferrous sulfate. The cyanide is generally complexed with ferrous sulfate at a pH of 9. It is subsequently precipitated with ferrous sulfate addition at pH 3.

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.

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

B. Status of In-Place Technology

Current wastewater treatment practices in the total nonferrous metals manufacturing category range from no treatment to treatment with chemical precipitation, sedimentation and filtration. Of the 236 discharging plants, 121 plants have chemical precipitation and sedimentation treatment to remove metals and suspended solids, 12 have technologies for the control of cyanide, four have technology for oil removal, eight practice ammonia stripping and 25 practice end-of-pipe filtration. The remainder of the dischargers did not report any treatment for their nonferrous metals manufacturing wastewaters.

Recycle after treatment consisting of lime precipitation and sedimentation is practiced at 22 plants. Thirty-nine plants practice recycle of scrubber water without any treatment.

C. Control and Treatment Options

EPA considered the following treatment and control options as the basis for BPT, BAT, NSPS, PSES, and PSNS for those facilities included by today's rulemaking within the nonferrous metals manufacturing category.

Option A—End-of-pipe treatment consisting of chemical 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 cyanide, conventional and nonconventional pollutants.

Option B—Option B is equal to Option A 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 is equal to Option B plus end-of-pipe polishing filtration for further reduction of toxic metals and TSS.

Option D—Option D is equal to Option C plus treatment of isolated waste streams with activated carbon adsorption for removal of toxic organics and activated alumina for reduction of fluorides and arsenic concentrations. This option was only considered for nonferrous metals phase I and is retained here only for consistency.

Option E—Option E consists of Option C 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 plus reverse osmosis treatment to attain complete recycle of all process wastewater. This option was only considered for nonferrous phase I.

Option G—Option G consists of chemical oxidation applied to the total plant discharge, as a step to reduce toxic organic concentrations, without any other end-of-pipe treatment or pretreatment.

VIII. Substantive Changes From Prior Regulations

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

A. *New Subcategorizations.* As discussed in Section VI of today's notice, EPA is proposing to include metallurgical acid plants associated (i.e., on-site) with primary molybdenum roasters as part of the metallurgical acid plants subcategory finalized on March 8, 1984 (49 FR 8742). 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, zinc, and molybdenum 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 four metal types. Nor was there any significant observable difference in the amount of water discharged from plants using the two technologies. Finally, the Agency found no difference in the characterization of the wastewater at plants which burn supplemental sulfur to enhance the performance of the acid plant.

The processes are also similar in terms of waste streams generated. Wastewaters are typically combined in 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 four types of plants.

The wastewater matrices from all four 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 four primary metals considered. There were similar concentrations (i.e., in the same order of magnitude) of antimony, arsenic, chromium, mercury, and selenium, among the four. 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.* The regulations proposed today use the so-called building block approach promulgated for phase I, 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 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-based 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 or mg/troy ounce) for each wastewater present in his plant, shown today in 40 CFR Part 421, by the production of that source (kkg or troy ounce), 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 for monthly averages for that discharge point. Waste streams not identified in today's notice 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 used 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 pretreatment standards as specified by the "combined waste stream formula" set forth at 40 CFR 403.6(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.

As an example, we will use a facility which combines secondary precious metals and secondary silver refining, and precious metals forming wastewater and treats this water in a waste treatment system prior to discharge. The permit writer must first identify the manufacturing operations using process water in the facility. The facility in this example discharges wastewater from gold precipitation and filtration, precipitation and filtration of nonphotographic solutions (silver), and surface treatment rinse water. Then by multiplying the production calculated according to 40 CFR 122.63(b)(2) for each of these operations by the limitations or standards in 40 CFR Pat 421 for both precipitation and filtration waste streams and in 40 CFR Part 471 for surface treatment rinse water and by summing the product obtained for each of these waste streams, the permit writer can obtain the allowable mass discharge.

If, for example, the production of gold resulting from gold precipitation and filtration is 200,000 troy ounce per year, the production of silver resulting from precipitation and filtration of nonphotographic solutions is 150,000 troy ounce per year, and the surface treatment rinse water production is 7.774 off-kkg of precious metals surface treated per year, the maximum for any one day limitation based on the best available technology economically achievable (BAT) for the pollutant copper is 1.7439 kg/yr as calculated below:

Gold Precipitation and Filtration

200,000 troy ounce/yr×5.632 mg/troy ounce=1.1264 kg/yr

Precipitation and Filtration of Nonphotographic Solutions

150,000 troy ounce/yr×3.930 mg/troy ounce=0.5895 kg/yr

Surface Treatment Rinse Water

7.774 Off-kkg/yr×3,600 mg/kkg=0.028 kg/yr

Total=1.7439 kg/yr

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 as follows. 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.

Under § 403.12(b)(4) of the General Pretreatment Regulations, a facility must monitor the flow of regulated process streams and other streams as necessary to allow use of the Combined Wastestream Formula. A facility must monitor the flows of its regulated streams. However, a facility can avoid monitoring its other streams (unregulated and dilute) under this section by agreeing to meet a mass limitation at least as stringent as the one which would be calculated under the Combined Wastestream Formula if these other streams were taken into consideration. An integrated nonferrous metals manufacturing facility combining regulated process streams with either unregulated or dilute streams, or both, can avoid monitoring the flows of those streams if it agrees to meet the mass limit calculated solely through use of the limits applicable to the regulated streams. Such a limit would be as stringent as any which could possibly be derived under the formula if either the unregulated or dilute streams, or both, were taken into consideration. If, however, the facility desires to take into account potential pollutants contained in these unregulated or dilute streams, monitoring of these streams will be required to enable calculation of the alternative limit under the formula.

It should be noted that it is an entirely different matter where concentration-based rather than mass-based limits are involved. A facility cannot, for example, avoid monitoring unregulated or dilute streams by agreeing to meet the concentration limit applicable to its regulated streams. This is because application of the formula could result in a more stringent concentration-based limit if the unregulated or dilute streams were taken into consideration.

As an example, we will use a facility which combines process wastewater from a mill using froth flotation to concentrate copper ore with SO_2 scrubber water from a primary molybdenum roaster. The portion of the limitations attributable to the roaster SO_2 scrubber water is calculated by multiplying the limitations in subpart U of 40 CFR Part 421 in today's notice by the molybdenum sulfide roasted production. The permit writer must then determine the appropriate flow for the discharge from the mill and multiply it by the concentrations set forth in subpart J of 40 CFR Part 440 at 47 FR 54618. If the molybdenum sulfide roasted production is 175,000 kkg per year and the flow from the froth flotation mill is 2,000,000 liters per year, the maximum for any one day limitation based on the best available technology economically achievable (BAT) for the pollutant nickel is 1511.7 kg/yr as calculated below:

Froth flotation mill wastewater

2,000,000 1/yr×0.2 mg/1×1 kg/10^6 mg=0.4 kg/yr

SO_2 Scrubber Water

8.636 mg/kg×175,000 kkg/yr=1511.3 kg/yr

Total=1511.7 kg/yr

The Agency recognizes that there may be different technology bases for the limitations and standards applicable to an integrated facility. As an example, the technology basis for BAT for tin smelting is chemical precipitation, sedimentation and filtration whereas the technology basis for BAT for tin forming is lime precipitation and sedimentation. EPA developed these limitations based on specified in-plant controls and end-of-pipe treatment technology; however, it does not require that the facility implement these specific in-plant controls and end-of-pipe technology. The facility combining wastewater from manufacturing operations covered by the two categories must install technology and modify the manufacturing operations so as to comply with the mass limitations.

D. *Allowances for Net Precipitation in Bauxite Refining.* Promulgated BPT and BAT limitations for the bauxite refining subcategory are based on use of settling impoundments. Facilities in this subcategory are subject to a zero discharge requirement; however, they can discharge on a monthly basis a volume of water equal to the difference between precipitation that falls within the impoundment and evaporation within that impoundment for that month.

We are proposing today to make minor technical amendments to delete or correct references to FDF considerations under Part 125 and pretreatment references to Part 128. We are giving consideration to establishing concentration-based limitations on the net precipitation discharge to control the discharge of phenol based toxic pollutants. Samples of red-mud impoundment discharges collected by EPA showed treatable concentrations of two listed toxic organic compounds, phenol and 2-chlorophenol, and phenols (4AAP). The concentration-based limitations we are considering are based on carbon adsorption treatment of the net precipitation discharge. We formally solicit comment on concentration-based limitations for these pollutants in the net precipitation discharge for bauxite refining.

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 today's notice. (Many of these issues were identified as a result of the Agency's consideration of public comment on the phase I portion of this rulemaking.) 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, 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.

a. *Hydroxide Precipitation-Sedimentation.* In considering the performance achievable using hydroxide (usually lime) precipitation-sedimentation of metals with and without polishing filtration, EPA evaluated data for 23 pollutants from 10 subcategories in nonferrous metals manufacturing phase II 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. (See generally 49 FR 8742, March 8, 1984.)

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

Two analyses were performed to evaluate these two sets of data. First, the mean wastewater pollutant concentrations of categories in the CMDB were compared statistically with the mean wastewater pollutant concentrations in the nonferrous data base. The technique used to compare these data is referred to as analysis of variance. The analysis of variance methodology is well known to statisticians and is sometimes referred to as a homogeneity analysis. The primary result of the analysis is that, except for lead (Pb), there was no statistical difference detected between the mean effluent pollutant concentrations from categories in the CMDB and the mean effluent pollutant concentrations from the nonferrous phase II category. The differences in mean effluent Pb concentration will be resolved by using the treatment effectiveness concentrations for Pb which have been developed from a data base which includes over 200 Pb concentration measurements from the effluent wastewaters of several lead battery manufacturing and/or secondary lead plants that employ lime precipitation and sedimentation treatment. The treatment effectiveness concentrations that were developed are substantially larger than those estimated from the CMDB. The procedures used to develop these Pb treatment effectiveness concentrations are described in a memorandum which is included in the record to this proposed rulemaking. The other analysis that the Agency conducted to support the nonferrous phase II proposed rule also employed analysis of variance. The analysis of variance in this second analysis compares the mean wastewater pollutant concentrations among the nonferrous phase II subcategories. The results indicate that the mean pollutant concentrations measured in the subcategories of the nonferrous phase II category are generally similar across subcategories. A report which describes the methodology and results of the analysis of variance comparisons that have been performed to support the nonferrous phase II proposed rulemaking is also included in the record.

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

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

(2) *Homogeneity:* EPA examined the statistical similarity among wastewater pollutant concentrations in the nonferrous subcategories, as well as between the pooled nonferrous subcategories and the CMDB. The purpose of these analyses was to test the Agency's engineering hypothesis that the mean untreated wastewater concentrations in the nonferrous category were similar to those in the CMDB. In general, the results of the analysis showed that the nonferrous subcategories are statistically similar with respect to mean pollutant concentrations across subcategories. The results also show that the nonferrous metals manufacturing pollutant concentration data combined across subcategories are comparable to the CMDB pollutant concentration data. The similarity of nonferrous and CMDB untreated and treated wastewater pollutant concentrations was established through a statistical assessment. The results of the statistical analysis provide further support to EPA's engineering evaluation that hydroxide precipitation and sedimentation treatment in the nonferrous category reduces the toxic metal pollutant concentrations achieved by the same technology applied to the wastewater from the categories in the CMDB.

We are proposing limits based on chemical precipitation and sedimentation technology for certain pollutants not included in the combined metals data base. Treatment performance concentrations for these pollutants are calculated either from nonferrous metals manufacturing data (for arsenic, selenium, silver, antimony, boron, molybdenum, and tin), or from categories with wastewaters similar to nonferrous metals manufacturing (fluoride from electrical components manufacturing data, cobalt from porcelain enameling data, and uranium and radium 226 from ore mining and dressing data). No treatment effectiveness concentrations are available for germanium, indium and titanium which are proposed for limitation in some subcategories. For these pollutants we have selected treatment effectiveness concentrations by comparing the theoretical solubilities of these pollutants to pollutants in the CMDB at comparable pH levels. As we have discussed above, hydroxide precipitation and sedimentation technology is to a degree solubility related. As such, we believe that these additional pollutants will be reduced to the same effluent concentrations as the corresponding pollutant in the CMDB.

b. *Filtration.* EPA established the pollutant concentrations achievable with lime precipitation, sedimentation, and polishing filtration with data from three plants with the technology in-place: one (phase I) nonferrous metals manufacturing plant and two porcelain enameling plants whose wastewater is similar (as determined by statistical analysis for homogeneity) to wastewater generated by nonferrous metals manufacturing plants. In generating long-term average standards, EPA applied variability factors based on the pooled variances from the combined metals data base because the combined data base provided a broader statistical basis for computing variability than the data from the three plants sampled. The use of lime and settle combined data base variability factors is probably a conservative assumption because filtration is a less variable technology than lime and settle, since it is less operator-dependent.

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

EPA selected this approach because of the extensive long-term data available from these three plants. We believe that the use of polishing filtration data from procelain enameling plants is justified because procelain 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 procelain 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.

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

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

The Agency has verified the proposed steam stripping performance values using steam stripping data collected at a zirconium-hafnium plant, a plant in the nonferrous phase II category, which has raw ammonia concentrations comparable to those in the iron and steel manufacturing data. Data collected by the plant represent almost two years of daily operations, and support the long-term mean used to establish treatment effectiveness.

There is one exception to this discussion. In those subcategories where we are not altering existing BPT requirements—bauxite refining and metallurgical acid plants—those limitations necessarily continue to be based on subcategory specific data.

BAT limitations for all subcategories employing filtration will be based on the data base for polishing filtration discussed above.

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

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 POTW 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 mass limitation is based upon flow reduction technology because pollutant reductions associated with the flow reduction cannot be ensured except by a reduction in the amount of pollutant allowed to be discharged. Mass-based standards, however, are harder to implement because POTWs face increased difficulties in monitoring. POTW 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 for PSES and PSNS where we believe that the incremental pollutant removals associated with flow reduction are significant enough to warrant mass-based standards.

C. *pH.* In those subcategories where we are first proposing BPT, we are proposing pH limitations of 7.5 to 10. We are proposing this range 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) to achieve optimum precipitation of toxic metals. This level is somewhat different from the pH 6–9 limitations that the Agency has set for BPT in the past. We are proposing the higher range to allow for proper performance of the lime and settle treatment without requiring the addition of acid to adjust the pH before discharge.

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 achieved regardless of the number of samples averaged and are to be used by plants with combined waste streams that use the "combined waste stream formula" set forth in 40 CFR 403.6(e) and by permit writers in writing direct discharge permits.

E. *Compliance Date for PSES.* The Agency is proposing that the date for compliance with PSES for existing indirect dischargers subject to this rulemaking be three years from the date of promulgation. 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 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 category. Indeed, some plants reported 100 percent recycle of process wastewater from these operations. The Agency believes, however, that most plants may have to discharge a portion of the recirculating flow to prevent the buildup of dissolved solids. The Agency believes that through operation of cooling towers 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 in nonferrous phase I and phase II supports our selection of a 90 percent recycle rate. Ninety percent recycle is extensively demonstrated in phase I (see 48 FR 7052 and subcategory supplements to the General Development Document).

Twenty-two of 29 secondary precious metals plants using wet air pollution control, four of eight primary precious metals and mercury plants, one secondary mercury plant, one secondary molybdenum and vanadium plant, and one of the two discharging primary molybdenum and rhenium plants practice recycle.

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

The Agency would like to point out that the regulations do not require each plant to achieve 90 percent recycle to meet these promulgated mass allowances. For example, a plant achieving the lowest process water use observed in the subcategory may only need to recycle 50 percent or less.

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

G. *Cost of Compliance at Integrated Facilities.* As discussed in section VIII (Building Block Approach Applied to Integrated Facilities), integrated facilities subject to both 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 generally include 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 the segregation of the combined waste streams are not normally significant compared to the cost of the treatment equipment. However, we did include the cost of piping and peripherals needed to route non-phase II wastewater away from phase II treatment.

For plants currently providing BPT or BAT on combined wastewater, we believe compatibility of combined treatment is demonstrated by these plants' own conduct. Therefore, we do not believe this proposed regulation will require segregation and separate treatment at these plants.

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, nonwater 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 basic end-of-pipe treatment for BPT in this rulemaking is lime and settle treatment. We are transferring lime and settle treatment technology and performance for the primary antimony, primary beryllium, primary boron, primary cesium and rubidium, primary and secondary germanium and gallium, secondary indium, secondary mercury, primary molybdenum and rhenium, secondary molybdenum and vanadium, primary nickel and cobalt, secondary nickel, primary precious metals and mercury, secondary precious metals, primary rare earth metals, secondary tantalum, primary and secondary tin, primary and secondary titanium, secondary tungsten and cobalt, secondary uranium, and primary zirconium and hafnium subcategories from aluminum forming, copper forming, battery manufacturing, porcelain enameling and coil coating plants. As discussed in section IX of this preamble, Summary of Generic Issues, the data base for the performance of lime and settle is a composite of data from the industrial categories listed known as the combined metals data base (CMDB). This data base was selected because lime and settle treatment applied to nonferrous metals manufacturing wastewater in each of the subcategories listed above will result in effluent concentrations identical to those achieved by the plants in the CMDB. This is based on the fact that the raw wastewater matrix in each of these subcategories contains the same pollutants in the same order of magnitude as the combined metals data base raw wastewater. The CMDB was also selected because it was determined to be homogeneous with the raw wastewaters in these subcategories.

We are transferring steam stripping technology and performance for ammonia removal in the primary molybdenum and rhenium, secondary molybdenum and vanadium, primary nickel and cobalt, secondary tungsten and cobalt, secondary uranium, secondary precious metals, primary and secondary tin and primary zirconium and hafnium subcategories of the nonferrous metals manufacturing phase II from one iron and steel manufacturing plant. As discussed in Section IX of this preamble, Summary of Generic Issues, we believe that steam stripping performance can be transferred to these subcategories because the technology is solubility related, and because the raw wastewater concentrations of ammonia in these subcategories and in iron and steel manufacturing are similar. We believe that plants in these subcategories will achieve effluent concentrations identical to those achieved by the one iron and steel plant.

One plant in the secondary precious metals subcategory currently uses cyanide precipitation to treat process wastewater. We are transferring cyanide precipitation technology and performance for the secondary precious metals, primary and secondary tin, and the primary zirconium and hafnium subcategories in nonferrous metals manufacturing phase II from coil coating plants. We believe that the technology is transferrable to these subcategories because the raw wastewater concentrations are of the same order of magnitude as those observed in coil coating wastewater. In that cyanide precipitation converts all cyanide species to complex cyanides and that precipitation of the complexed cyanides is solubility related, we believe that the technology will achieve identical effluent concentrations in both categories.

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*, 526 F 2d 1027 (3rd Cir. 1975). In balancing costs in relation to pollutant removal 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, both of the plants in the rare earth metals subcategory that use wet air pollution control on electrolytic refining operations discharge no process wastewater through by-product recovery of the scrubber liquor. We are proposing zero discharge from this stream because by-product recovery 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 limitations were calculated by multiplying the effluent concentrations (mg/1) achievable by the selected option technology by the regulatory flow (1/kg production normalizing parameter) established for each waste stream.

Where we already have promulgated BPT, we are not proposing to alter these existing limitations because we have determined that the existing regulation adequately characterizes BPT and because the 1984 BAT compliance date is imminent. We therefore are leaving unaltered existing BPT limitations for the bauxite refining subcategory and are proposing to alter only the applicability of the metallurgical acid plants subcategory.

To fulfill our statutory obligation, we are proposing BPT in those subcategories we have not addressed previously, namely primary antimony, primary beryllium, primary molybdenum and rhenium, secondary molybdenum and vanadium, primary nickel and cobalt, primary precious metals and mercury, secondary precious metals, primary rare earth metals, secondary tantalum, primary and secondary tin, primary and secondary titanium, secondary tungsten and cobalt, secondary uranium, primary and secondary germanium and gallium and primary zirconium and hafnium. We also are proposing that molybdenum metallurgical acid plants be subject to existing limits already promulgated for copper, lead, and zinc metallurgical acid plants. We are not proposing BPT for the five subcategories without direct discharging plants: primary boron, primary cesium and rubidium, secondary indium, secondary mercury, and secondary nickel. Our basis for these decisions is explained below. The pollutant reduction benefits from applying BPT in the regulated subcategories listed above substantially outweigh the costs of compliance.

Primary Antimony

We are proposing BPT requirements for the primary antimony 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. These technologies are not in-place at the one discharger in this subcategory. The pollutants specifically proposed for regulation at BPT are antimony, arsenic, lead, mercury, TSS, and pH.

Implementation of the proposed BPT limitations will remove annually an estimated 2,642 kg of toxic metals and 965 kg of TSS over estimated current discharge, which is equal to the raw waste load because no treatment is in-place. We project a capital cost of approximately $34,200 and an annualized cost of approximately $17,300 for achieving proposed BPT.

More stringent technology options were not selected for BPT since they require in-process changes and, therefore, are more appropriately considered under BAT.

Bauxite Refining

EPA promulgated BPT effluent limitations for the bauxite refining subcategory on April 8, 1974 under Subpart A of 40 CFR Part 421. The promulgated BPT is based on zero discharge of process wastewater except for an allowance for net precipitation that falls within process wastewater impoundments. EPA is only proposing minor technical amendments to the existing BPT limitations. The technology basis of the existing BPT is impoundment and recycle.

Primary Beryllium

We are proposing BPT requirements for the primary beryllium subcategory, since BPT has not yet been promulgated. The technology basis for the BPT limitations is lime precipation and sedimentation technology to remove metals and solids from combined wastewaters and to control pH and fluoride. This technology is already in-place at the one discharger in the subcategory. The pollutants specifically proposed for regulation at BPT are beryllium, chromium, copper, fluoride, TSS, and pH.

Because the one discharging facility in the primary beryllium subcategory already has the BPT technology in-place, and our data indicate that the technology is achieving the proposed BPT limitations, there will be no pollutant removal above the current discharge level and no incremental capital or annual costs.

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 Boron

We are not proposing best practicable technology for existing direct dischargers for the primary boron subcategory since there are no existing direct dischargers.

Primary Cesium and Rubidium

We are not proposing BPT limitations for the primary cesium and rubidium subcategory because there are no existing direct dischargers.

Primary and Secondary Germanium and Gallium

We are proposing BPT requirements for the primary and secondary germanium and gallium subcategory, since BPT has not yet been promulgated. Level A provisions are applicable to facilities which only reduce germanium dioxide in a hydrogen furnace and wash and rinse the germanium product in conjunction with zone refining. Level B provisions are applicable to all other facilities in the subcategory. The technology basis for both Levels A and B for the BPT limitations are lime precipitation and sedimentation technology to remove metals, fluoride and solids from combined wastewaters and to control pH. The pollutants specifically proposed for regulation at BPT are arsenic, lead, zinc, germanium, fluoride, TSS, and pH.

Although there are no existing direct dischargers in this subcategory, BPT is proposed for any existing zero discharger that elects to discharge at some point in the future. This action is deemed necessary because wastewaters from germanium and gallium operations which contain significant loadings of toxic pollutants are currently being disposed of in a RCRA permitted surface impoundment.

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. EPA is proposing a two tier regulatory scheme for this subcategory however the same technology apply to both levels at BPT.

The cost and specific removal data for this subcategory are not presented here because the data on which they are based have been claimed to be confidential. The Agency has determined that the benefits justify the costs for this subcategory.

Secondary Indium

We are not proposing BPT limitations for the secondary indium subcategory since there are no existing direct dischargers.

Secondary Mercury

We are not proposing BPT limitations for the secondary mercury subcategory since there are no existing direct dischargers.

Primary Molybdenum and Rhenium

We are proposing BPT requirements for the primary molybdenum and rhenium 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 preliminary treatment. These technologies are already in-place at one of the two direct dischargers in the subcategory. The pollutants specifically proposed for regulation at BPT are arsenic, lead, nickel, selenium, molybdenum, ammonia, TSS, and pH. As described previously, we also are proposing to add acid plants associated with primary molybdenum plants to those regulated by promulgated BPT limitations for the metallurgical acid plant subcategory.

Implementation of the proposed BPT limitations will remove annually an estimated 73,631 kg of toxic metals, 1,049 kg of molybdenum, 62,813 kg of ammonia, and 51,529 kg of TSS. While one of the discharging plants has the basic equipment components in-place to comply with BPT, we do not believe that either plant is currently achieving the BPT mass limitations.

The cost and specific removal data for this subcategory are not presented here because the data on which they are based have been claimed to be confidential. The Agency has determined that the benefits justify the costs for this subcategory.

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.

We are expanding the applicability of the existing BPT requirements established for the metallurgical acid plants subcategory to include the acid plants associated with primary molybdenum roasting operations. The technology basis for the existing BPT limitations is lime precipitation and sedimentation technology to remove metals and solids from combined wastewaters and to control pH. These technologies are already in-place at both of the dischargers included under the expanded applicability. The pollutants specifically proposed for regulation at BPT are cadmium, copper, lead, zinc, TSS, and pH.

Compliance with the existing BPT limitations for metallurgical acid plants by the two direct discharging primary molybdenum facilities which operate sulfuric acid plants will result in the removal of an estimated 8,026 kg of toxic metals, and 10,903 kg of TSS. While both plants have the equipment in-place to comply with BPT, we do not believe that the plants are currently achieving the proposed BPT limitations.

The cost and specific removal data for this subcategory are not presented here because the data on which they are based have been claimed to be confidential. The Agency has determined that the benefits justify the costs for this subcategory.

Secondary Molybdenum and Vanadium

We are proposing BPT requirements for the secondary molybdenum and vanadium 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 are already in-place at the one discharger in the subcategory. The pollutants specifically proposed for regulation at BPT are antimony, lead, nickel, molybdenum, ammonia, TSS, and pH.

Implementation of these proposed BPT limitations will remove annually an estimated 25,100 kg of toxic metals, and 74,000 kg of TSS.

The cost and specific removal data for this subcategory are not presented here because the data on which they are based have been claimed to be confidential. The Agency has determined that the benefits justify the costs for this subcategory.

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 Nickel and Cobalt

We are proposing BPT requirements for the primary nickel and cobalt 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. Lime precipitation and sedimentation technology is already in-place at the one discharger in the subcategory. The pollutants specifically proposed for regulation at BPT are copper, nickel, cobalt, ammonia, TSS, and pH.

Implementation of the proposed BPT limitations will remove annually an estimated 241 kg of toxic metals.

The cost and specific removal data for this subcategory are not presented here because the data on which they are based have been claimed to be confidential. The Agency has determined that the benefits justify the costs for this subcategory.

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.

Secondary Nickel

We are not proposing BPT requirements for the secondary nickel subcategory, since there are no existing direct dischargers.

Primary Precious Metals and Mercury

We are proposing BPT requirements for the primary precious metals and mercury 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 oil skimming to remove oil and grease. These technologies are not in-place at the one discharger in this subcategory. The pollutants specifically proposed for regulation at BPT are arsenic, lead, mercury, silver, zinc, oil and grease, TSS, and pH.

Implementation of the proposed BPT limitations will remove annually an estimated 914 kg of toxic metals and 334 kg of TSS. We project a capital cost of $27,500 and an annualized cost of $9,000 for achieving proposed BPT limitations.

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.

Secondary Precious Metals

We are proposing BPT requirements for the secondary precious metals subcategory, since BPT has not yet been promulgated. The technology basis for the BPT limitations is hydroxide precipitation and sedimentation technology to remove metals and solids from combined wastewaters and to control pH, ammonia steam stripping to remove ammonia, and cyanide precipitation to remove free and complex cyanide. Chemical precipitation and sedimentation technology is already in-place at 20 of the plants in the subcategory including all three direct dischargers. One plant has cyanide precipitation in-place. The technology basis for steam stripping is discussed above. The pollutants specifically proposed for regulation at BPT are copper, cyanide, zinc, ammonia, TSS, and pH.

Implementation of the proposed BPT limitations will remove annually an estimated 34,570 kg of toxic pollutants (which include 6.3 kg of cyanide), 490 kg of ammonia, and 11,200 kg of TSS.

The cost and specific removal data for this subcategory are not presented here because the data on which they are based have been claimed to be confidential. The Agency has determined that the benefits justify the costs for this subcategory.

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 Rare Earth Metals

We are proposing BPT requirements for the primary rare earth metals 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. These technologies are already in-place at the one direct discharger in the subcategory. The pollutants specifically proposed for regulation at BPT are chromium, lead, nickel, TSS, and pH.

Compliance with of the proposed BPT limitations will remove annually an estimated 0.13 kg of toxic metals and 81.6 kg of TSS (no toxic organics would be removed). We project no capital or additional annual cost for achieving proposed BPT because the technology is already in-place at the one direct discharging facility in this subcategory.

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. Therefore, they are more appropriately considered under BAT.

Secondary Tantalum

We are proposing BPT requirements for the secondary tantalum 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. These technologies are already in-place at all three of the dischargers in the subcategory. The pollutants specifically proposed for regulation at BPT are copper, lead, nickel, zinc, TSS, and pH.

Implementation of the proposed BPT limitations will remove annually an estimated 26,268 kg of toxic metals and 20,079 kg of TSS.

The cost and specific removal data for this subcategory are not presented here because the data on which they are based have been claimed to be confidential. The Agency has determined that the benefits justify the costs for this subcategory.

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. Therefore, they are more appropriately considered under BAT.

Primary and Secondary Tin

We are proposing BPT requirements for the primary and secondary tin subcategory, since BPT has not yet been promulgated. The technology basis for the BPT limitations is chemical precipitation and sedimentation technology to remove metals, fluoride, and solids from combined wastewaters and to control pH, with preliminary treatment consisting of cyanide precipitation and ammonia steam stripping. Chemical precipitation and sedimentation technology is already in-place at two of the three direct dischargers in the subcategory. The pollutants specifically proposed for regulation at BPT are antimony, cyanide, lead, nickel, tin, ammonia, fluoride, TSS, and pH.

Implementation of the proposed BPT limitations will remove annually an estimated 1,169 kg of toxic metals, 144 kg of cyanide, 237,220 kg of fluoride, and 58,560 kg of TSS.

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

Primary and Secondary Titanium

We are proposing BPT requirements for the primary and secondary titanium 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 oil skimming preliminary treatment for streams with treatable concentrations of oil and grease. These technologies are already in place at two of the four direct dischargers in the subcategory. EPA is proposing a two tier regulatory scheme for this subcategory. However, the same technologies apply to both tiers at BPT. The pollutants specifically proposed for regulation at BPT are chromium, lead, nickel, thallium, fluoride, titanium, oil and grease, TSS, and pH.

Implementation of the proposed BPT limitations will remove annually an estimated 113 kg of toxic metals, 5,791 kg of titanium, and 58,864 kg of TSS. While two plants have the equipment in-place to comply with BPT, we do not believe that the plants are currently achieving the proposed BPT limitations. We project a capital cost of $481,000 and annualized cost of $330,000 for achieving proposed BPT in all plants.

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.

Secondary Tungsten and Cobalt

We are proposing BPT requirements for the secondary tungsten and cobalt 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, oil skimming and ammonia steam stripping to remove ammonia. Lime precipitation and sedimentation technology is already in-place at three direct dischargers in the subcategory. The pollutants specifically proposed for regulation at BPT are copper, nickel, cobalt, ammonia, oil and grease, TSS, and pH.

Implementation of the proposed BPT limitations will remove annually an estimated 150,650 kg of toxic metals, and 108,700 kg of TSS.

The cost and specific removal data for this subcategory are not presented here because the data on which they are based have been claimed to be confidential. The Agency has determined that the benefits justify the costs for this subcategory.

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.

Secondary Uranium

We are proposing BPT requirements for the secondary uranium 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. BPT also includes ammonia steam stripping. These technologies are already in-place at the one discharger in the subcategory. The pollutants specifically proposed for regulation at BPT are chromium, copper, nickel, ammonia, fluoride, uranium, TSS, and pH.

Implementation of the proposed BPT limitations will remove annually an estimated 1,280 kg of toxic metals, 12,000 kg of ammonia and 1,763 kg of TSS. While the one discharging plant has the equipment in-place to comply with BPT, we do not believe that the plant is currently achieving the proposed BPT limitations. We project capital and annual costs of $28,600 and $73,644 (1982 dollars) respectively for modifications to technology presently in-place at the discharging facility to achieve proposed BPT regulations.

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. Therefore, they are more appropriately considered under BPT.

Primary Zirconium and Hafnium

We are proposing BPT requirements for the primary zirconium and hafnium 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 plus ammonia steam stripping, cyanide precipitation and barium chloride co-precipitation preliminary treatment of streams containing ammonia, cyanide or radium. Lime precipitation and sedimentation technology and ammonia steam stripping is already in-place at one discharger in the subcategory. The pollutants specifically proposed for regulation at BPT are chromium, cyanide, lead, nickel, ammonia, radium (226), TSS, and pH.

Implementation of the proposed BPT limitations will remove annually an estimated 703 kg of toxic metals, and 281,882 kg of TSS.

The cost and specific removal data for this subcategory are not presented here because the data on which they are based have been claimed to be confidential. The Agency has determined that the benefits justify the costs for this subcategory.

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.

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 pollutant removal benefits (see *Weyerhaeuser* v. *Costle, supra*). In devloping 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 pollutant removal 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 five 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 also considered dry scrubbing as an in-process modification for BAT. This technology, however, generally was not sufficiently demonstrated for nonferrous metals subcategories subject to this rulemaking. The emissions from many of the manufacturing processes were found to contain hot particulate matter and acidic fumes. Emissions of this nature would tend to cause operational problems in dry scrubbers. 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 each of the options was prepared for each subcategory as an aid in choosing the best BAT options. All compliance costs are based on March 1982 dollars.

The cost methodology has been described in detail in section III of this preamble. For most treatment technologies, standard cost literature sources and vendor quotations 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 establish system costs for each facility.

End-of-pipe filtration is demonstrated at 23 nonferrous metals plants in subcategories covered under nonferrous metals manufacturing phase I, and 2 plants covered under phase II in the primary nickel and cobalt and secondary precious metals subcategories. We are transferring end-of-pipe filtration performance for the Primary Antimony, Primary Beryllium, Primary and Secondary Gemanium and Gallium, Primary Molybdenum and Rhenium, Secondary Molybdenum and Vanadium, Primary Nickel and Cobalt, Primary Precious Metals and Mercury, Secondary Precious Metals, Primary Rare Earth Metals, Secondary Tantalum, Primary and Secondary Tin, Primary and Secondary Titanium, Secondary Tungsten and Cobalt, Secondary Uranium, and Primary Zirconium and Hafnium subcategories of this proposed rulemaking from one nonferrous metals manufacturing plant and two porcelain enameling plants. As discussed in section IX of this preamble Summary of Generic Issues, this data base was selected because the raw wastewater among plants in nonferrous metals manufacturing phase II and in categories in the CMDB is similar. We believe that filtration will achieve the same effluent concentrations for nonferrous metals manufacturing wastewater as for the one nonferrous metals manufacturing and two porcelain enameling plants.

In-process flow reduction is an integral part of the proposed BAT in the primary beryllium, primary molybdenum and rhenium, primary precious metals and mercury, secondary precious metals, primary rare earth metals, primary and secondary titanium, secondary tungsten and cobalt, and primary zirconium and hafnium subcategories. Flow reduction is demonstrated in the category for wet air pollution control wastewater and contact cooling water. The demonstration status of in-process flow reduction and the level of recycle considered for this proposed rulemaking are discussed more fully in section IX of this preamble, Summary of Generic Issues. Flow reduction measures result in concentrating the pollutants present in wastewater. Treatment of a more concentrated stream allows a greater net removal of pollutants and a reduced flow may reduce the size of the treatment equipment and hence the cost of treatment. The Agency believes that the BAT technology based limitations proposed for the subcategories in this rulemaking are economically achievable.

Primary Antimony

Our proposed BAT limitations for this subcategory are based on lime precipitation and sedimentation (BPT technology) with the addition of filtration.

The pollutants specifically limited under BAT are antimony, arsenic, lead, and mercury. The toxic pollutants cadmium, copper and zinc were also considered for regulation because they were found at treatable concentrations in the raw wastewaters from this subcategory. These pollutants were not selected for specific regulation because they will be effectively controlled when the regulated toxic metals are treated to the levels achievable by the model BAT technology.

Implementation of the proposed BAT limitations would remove annually an estimated 2,644 kg of toxic pollutants, which is 1.3 kg of toxic metals over the estimated BPT discharge. Estimated capital cost for achieving proposed BAT is $41,250, and annualized cost is $21,183.

Bauxite Refining

We are proposing today to make minor technical amendments to delete or correct references to FDF considerations under Part 125 and pretreatment references to Part 128. The existing BAT (promulgated on April 8, 1974 under Subpart A of 40 CFR Part 421) prohibits the discharge of process wastewater except for an allowance for net precipitation that falls within process wastewater impoundments.

Information has become available to the Agency that suggests the need for treatment of the red mud impoundment effluent to remove toxic organic pollutants not considered in the development of the promulgated limitations. In keeping with the emphasis of the Clean Water Act of 1977 on toxic pollutants, we have considered the discharge from process wastewater impoundments as a part of this rulemaking and are now considering the regulation of toxic pollutants.

Therefore, we also are soliciting comments on the need for BAT limitations on the net precipitation discharge from red-mud ponds based on activated carbon treatment to remove toxic organic pollutants. The pollutants being considered for control under BAT are 2-chlorophenol, phenol (GC/MS) and total phenols (4AAP). The limitations would be based on achieving a daily maximum concentration of 0.010 mg/l for each pollutant. The toxic pollutants 2,4,6-trichlorophenol, 4,6-dichlorophenol, 2-nitrophenol and 4-nitrophenol were also considered for possible regulation because they were found at treatable concentrations in the raw wastewaters from this subcategory. These pollutants are not presently being considered for regulation because they would be effectively controlled by the toxic organic limitations presently being considered.

The BAT limitations on the toxic pollutants under consideration would remove annually an estimated 4,835 kg of toxic pollutants from the estimated current discharge. Estimated capital cost for achieving proposed BAT is $7.60 million, and annualized cost is $2.98 million.

The Agency may promulgate concentration based BAT limitations as discussed above for net precipitation discharge. Accordingly the public should submit comments on this issue at this time. The Agency specifically invites comments on the need to modify the existing regulation. If EPA determines that a change in the existing regulation is necessary, EPA intends to promulgate the technical option discussed above.

Primary Beryllium

Our proposed BAT limitations for this subcategory are based on lime precipitation and sedimentation (BPT technology), with the addition of in-process wastewater reduction, and filtration. Flow reduction is based on 90 percent recycle of beryllium oxide calcining furnace wet air pollution control. Although the one beryllium plant currently generating beryllium oxide calcining furnace wet air pollution control wastewater does not practice recycle, recycle of similar streams is demonstrated extensively in other subcategories of the nonferrous metals manufacturing category.

The polllutants specifically limited under BAT are beryllium, chromium, copper, and fluoride.

Implementation of the proposed BAT limitations would remove annually an estimated 257 kg of toxic pollutants, which is 8 kg of toxic metals over the estimated BPT discharge. An intermediate option considered for BAT is flow reduction plus lime precipitation and sedimentation. This option would remove an estimated 7.3 kg of toxic metals over the estimated BPT discharge.

The costs and specific removal data for this subcategory are not presented here because the data on which they are based has been claimed to be confidential.

Primary Boron

We are not proposing limitations based on best available technology for existing direct dischargers for the primary boron subcategory since there are no existing direct dischargers.

Primary Cesium and Rubidium

We are not proposing BAT limitations for the primary cesium and rubidium subcategory because there are no existing direct dischargers.

Primary and Secondary Germanium and Gallium

We are proposing Level A BAT limitations for this subcategory based on lime precipitation and sedimentation (BPT technology) for plants that only reduce germanium oxide in a hydrogen furnance and then wash and rinse the germanium product in conjunction with zone refining. This is equivalent to BPT technology. Level B BAT limitations are proposed for all other facilities in this subcategory. The Level B effluent limitations are based on the addition of filtration.

The pollutants specifically limited under BAT are arsenic, lead, zinc, germanium and fluoride. The toxic pollutants antimony, cadmium, chromium, copper, nickel, selenium, silver and thallium were also considered for regulation because they were found at treatable concentrations in the raw wastewaters from this subcategory. These pollutants were not selected for specific regulation because they will be effectively controlled when the regulated toxic metals are treated to the levels achievable by the model BAT technology. The Agency considered applying the same technology levels to this entire subcategory but decided to propose this two tiered regulatory scheme because there was little additional pollutant removal from the Level A wastewater streams when treated by the added Level B technology.

Although there are no existing direct dischargers in this subcategory, BAT is proposed for any existing zero discharger who elects to discharge at some point in the future. This action was deemed necessary because wastewaters from germanium and gallium operations which contain significant loadings of toxic pollutants are currently being disposed of in a RCRA permitted surface impoundment.

It is estimated that Level A plants in this subcategory would remove 335 kg of toxic metals annually. It is also estimated that Level B plants in this subcategory would remove 548 kg of toxic metals annually.

The costs and specific removal data for this subcategory are not presented here because the data on which they are based has been claimed to be confidential.

Secondary Indium

We are not proposing BAT limitations for the secondary indium subcategory since there are no existing direct dischargers.

Secondary Mercury

We are not proposing BAT limitations for the secondary mercury subcategory since there are no existing direct dischargers.

Primary Molybdenum and Rhenium

Our proposed BAT limitations for this subcategory are based on (BPT technology) preliminary treatment of ammonia steam stripping, end-of-pipe treatment consisting of lime precipitation and sedimentation, with the addition of in-process wastewater reduction, and filtration. Flow reductions are based on 90 percent recycle of scrubber liquor, a rate demonstrated by one of the two direct discharger plants.

The pollutants specifically limited under BAT are arsenic, lead, molybdenum, nickel, selenium, and ammonia. The toxic pollutants chromium, copper and zinc were also considered for regulation because they were found at treatable concentrations in the raw wastewaters from this subcategory. These pollutants were not selected for specific regulation because they will be effectively controlled when the regulated toxic metals are treated to the levels achievable by the model BAT technology.

Implementation of the proposed BAT limitations would remove annually an estimated 73,655 kg of toxic metals, which is 24 kg of toxic metals greater than the estimated BPT removal. No additional ammonia is removed at BAT.

An intermediate option considered for BAT is preliminary treatment with ammonia steam stripping followed by end-of-pipe treatment consisting of chemical precipitation and sedimentation with the addition of flow reduction. This option would remove an estimated 13 kg of toxic metals more than the estimated BPT discharge.

The costs and specific removal data for this subcategory are not presented here because the data on which they are based has been claimed to be confidential.

We are expanding the applicability of the existing BAT limitations for metallurgical acid plants to include acid plants associated with primary molybdenum roasting operations. The existing BAT limitations are based on the BPT technology (lime precipitation and sedimentation), in-process wastewater reduction, sulfide precipitation and filtration. Flow reduction are based on 90 percent recycle of scrubber liquor.

Compliance with the BAT limitations for the existing metallurgical acid plants subcategory by the two direct discharging primary molybdenum facilities which operate sulfuric acid plants will result in the annual removal of an estimated 8,245 kg of toxic pollutants.

Secondary Molybdenum and Vanadium

Our proposed BAT limitations for this subcategory are based on preliminary treatment consisting of ammonia steam stripping followed by end-of-pipe treatment consisting of lime precipitation and sedimentation (BPT technology) and filtration.

The pollutants specifically limited under BAT are antimony, lead, molybdenum, nickel, and ammonia. The toxic pollutants arsenic, beryllium, cadmium, chromium and zinc were also considered for regulation because they were found at treatable concentrations in the raw wastewaters from this subcategory. These pollutants were not selected for specific regulation because they will be effectively controlled when the regulated toxic metals are treated to the levels achievable by the model BAT technology.

Implementation of the proposed BAT limitations would remove annually an estimated 25,190 kg of toxic pollutants, which is 80 kg of toxic metals greater than the estimated BPT removal.

The costs and specific removal data for this subcategory are not presented here because the data on which they are based has been claimed to be confidential.

Primary Nickel and Cobalt

Our proposed BAT limitations for this subcategory are based on preliminary treatment of ammonia steam stripping followed by end-of-pipe treatment consisting of lime precipitation and sedimentation (BPT technology), and filtration. Filters are presently utilized by the one plant in this subcategory.

We are proposing filtration as part of the BAT technology because this technology is demonstrated in the primary nickel and cobalt category (the one discharger in this subcategory presently has a filter, and a total of 25 facilities in eight nonferrous metals manufacturing subcategories currently have filters), and results in additional removals of toxic metals. 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.

The pollutants specifically limited under BAT are cobalt, copper, nickel, and ammonia. The toxic pollutant zinc was also considered for regulation because it was found at treatable concentrations in the raw wastewaters from this subcategory. This pollutant was not selected for specific regulation because it will be effectively controlled when the regulated toxic metals are treated to the levels achievable by the model BAT technology.

Implementation of the proposed BAT limitations would remove annually an estimated 246 kg of toxic metals, which is 5 kg of toxic metals greater than the estimated BPT removal.

The costs and specific removal data for this subcategory are not presented here because the data on which they are based has been claimed to be confidential.

Secondary Nickel

We are not proposing BAT for the secondary nickel subcategory since there are no existing direct dischargers.

Primary Precious Metals and Mercury

Our proposed BAT limitations for this subcategory are based on preliminary treatment consisting of oil skimming and end-of-pipe treatment consisting of lime precipitation and sedimentation (BPT technology), and filtration. BAT also includes flow reduction.

The pollutants specifically limited under BAT are arsenic, lead, mercury, silver, and zinc. The toxic pollutants cadmium, chromium, copper, nickel and thallium were also considered for regulation because they were found at treatable concentrations in the raw wastewaters from this subcategory. These pollutants were not selected for specific regulation because they will be effectively controlled when the regulated toxic metals are treated to the levels achievable by the model BAT technology.

Implementation of the proposed BAT limitations would remove annually an estimated 914.5 kg of toxic pollutants, which is 0.5 kg of toxic metals greater than the estimated BPT removal. No additional oil and grease is removed at BAT. Estimated capital cost for achieving proposed BAT is $30,000, and annualized cost is $10,000.

Secondary Precious Metals

Our proposed BAT limitations for this subcategory are based on preliminary treatment consisting of cyanide precipitation and ammonia steam stripping and end-of-pipe treatment consisting of chemical precipitation and sedimentation (BPT technology) with the addition of in-process wastewater flow reduction, and filtration. Flow reductions are based on recycle of scrubber effluent. Twenty-one of the 29 existing plants currently have scrubber liquor recycle rates of 90 percent or greater. Filters also are presently utilized by one plant in the subcategory.

The pollutants specifically limited under BAT are copper, cyanide, zinc, and ammonia. The toxic pollutants antimony, arsenic, cadmium, chromium, lead, nickel, selenium, silver and thallium were also considered for regulation because they were found at treatable concentrations in the raw wastewaters from this subcategory. These pollutants were not selected for specific regulation because they will be effectively controlled when the regulated toxic metals are treated to the levels achievable by the model BAT technology.

Implementation of the proposed BAT limitations would remove annually an estimated 34,580 kg of toxic pollutants, which is 10 kg of toxic pollutants greater than the estimated BPT removal. No additional ammonia or cyanide is removed at BAT.

An intermediate option considered for BAT is flow reduction plus preliminary treatment consisting of cyanide precipitation, ammonia steam stripping and end-of-pipe treatment consisting of chemical precipitation and sedimentation. This option would remove an estimated 6.3 kg of toxic metals more than the estimated BPT removal.

The costs and specific removal data for this subcategory are not presented here becaue the data on which they are based has been claimed to be confidential.

Primary Rare Earth Metals

Our proposed BAT limitations for this subcategory are based on lime precipitation and sedimentation (BPT technology) with the addition of in-process flow reduction and filtration. Flow reduction is based on 90 percent recycle of scrubber effluent. Activated carbon absorption technology is proposed to control the discharge of hexachlorobenzene which is not effectively removed by existing treatment in the subcategory. Activated carbon technology is transferred from the iron and steel category where it is a demonstrated technology for removal of toxic organics.

The pollutants specifically limited under BAT are hexachlorobenzene, chromium, lead, and nickel. The toxic pollutants benzene, arsenic, cadmium, copper, selenium, silver, thallium and zinc were also considered for regulation because they were found at treatable concentrations in the raw wastewaters from this subcategory. These pollutants were not selected for specific regulation because they will be effectively controlled when the regulated toxic pollutants are treated to the levels achievable by the model BAT technology.

Implementation of the proposed BAT limitations would remove annually an estimated 18.3 kg of toxic pollutants (14.9 kg of toxic organics and 3.4 kg of toxic metals) and 198 kg of suspended solids more than the estimated BPT removal. An intermediate option considered for BAT is lime precipitation and sedimentation with the addition of in-process flow reduction and filtration. This option would remove an estimated 3.4 kg of toxic metals more than the estimated BPT removal. No toxic organics would be removed.

The costs and specific removal data for this subcategory are not presented here because the data on which they are based has been claimed to be confidential.

Secondary Tantalum

Our proposed BAT limitations for this subcategory are based on lime preciptation and sedimentation (BPT technology) with the addition of filtration.

The pollutants specifically limited under BAT are copper, lead, nickel, and zinc. The toxic pollutants antimony, beryllium; cadmium, chromium and silver were also considered for regulation because they were found at treatable concentrations in the raw wastewaters from this subcategory. These pollutants were not selected for specific regulation because they will be effectively controlled when the regulated toxic metals are treated to the levels achievable by the model BAT technology.

Implementation of the proposed BAT limitations would remove annually an estimated 26,273 kg of toxic metals, which is 4.8 kg of toxic metals more than the estimated BPT removal.

The costs and specific removal data for this subcategory are not presented here because the data on which they are based has been claimed to be confidential.

Primary and Secondary Tin

Our proposed BAT limitations for this subcategory are based on preliminary treatment consisting of ammonia steam stripping and cyanide precipitation when required, and end-of-pipe treatment consisting of chemical precipitation and sedimentation, and polishing filtration.

The pollutants specifically limited under BAT are antimony, cyanide, lead, nickel, tin, ammonia, and fluoride. The toxic pollutants arsenic, cadmium, chromium, copper, selenium, silver, thallium and zinc were also considered for regulation because they were found at treatable concentrations in the raw wastewaters from this subcategory. These pollutants were not selected for specific regulation because they will be effectively controlled when the regulated toxic metals are treated to the levels achievable by the model BAT technology.

Implementation of the proposed BAT limitations would remove annually an estimated 1,045 kg of toxic metals, which is 91 kg of toxic metals over the estimated BPT discharge. No additional fluoride is removed at BAT. The costs and specific removal data for this subcategory are not presented here because the data on which they are based has been claimed to be confidential.

Primary and Secondary Titanium

We are proposing Level A BAT limitations for titanium plants which do not practice electrolytic recovery of magnesium and which use vacuum distillation instead of leaching to purify titanium sponge as the final product are based on lime precipitation, sedimentation, and oil skimming (BPT technology) plus in-process wastewater flow reduction. Level B BAT limitations are proposed for all other titanium plants are based on lime precipitation, sedimentation, and oil skimming pretreatment where required (BPT technology) plus flow reduction, and filtration. Flow reduction is based on 90 percent recycle of scrubber effluent through holding tanks and 90 percent recycle of casting contact cooling water through cooling towers. The Agency considered applying the same technology levels to this entire subcategory but decided to propose this two tiered regulatory scheme because there was little additional pollutant removal from the Level A wastewater streams when treated by the added Level B technology.

The pollutants specifically limited under BAT are chromium, lead, nickel, thallium, titanium, and fluoride. The toxic pollutants antimony, cadmium, copper and zinc were also considered for regulation because they were found at treatable concentrations in the raw wastewaters from this subcategory. These pollutants were not selected for specific regulation because they will be adequately treated when the regulated toxic metals are treated to the levels achievable by the model BAT technology.

There are currently no direct discharging Level A plants in this subcategory. It is estimated that if the four existing direct discharging Level B plants in this subcategory became Level A dischargers they would incur a capital cost of approximately $641,000 and an annualized cost of $325,000; 135 kg of toxic pollutants would be removed.

Implementation of the proposed Level B BAT limitations would remove annually an estimated 298 kg of toxic pollutants. Estimated capital cost for achieving proposed BAT is $1,030,000, and annualized cost is $585,000.

Secondary Tungsten and Cobalt

Our proposed BAT limitations for this subcategory are based on lime precipitation and sedimentation (BPT technology) ammonia steam stripping plus in-process wastewater reduction, and filtration. Flow reductions are based on 90 percent recycle of scrubber effluent, which is the rate reported by the only existing plant with a scrubber.

The pollutants specifically limited under BAT are cobalt, copper, nickel, and ammonia. The toxic pollutants arsenic, cadmium, chromium, lead, silver and zinc were also considered for regulation because they were found at treatable concentrations in the raw wastewaters from this subcategory. These pollutants were not selected for specific regulation because they will be effectively controlled when the regulated toxic metals are treated to the levels achievable by the model BAT technology.

Implementation of the proposed BAT limitations would remove annually an estimated 150,700 kg of toxic pollutants.

The costs and specific removal data for this subcategory are not presented here because the data on which they are based has been claimed to be confidential.

The intermediate option we considered for BAT is flow reduction plus ammonia steam stripping and chemical precipitation and sedimentation. This option would remove an estimated 26 kg of toxic metals over the estimated BPT discharge.

Secondary Uranium

Our proposed BAT limitations for this subcategory are based on ammonia steam stripping and lime precipitation and sedimentation (BPT technology), plus filtration.

The pollutants specifically limited under BAT are chromium, copper, nickel, ammonia, uranium and fluoride. The toxic pollutants arsenic, cadmium, lead, selenium, silver and zinc were also considered for regulation because they were found at treatable concentrations in the raw wastewaters from the subcategory. These pollutants were not selected for specific regulation because they will be effectively controlled when the regulated toxic metals are treated to the levels achievable by the model BAT technology.

Implementation of the proposed BAT limitations would remove annually an estimated 1,304 kg of toxic metals and 12,000 kg of ammonia. Estimated capital cost for achieving proposed BAT is $54,312, and annualized cost is $36,452 (1982 dollars).

Primary Zirconium and Hafnium

Our proposed Level A BAT limitations for plants which only produce zirconium or zirconium-nickel alloys by magnesium reduction of ZrO_2 are based on barium chloride coprecipitation, cyanide precipitation, ammonia stream stripping and chemical precipitation and sedimentation (BPT technology), plus in-process wastewater flow reduction. Level B limitations apply to all other plants in the subcategory. The proposed Level B BAT limitations are based on barium chloride coprecipitation, cyanide precipitation, ammonia stream stripping and chemical precipitation and sedimentation (BPT technology), plus flow reduction, and filtration.

The achievable concentration for ammonia steam stripping is based on iron and steel manufacturing category data. Flow reductions are based on 90 percent recycle of scrubber effluent. The Agency considered applying the same technology levels to this entire subcategory but decided to propose this two tiered regulatory scheme because there was little additional pollutant removal from the Level A wastewater streams when treated by the added Level B technology.

The pollutants specifically limited under BAT are chromium, cyanide, lead, nickel, radium (226) and ammonia. The toxic pollutants cadmium, thallium and zinc were also considered for regulation because they were found at treatable concentrations in the raw wastewaters from this subcategory. These pollutants were not selected for specific regulation because they will be effectively controlled when the regulated toxic metals are treated to the levels achievable by the model BAT technology.

There are currently no level A direct discharging plants in this subcategory.

The costs and specific removal data for this subcategory are not presented here because the data on which they are based has been claimed to be confidential.

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 four major sets of technology options for this phase of nonferrous metals manufacturing which might be applied at the BDT level discussed in section VII. 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.

We are transferring lime precipitation and sedimentation technology and performance for the primary boron, primary cesium and rubidium, secondary indium, secondary mercury and secondary nickel subcategories from aluminum forming, copper forming, coil coating, battery manufacturing and porcelain enameling plants. This technology is not demonstrated on nonferrous metals manufacturing phase II process wastewater discharges in these subcategories. While lime precipitation and sedimentation is not demonstrated in these subcategories, we believe that it is transferable because of its widespread demonstration in this (the nonferrous metals manufacturing) category and by the categories considered in the CMDB. The raw wastewater characteristics of the primary boron, primary cesium and rubidium, secondary indium, secondary mercury and secondary nickel subcategories are similar to those found in this category. Likewise, the raw wastewater characteristics of these phase II subcategories are similar to those for the plants in the combined metals data base (see Section IX of this preamble). We believe that the technology when applied to wastewater in these phase II subcategories will achieve the same effluent concentration as plants in the CMDB.

We are transferring filtration technology for the primary cesium and rubidium, secondary indium, secondary mercury and secondary nickel subcategories from one nonferrous metals manufacturing phase I plant and two porcelain enameling plants. This technology is not demonstrated on nonferrous manufacturing phase II process wastewater discharges in these subcategories. While filtration is not demonstrated in these subcategories, we believe that it is transferrable because of its demonstration in this category. The raw wastewater characteristics of the primary cesium and rubidium, secondary indium, secondary mercury and secondary nickel subcategories are similar to those found in the other subcategories in the nonferrous metals manufacturing category. Likewise, the raw wastewater characteristics of these phase II subcategories are similar to those for plants in the data base used for filtration performance (see section IX of this preamble). We believe that this technology when applied to wastewater in these phase II subcategories will achieve the same effluent concentrations as the plants used to establish filtration performance.

Primary Antimony

We are proposing that NSPS be equal to BAT. Our review of the subcategory indicates that no new demonstrated technologies that improve on BAT technology exist. We do not believe that new plants could achieve any flow reduction beyond the allowances proposed for BAT. Because NSPS is equal to BAT we believe that the proposed NSPS will not pose a barrier to the entry of new plants into this subcategory.

Bauxite Refining

As discussed under BAT, we are soliciting comment on the achievability of NSPS equivalent to the BAT limitations. The standards we are considering would require that new bauxite plants achieve a maximum daily concentration of 0.010 mg/1 for 2-chlorophenol, phenol, and phenols (4AAP). Because the NSPS being considered is equal to the BAT we are considering, we believe that the proposed NSPS will not pose a barrier to the entry of new plants into this subcategory.

Primary Beryllium

We are proposing that NSPS be equal to BAT. Our review of the subcategory indicates that no new demonstrated technologies that improve on BAT technology exist. We do not believe that new plants could achieve any flow reduction beyond the allowances proposed for BAT. Because NSPS is equal to BAT we believe that the proposed NSPS will not have a detrimental impact on the entry of new plants into this subcategory.

Primary Boron

Our proposed NSPS limitations for this subcategory are based on lime precipitation and sedimentation technology. This technology is fully demonstrated in many nonferrous metals subcategories and would be expected to perform at the same level in this subcategory.

The pollutants specifically limited under NSPS are boron, lead, nickel, TSS, and pH. The toxic pollutants cadmium, chromium, thallium and zinc were also considered for regulation because they are present at treatable concentrations in the raw wastewaters from this subcategory. These pollutants were not selected for specific regulation because they will be effectively controlled when the regulated toxic metals are treated to the levels achievable by the model technology.

The costs and specific removal data for this subcategory are not presented here because the data on which they are based has been claimed to be confidential. We believe that the proposed NSPS limitations are achievable, and that they are not a barrier to entry of new plants into this subcategory.

Primary Cesium and Rubidium

Our proposed NSPS for the primary cesium and rubidium subcategory are based on lime precipitation, sedimentation, and filtration technology.

The pollutants and pollutant parameters specifically limited under NSPS are lead, thallium, zinc, TSS, and pH. The toxic pollutants antimony, arsenic, beryllium, cadmium, chromium, copper, nickel and silver were also considered for regulation because they are present at treatable concentrations in the raw wastewaters from this subcategory. These pollutants were not selected for specific regulation because they will be effectively controlled when the regulated toxic metals are treated to the levels achievable by the model technology.

The costs and specific removal data for this subcategory are not presented here because the data on which they are based has been claimed to be confidential. We believe the proposed NSPS is economically achievable, and that they are not a barrier to entry of new plants into this subcategory.

Primary and Secondary Germanium and Gallium

We are proposing that NSPS be equal to BAT. Our review of the subcategory indicates that no new demonstrated technologies that improve on BAT technology exist. We do not believe that new plants could achieve any flow reduction beyond the allowances proposed for BAT. Because NSPS is equal to BAT we believe that the proposed NSPS will not have a detrimental impact on the entry of new plants into this subcategory.

Secondary Indium

We are proposing that NSPS for the secondary indium subcategory be based on lime precipitation, sedimentation, (the same model technology as PSES) and polishing filtration. The pollutants and pollutant parameters specifically limited under NSPS are cadmium, lead, zinc, indium, total suspended solids and pH. The toxic pollutants chromium, nickel, selenium, silver and thallium were also considered for regulation because they are present at treatable concentrations in the raw wastewaters from this subcategory. These pollutants were not selected for specific regulation because they will be effectively controlled when the regulated toxic metals are treated to the levels achievable by the model technology.

The costs and specific removal data for this subcategory are not presented here because the data on which they are based has been claimed to be confidential. We believe the proposed NSPS is economically achievable, and that they do not pose a barrier to entry of new plants into this subcategory.

Secondary Mercury

Our proposed NSPS for this subcategory are based on lime precipitation, sedimentation, and filtration. This technology is fully demonstrated in many nonferrous metals manufacturing subcategories and would be expected to perform at the same level in this subcategory.

The pollutants specifically limited under NSPS are lead, mercury, TSS, and pH. The toxic pollutants arsenic, cadmium, copper, silver and zinc were also considered for regulation because they are present at treatable concentrations in the raw wastewaters from this subcategory. These pollutants were not selected for specific regulation because they will be effectively controlled when the regulated toxic metals are treated to the levels achievable by the model technology.

We believe the proposed NSPS is economically achievable, and that they are not a barrier to entry of new plants into this subcategory.

Primary Molybdenum and Rhenium

We are proposing that NSPS be equal to BAT. Our review of the subcategory indicates that no new demonstrated technologies that improve on BAT technology exist. We do not believe that new plants could achieve any flow reduction beyond the allowances proposed for BAT. Because NSPS is equal to BAT we believe that the proposed NSPS will not have a detrimental impact on the entry of new plants into this subcategory.

We are expanding the applicability of the existing NSPS regulation for the metallurgical acid plants subcategory to include acid plants associated with primary molybdenum roasting operations. We do not believe that this expanded applicability will have a detrimental impact on the entry of new plants into this subcategory.

Secondary Molybdenum and Vanadium

We are proposing that NSPS be equal to BAT. Our review of the subcategory indicates that no new demonstrated technologies that improve on BAT technology exist. We do not believe that new plants could achieve any flow reduction beyond the allowances proposed for BAT. Because NSPS is equal to BAT we believe that the proposed NSPS will not pose a barrier to the entry of new plants into this subcategory.

Primary Nickel and Cobalt

We are proposing that NSPS be equal to BAT. Our review of the subcategory indicates that no new demonstrated technologies that improve on BAT technology exist. We do not believe that new plants could achieve any flow reduction beyond the allowances proposed for BAT. Because NSPS is equal to BAT we believe that the proposed NSPS will not pose a barrier to the entry of new plants into this subcategory.

Secondary Nickel

We are proposing that NSPS be equivalent to PSES. Our review of the subcategory indicates that no new demonstrated technologies that improve on PSES technology exist. We do not believe that new plants could achieve any flow reduction beyond the allowances proposed for BAT. Because NSPS is equal to PSES we believe that the proposed NSPS will not pose a barrier to the entry of new plants into this subcategory.

Primary Precious Metals and Mercury

We are proposing that NSPS be equal to BAT. Our review of the subcategory indicates that no new demonstrated technologies that improve on BAT technology exist. We do not believe that new plants could achieve any flow reduction beyond the allowances proposed for BAT. Because NSPS is equal to BAT we believe that the proposed NSPS will not have a detrimental impact on the entry of new plants into this subcategory.

Secondary Precious Metals

We are proposing that NSPS be equal to BAT, except for furnace air pollution control, which we are proposing as zero discharge. Except for furnace air pollution control, our review of the industry indicates that no new demonstrated technologies exist that improve on BAT technology. Zero discharge for furnace air pollution control is based on dry scrubbing, which is demonstrated at 11 out of 16 plants with furnace air pollution control. Cost for dry scrubbing air pollution control in a new facility is no greater than the cost for wet scrubbing which was the basis for BAT cost estimates. We believe that the proposed NSPS is economically achievable, and that they are not a barrier to entry of new plants into this subcategory.

Primary Rare Earth Metals

We are proposing that NSPS be equal to BAT. Our review of the subcategory indicates that no new demonstrated technologies that improve on BAT technology exist. We do not believe that new plants could achieve any flow reduction beyond the allowances proposed for BAT. Because NSPS is equal to BAT we believe that the proposed NSPS will not have a detrimental impact on the entry of new plants into this subcategory.

Secondary Tantalum

We are proposing that NSPS be equal to BAT. Our review of the subcategory indicates that no new demonstrated technologies that improve on BAT technology exist. We do not believe that new plants could achieve any flow reduction beyond the allowances proposed for BAT. Because NSPS is equal to BAT we believe that the proposed NSPS will not pose a barrier to the entry of new plants into this subcategory.

Primary and Secondary Tin

We are proposing that NSPS be equal to BAT. Our review of the subcategory indicates that no new demonstrated technologies that improve on BAT technology exist. We do not believe that new plants could achieve any flow reduction beyond the allowances proposed for BAT. Because NSPS is equal to BAT we believe that the proposed NSPS will not pose a barrier to the entry of new plants into this subcategory.

Primary and Secondary Titanium

We are proposing that NSPS be equal to BAT plus flow reduction technology with additional flow reduction for four streams. Zero discharge is proposed for chip crushing, sponge crushing and screening, and scrap milling wet air pollution control wastewater based on dry scrubbing. Zero discharge is also proposed for chlorine liquefaction wet air pollution control based on by-product recovery of scrubber liquor as hypochlorous acid. Cost for dry scrubbing air pollution control in a new facility is no greater than the cost for wet scrubbing which was the basis for BAT cost estimates. We believe that the proposed NSPS is economically achievable and that it will not pose a barrier to the entry of new plants into this subcategory.

Secondary Tungsten and Cobalt

We are proposing that NSPS be equal to BAT. Our review of the subcategory indicates that no new demonstrated technologies that improve on BAT technology exist. We do not believe that new plants could achieve any flow reduction beyond the allowances proposed for BAT. Because NSPS is equal to BAT we believe that the proposed NSPS will not pose a barrier to the entry of new plants into this subcategory.

Secondary Uranium

We are proposing that NSPS be equal to BAT. Our review of the subcategory indicates that no new demonstrated technologies that improve on BAT technology exist. We do not believe that new plants could achieve any flow reduction beyond the allowances proposed for BAT. Because NSPS is equal to BAT we believe that the proposed NSPS will not pose a barrier to the entry of new plants into this subcategory.

Primary Zirconium and Hafnium

We are proposing that NSPS be equal to BAT. Our review of the subcategory indicates that no new demonstrated technologies that improve on BAT technology exist. We do not believe that new plants could achieve any flow reduction beyond the allowances proposed for BAT. Because NSPS is equal to BAT we believe that the proposed NSPS will not pose a barrier to the entry of new plants into this subcategory.

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

Before 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 indirect dischargers applying the best available technology economically achievable. A pollutant is deemed to pass through the POTW when the average percentage removed nationwide by a well-operated POTW meeting secondary treatment requirements, is less than the percentage removed by dischargers complying with BAT level effluent limitations guidelines for that pollutant. (See generally, 46 FR at 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. We have data to indicate that pollutants are removed to a degree when treated in a POTW. The percentage of removal in POTW for selected pollutants is antimony—0; arsenic—20; cadmium—38; chromium—18; copper—58; cyanide—52; lead—48; mercury—69; nickel—19; selenium—0; silver—66; zinc—65; hexachlorobenzene—12, ammonia—40 and fluoride—0. These removal levels are used in determining pass through of pollutant.

There were no data concerning POTW removals for beryllium, boron, cobalt, germanium, indium, molybdenum, radium 226, thallium, tin, titanium, and uranium, to compare with our estimates of in-plant treatment. Removal of these pollutants is solubility related. Since the removal of metal pollutants for which data are available is also solubility related, EPA believes that these pollutants may pass through a POTW We have assumed that these metals pass through a POTW in today's notice (zero removal); however, we formally solicit comments and data on whether these pollutants do pass through POTW and on actual POTW removal performance. Where EPA has regulated these pollutants they are a major pollutant generated in a substantial mass in the subcategory.

EPA is proposing mass-based PSES for eight of the 20 discharging subcategories to assure the effluent reduction benefits associated with flow reductions in those subcategories.

We are transferring lime precipitation and sedimentation technology and its performance for the secondary indium and secondary nickel subcategories from aluminum forming, copper forming, coil coating, battery manufacturing and porcelain enameling plants. This technology is not demonstrated in existing plants in these subcategories. While lime precipitation and sedimentation is not demonstrated in these subcategories, we believe that it is transferrable because of its widespread demonstration in this category. The raw wastewater characteristics of secondary indium and secondary nickel subcategories are similar to those found in this category. Likewise, the raw wastewater characteristics of the phase II subcategories are similar to those for plants in the CMDB (see section IX of this preamble). We believe that the technology when applied to wastewater in these phase II subcategories will achieve the same effluent concentrations as plants in the CMDB.

We are transferring filtration technology for the secondary nickel subcategory from one nonferrous metals manufacturing plant and two porcelain enameling plants. This technology is not demonstrated on existing secondary nickel process wastewater discharges. While filtration is not demonstrated in this subcategory, we believe that it is transferrable because it is demonstrated in the nonferrous metals manufacturing category. The raw wastewater characteristics of the secondary nickel subcategory are similar to those found in the other nonferrous metals manufacturing subcategories and in the plants used for establishing filtration performance (See section IX of this preamble). We believe that this technology when applied to secondary nickel wastewater will achieve the same effluent concentrations as the plants used to establish filtration performance.

Primary Antimony

We are not proposing PSES limitations for the primary antimony subcategory because there are no existing indirect dischargers.

Bauxite Refining

We are not proposing PSES limitations for the bauxite refining subcategory because there are no existing indirect dischargers.

Primary Beryllium

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

Primary Boron

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

Primary Cesium and Rubidium

We are not proposing PSES for the primary cesium and rubidium subcategory because there are no existing indirect dischargers.

Primary and Secondary Germanium and Gallium

We are proposing two levels of PSES for this subcategory. The first level, A, consists of lime precipitation and sedimentation. Level A applies to plants which only reduce germanium dioxide to metal and practice zone refining and acid washing and rinsing. These plants only have one waste stream—acid wash and rinse water. The second level, B, consists of lime precipitation, sedimentation, and filtration. Level B applies to all other plants in the subcategory.

The pollutants controlled at PSES are the same as those controlled at BAT.

We are proposing PSES to prevent pass-through of arsenic, lead, zinc fluoride and germanium. These pollutants are removed by a well-operated POTW achieving secondary treatment at an average of 33 percent while BAT Level A technology removes approximately 87 percent and Level B technology over approximately 93 percent.

Implementation of the proposed Level A PSES limitations would remove annually an estimated 20 kg of toxic metals, 818 kg of germanium and 376 kg of fluoride.

There are no existing Level B plants in the subcategory which are indirect dischargers. It is estimated that if Level A became Level B plants, an additional 32 kg of toxic metals would be removed annually by the proposed Level B PSES.

The costs and specific removal data for this subcategory are not presented here because the data on which they are based has been claimed to be confidential. The proposed PSES will not result in adverse economic impacts.

Secondary Indium

We are proposing PSES limitations for this subcategory based on lime precipitation and sedimentation technology. The pollutants sepcifically regulated under PSES are cadmium, lead, zinc, and indium. The toxic pollutants chromium, nickel, selenium, silver and thallium were also considered for regulation because they are present at treatable concentrations in the raw wastewaters from this subcategory. These pollutants were not selected for specific regulation because they will be effectively controlled when the regulated toxic metals are treated to the levels achievable by the model technology. It is necessary to propose PSES to prevent pass-through of cadmium, lead, and zinc. These toxic pollutants are removed by a well-operated POTW achieving secondary treatment at an average of 38 percent while this BAT level technology removes approximately 99 percent.

Implementation of the proposed PSES limitations would remove annually an estimated 588 kg of toxic metals and 288 kg of indium.

Secondary Mercury

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

Primary Molybdenum and Rhenium

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

Secondary Molybdenum and Vanadium

We are not proposing pretreatment standards for existing sources for the secondary molybdenum and vanadium subcategory since there are no existing indirect dischargers.

Primary Nickel and Cobalt

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

Secondary Nickel

We are proposing PSES for this subcategory based on chemical precipitation, sedimentation, and filtration (filtration is proposed for acid reclaim leaching filtrate and acid reclaim leaching filter backwash, but not for slag reclaim tailings). The pollutants specifically regulated under PSES are chromium, copper and nickel. The toxic pollutants arsenic and zinc were also considered for regulation because they are present at treatable concentrations in the raw wastewaters from this subcategory. These pollutants were not selected for specific regulations because they will be effectively controlled when the regulated toxic metals are treated to the levels achievable by the model technololgy. We are proposing PSES to prevent pass-through of chromium copper, and nickel. These toxic pollutants are removed by a well-operated POTW at an average of 32 percent while PSES technology removes approximately 84 percent.

Implementation of the proposed PSES limitations would remove annually an estimated 1,113 kg of toxic metals. We estimate a capital cost of $287,000 and an annualized cost of $120,000 to achieve the proposed PSES. The proposed PSES will not result in adverse economic impacts.

Primary Precious Metals and Mercury

We are not proposing pretreatment standards for existing sources for the primary precious metals and mercury subcategory because there are no existing indirect dischargers.

Secondary Precious Metals

We are proposing PSES equal to BAT for this subcategory. It is necessary to propose this PSES to prevent pass-through of copper, cyanide, zinc, and ammonia. These toxic pollutants are removed by a well-operated POTW achieving secondary treatment at an average of 32 percent while BAT level technology removes approximately 99 percent.

The technology basis for PSES thus is hydroxide precipitation and sedimentation, ammonia steam stripping, cyanide precipitation, 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 the same recycle of scrubber effluent that is the flow basis of BAT. Recycle is practiced by 21 of the 29 existing plants in the subcategory.

Implementation of the proposed PSES limitations would remove annually an estimated 98,550 kg of toxic pollutants including 840 kg of cyanide, and an estimated 9,240 kg of ammonia. Capital cost for achieving proposed PSES is $1,419,000 and annualized cost of $984,000. The proposed PSES will not result in adverse economic impacts.

An intermediate option considered for PSES is BAT equivalent technology without filters. This option removes an estimated 65,319 kg of toxic pollutants and 9,240 kg of ammonia. We estimate the capital cost of this technololgy is $1,325,000, and annual cost $928,000.

Primary Rare Earth Metals

We are proposing PSES equal to BAT for this subcategory. It is necessary to propose PSES to prevent pass-through of hexachlorobenzene, chromium, lead, and nickel. These toxic pollutants are removed by a well-operated POTW achieving secondary treatment at an average of 28 percent while BAT technology removes approximately 74 percent.

The technology basis for PSES is lime precipitation and sedimentation, wastewater flow reduction, filtration, and activated carbon. Flow reduction is based on 90 percent recycle of scrubber effluent that is the flow basis of BAT. Filtration is an effluent polishing step that removes additional pollutants.

Implementation of the proposed PSES limitations would remove annually an estimated 10.9 kg of toxic pollutants.

The costs and specific removal data for this subcategory are not presented here because the data on which they are based has been claimed to be confidential. The proposed PSES will not result in adverse economic impacts.

An intermediate option considered for PSES is BAT equivalent technology without activated carbon adsorption. This option removes an estimated 1.9 kg of toxic pollutants.

Secondary Tantalum

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

Primary and Secondary Tin

We are proposing PSES equal to BAT for this subcategory. It is necessary to propose PSES to prevent pass-through of antimony, cyanide, lead, nickel, tin, ammonia, and fluoride. The four toxic pollutants and fluoride are removed by a well-operated POTW achieving secondary treatment at an average of 17 percent while BAT technology removes approximately 97 percent.

The technology basis for PSES thus is chemical precipitation and sedimentation, with preliminary treatment consisting of cyanide precipitation and ammonia steam stripping and filtration.

Implementation of the Proposed PSES limitations would remove annually an estimated 152 kg of toxic metals, 6,282 kg of tin, 32 kg of cyanide and 25,105 kg fluoride over estimated current discharge. Removals over estimated raw discharge are the same as removals over current discharge because neither of the indirect dischargers in this subcategory has any treatment in place. Capital cost for achieving proposed PSES is $341,700, and annual cost of $119,900. The proposed PSES will not result in adverse economic impacts.

Primary and Secondary Titanium

We are proposing PSES equal to BAT for this subcategory. It is necessary to propose PSES to avoid pass-through of chromium, lead, nickel, thallium, titanium and fluoride. The four toxic pollutants are removed by a well-operated POTW achieving secondary treatment at an average of 14 percent while BAT Level A technology removes approximately 53 percent and Level B technology removes approximately 76 percent.

Implementation of the proposed PSES limitations would remove annually an estimated 1.7 kg of toxic pollutants and 147 kg of titanium.

The costs and specific removal data for this subcategory are not presented here because the data on which they are based has been claimed to be confidential. The proposed PSES will not result in adverse economic impacts.

Secondary Tungsten and Cobalt

We are not proposing pretreatment standards for existing sources for the secondary tungsten and cobalt subcategory since there are no existing indirect dischargers.

Secondary Uranium

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

Primary Zirconium and Hafnium

We are proposing PSES for Levels A and B equal to BAT for this subcategory. It is necessary to propose PSES to prevent pass-through of chromium, cyanide, lead, nickel, ammonia and radium (226). These toxic pollutants are removed by a well-operated POTW at an average of 30 percent, while BAT Level A technology removes approximately 40 percent and Level B technology removes approximately 80 percent.

Level A PSES is for plants which only reduce zirconium or zirconium/nickel alloys from ZrO_2 with magnesium or hydrogen. The technology basis for Level A PSES is preliminary treatment consisting of ammonia steam stripping and cyanide precipitation where necessary, lime precipitation, sedimentation, and flow reduction. Level B PSES is for all other plants in the subcategory. Level B PSES is based on preliminary treatment consisting of ammonia steam stripping and cyanide precipitation where necessary, lime precipitation, sedimentation, wastewater flow reduction, and filtration. Flow reduction is based on 90 percent recycle of scrubber effluent.

Implementation of the proposed PSES Level A limitations would remove annually an estimated 0.5 kg of toxic pollutants. There is no capital cost for achieving the proposed Level A PSES.

There are currently no Level B plants in this subcategory which are indirect dischargers. If nondischarging plants in this subcategory were to become Level B indirect dischargers, compliance with the proposed Level B PSES would remove 10.6 kg of toxic metals, 7.3 kg of cyanide, and 15 kg of ammonia annually.

The costs and specific removal data for this subcategory are not presented here because the data on which they are based has been claimed to be confidential. The proposed PSES will not result in adverse economic impacts.

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 discharging subcategories to assure that the identified flow reduction technologies are considered in new plant designs.

Primary Antimony

We are proposing PSNS equivalent to NSPS and BAT. The technology basis for proposed PSNS is identical to NSPS and BAT. It is necessary to propose PSNS to prevent pass-through of toxic metals. These metals are removed by a well operated POTW achieving secondary treatment at an average of 61 percent. PSNS technology removes these pollutants at an average of 98 percent. We know of no economically feasible, demonstrated technology that is better than BAT level technology. No additional flow reduction for new sources is feasible beyond the allowances proposed for BAT. We believe that the proposed PSNS are achievable, and that they are not a barrier to entry of new plants into this subcategory.

Bauxite Refining

We are not proposing any modifications to PSNS since it is unlikely that any new bauxite sources will be constructed as indirect dischargers.

Primary Beryllium

The technology basis for proposed PSNS is identical to NSPS and BAT. It is necessary to propose PSNS to prevent pass-through of beryllium, chromium, copper and fluoride. These toxic pollutants are removed by a well-operated POTW achieving secondary treatment at an average of 41 percent while BAT technology removes approximately 93 percent. We know of no economically feasible, demonstrated technololgy that is better than BAT technology. The PSNS flow allowances are based on minimization of process wastewater wherever possible through the use of holding tanks for wet scrubbing wastewater. The discharges are based on 90 percent recycle of this waste stream (see section IX—Recycle of Wet Scrubber and Contact Cooling Water). No additional flow reduction for new sources is feasible. 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 Boron

We are proposing PSNS equivalent to NSPS (lime precipitation and sedimentation technololgy) for this subcategory. It is necessary to propose PSNS to prevent pass-through of boron, lead and nickel, which are the regulated pollutants in this subcategory. These toxic pollutants are removed by a well-operated POTW achieving secondary treatment at an average of 34 percent while NSPS level technology removes approximately 85 percent.

We believe that the proposed PSNS are achievable, and that they are not a barrier to entry of new plants into this subcategory.

Primary Cesium and Rubidium

We are proposing PSNS equivalent to NSPS. The technology basis for proposed PSNS is identical to NSPS. It is necessary to propose this PSNS to prevent pass-through of toxic metals. These metals are removed by a well-operated POTW achieving secondary treatment at an average of 38 percent. PSNS technology removes these pollutants at an average of 95 percent. We know of no economically feasible, demonstrated technology that is better than NSPS technology.

The costs and specific removal data for this subcategory are not presented here because the data on which they are based and has been claimed to be confidential. We believe that the proposed PSNS are achievable, and that they are not a barrier to entry of new plants into this subcategory.

Primary and Secondary Germanium and Gallium

We are proposing PSNS equivalent to PSES, NSPS and BAT. 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 believe that the proposed PSNS are achievable, and that they are not a barrier to entry of new plants into this subcategory.

Secondary Indium

We are proposing PSNS equal to NSPS. The technology basis for proposed PSNS is identical to NSPS. The same pollutants pass through as at PSES, for the same reasons.

We believe that the proposed PSNS are achievable, and that they are not a barrier to entry of new plants into this subcategory.

Secondary Mercury

We are proposing PSNS equivalent to NSPS for this subcategory. It is necessary to propose PSNS to prevent pass-through of lead and mercury. These toxic pollutants are removed by a well-operated POTW achieving secondary treatment at an average of 59 percent, while PSNS level technology removes approximately 99 percent.

We believe that the proposed PSNS are achievable, and that they are not a barrier to entry of new plants into this subcategory.

Primary Molybdenum and Rhenium

We are proposing PSNS equal to NSPS and BAT for this subcategory. It is necessary to propose PSNS to prevent pass-through of arsenic, lead, nickel, selenium, molybdenum and ammonia. These toxic pollutants are removed by a well-operated POTW achieving secondary treatment at an average of 13 percent, while the NSPS and BAT level technology removes approximately 79 percent.

We believe that the proposed PSNS are achievable, and that they are not a barrier to entry of new plants into this subcategory.

We are proposing to expand the applicability of the existing PSNS for metallurgical acid plants to include metallurgical acid plants associated with primary molybdenum roasters. It is necessary to propose PSNS to prevent pass-through of arsenic, cadmium, copper, lead, and zinc. These toxic pollutants are removed by a well-operated POTW achieving secondary treatment at an average of 42 percent, while BAT level technology removes approximately 83 percent.

We believe that the proposed PSNS are achievable, and that they are not a barrier to entry of new plants into this subcategory.

Secondary Molybdemum and Vanadium

We are proposing PSNS equal to NSPS and BAT for this subcategory. It is necessary to propose PSNS to prevent pass-through of antimony, lead, nickel, molybdenum and ammonia. These toxic pollutants are removed by a well-operated POTW achieving secondary treatment at an average of 23 percent, while the NSPS and BAT level technology removes approximately 98 percent.

The technology basis for PSNS thus is hydroxide precipitation and sedimentation, ammonia steam stripping, 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. Filters are demonstrated at 25 facilities in the nonferrous metals manufacturing category.

We believe that the proposed PSNS are achievable, and that they are not a barrier to entry of new plants into this subcategory.

Primary Nickel and Cobalt

We are proposing PSNS equal to BAT and NSPS for this subcategory. It is necessary to propose PSNS to prevent pass-through of copper, nickel, cobalt, and ammonia. These toxic pollutants are removed by a well operated POTW at an average of 26 percent, while BAT technology removes approximately 58 percent.

The technology basis for PSNS thus is lime precipitation and sedimentation, ammonia steam stripping, 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.

We believe that the proposed PSNS are achievable, and that they are not a barrier to entry of new plants into this subcategory.

Secondary Nickel

We are proposing PSNS equivalent NSPS and PSES. The same pollutants pass through at PSNS 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.

We believe that the proposed PSNS are achievable, and that they are not a barrier to entry of new plants into this subcategory.

Primary Precious Metals and Mercury

We are proposing PSNS equal to NSPS and BAT for this subcategory. It is necessary to propose PSNS to prevent pass-through of arsenic, lead, mercury, silver, and zinc. These toxic pollutants are removed by a well-operated POTW at an average of 62 percent, while the NSPS and BAT technology removes approximately 93 percent.

The technology basis for PSNS thus is lime precipitation and sedimentation, oil skimming, wastewater flow reduction and filtration. Flow reduction is based on 90 percent recycle of scrubber effluent that is the flow basis of BAT.

We believe that the proposed PSNS are achievable, and that they are not a barrier to entry of new plants into this subcategory.

Secondary Precious Metals

We are proposing PSNS equivalent to NSPS. The technology basis for proposed PSNS is identical to NSPS. This is equivalent to PSES and BAT, with additional flow reduction based on dry air pollution control on furnace emissions. The same pollutants pass through at PSNS as at PSES, for the same reasons. We know of no economically feasible, demonstrated technology that is better than NSPS technology. The NSPS flow allowances are based on minimization of process wastewater wherever possible through the use of holding tanks to recycle wet scrubbing wastewater and the use of dry scrubbing to control furnace emissions. The discharges are based on recycle of these waste streams (see section IX—Recycle of Wet Scrubber and Contact Cooling Water).

There are no additional costs associated with the installation of dry scrubbers instead of wet scrubbers which were used for estimating cost of BAT. We believe that the proposed PSNS are achievable, and that they are not a barrier to entry of new plants into this subcategory.

Primary Rare Earth Metals

We are proposing PSNS equivalent to PSES, NSPS and BAT. The technology basis for proposed PSNS is identical to NSPS, PSES, and BAT. The same pollutants pass through at PSNS as at PSES, for the same reasons. We know of no economically feasible, demonstrated technology that is better than PSES technology. The PSNS flow allowances are equal to the BAT, NSPS and PSES flow allowances.

We believe that the proposed PSNS are achievable, and that they are not a barrier to entry of new plants into this subcategory.

Secondary Tantalum

We are proposing PSNS equal to NSPS and BAT. It is necessary to propose PSNS to prevent pass-through of copper, lead, nickel, and zinc. These toxic pollutants are removed by a well-operated POTW achieving secondary treatment at an average of 48 percent while BAT level technology removes approximately 99 percent.

We believe that the proposed PSNS are achievable, and that they are not a barrier to entry of new plants into this subcategory.

Primary and Secondary Tin

We are proposing PSNS equivalent to PSES, NSPS and BAT. The technology basis for proposed PSNS is identical to NSPS, PSES, and BAT. The same pollutants pass through at PSNS as at PSES, for the same reasons. We know of no economically feasible, demonstrated technology that is better than PSES technology. The PSNS flow allowances are identical to the flow allowances for BAT, NSPS, and PSES.

There would be no additional cost for PSNS above the costs estimated for BAT. We believe that the proposed PSNS are achievable, and that they are not a barrier to entry of new plants into this subcategory.

Primary and Secondary Titanium

We are proposing Level A and Level B PSNS equivalent to NSPS. The technology basis for proposed PSNS is identical to NSPS. The same pollutants are regulated at PSNS as at PSES and they pass through at PSNS as at PSES, for the same reasons. The PSNS and NSPS flow allowances are based on minimization of process wastewater wherever possible through the use of cooling towers to recycle contact cooling water and holding tanks for wet scrubbing wastewater. The discharge allowance for pollutants is the same at PSNS and NSPS. The discharges are based on 90 percent recycle of these waste streams (see section IX—Recycle of Wet Scrubber and Contact Cooling Water). As in NSPS, flow reduction beyond BAT is proposed for chip crushing, sponge crushing and screening and scrap milling wet air pollution control based on dry scrubbing. Also zero discharge is proposed for chlorine liquefaction wet air pollution control based on byproduct recovery.

We believe that the proposed PSNS are achievable, and that they are not a barrier to entry of new plants into this subcatetory.

Secondary Tungsten and Cobalt

We are proposing PSNS equal to NSPS and BAT for this subcategory. It is necessary to propose PSNS to prevent pass-through of copper, nickel, cobalt, and ammonia. These toxic pollutants are removed by a well-operated POTW achieving secondary treatment at an average of 26 percent, while the NSPS and BAT level technology removes approximately 97 percent.

The technology basis for PSNS thus is lime precipitation and sedimentation, oil skimming, 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.

We believe that the proposed PSNS are achievable, and that they are not a barrier to entry of new plants into this subcategory.

Secondary Uranium

We are proposing PSNS equal to NSPS and BAT for this subcategory. It is necessary to propose PSNS to prevent pass-through of chromium, copper, nickel, ammonia, uranium and fluoride. These toxic pollutants are removed by a well-operated POTW achieving secondary treatment at an average of 40 percent, while the NSPS and BAT level technology removes approximately 88 percent.

The technology basis for PSNS is lime precipitation, sedimentation, and ammonia steam stripping, followed by filtration.

We believe that the proposed PSNS are achievable, and that they are not a barrier to entry of new plants into this subcategory.

Primary Zirconium and Hafnium

We are proposing PSNS equivalent to PSES, NSPS and BAT. 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 economically feasible, demonstrated technology that is better than PSES technology.

We believe that the proposed PSNS are achievable, and that they are not a barrier to entry of new plants into this subcategory.

XV 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 subcategory supplements. Some of these pollutants are designated as toxic under section 307(a) of the Act. Three pollutants have been deleted from the list of 129. These are dichlorodifluoromethane, and 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 B.

XVI. 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 C of this notice by subcategory. Also included in Appendix C are toxic pollutants not analyzed for in each 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 D to this notice lists the toxic pollutants in each subcategory which were detected in the effluent in amounts at or below the nominal limit of analytical quantification. Appendix E to this notice lists the toxic pollutants in each subcategory present in amounts which are too small to be effectively reduced by technologies considered applicable to the category 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 the are uniquely related to those sources. Appendix F to this notice lists for each subcategory the toxic pollutants which were detected in the effluents of only one plant, are uniquely related to the 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 G lists those toxic pollutants which will be effectively controlled by the BAT limitations, NSPS, and pretreatment standards, even though they are not specifically regulated.

B. Exclusion of Subcategories

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

Four of these excluded subcategories—primary antimony, primary tin, secondary molybdenum, and secondary tantalum, have been reconsidered for regulation in nonferrous phase II. This is due to data received by EPA since May 10, 1979, showing a need for effluent guidelines to be established for these four subcategories. Today's notice proposes effluent limitations and guidelines which include these four subcategories.

In addition to the subcategories already excluded under Paragraph 8(a)(iv) of the Settlement Agreement, EPA proposed to exclude two additional primary and one additional secondary metal subcategory from regulation. EPA proposes these exclusions because no existing primary lithium or secondary zinc plants discharge wastewater and because there are no pollutants at treatable concentrations in primary magnesium discharges. The subcategories are:

Primary Lithium
Primary Magnesium
Secondary Zinc

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

Primary Boron
Primary Cesium and Rubidium
Secondary Mercury

The Agency is excluding the following subcategories from BAT effluent guidelines under provisions of Paragraph 8(a)(iv) because there are no facilities discharging wastewater to surface waters. They are:

Secondary Indium
Secondary Nickel

In today's notice, EPA proposes to exclude 10 subcategories from pretreatment standards for existing sources because there are no facilities discharging wastewater to POTW. They are:

Primary Antimony
Bauxite Refining
Primary Beryllium
Primary Molybdenum and Rhenium
Secondary Molybdenum and Vanadium
Primary Nickel and Cobalt
Primary Precious Metals and Mercury
Secondary Tantalum
Secondary Tungsten and Cobalt
Secondary Uranium

XVII. Cost and Economic Impacts

The economic assessment of the proposed regulation is presented in the "Economic Impact Analysis of Proposed Effluent Standards and Limitations for the Nonferrous Smelting and Refining Industry, Phase II," EPA 440/2-84-009. This report details the investment and annual costs for the industry and for each metal subcategory 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, cost of production changes, plant closures and associated loss of employment, financial impacts and balances 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. For some pollutants however, toxicity data with respect to human health or chronic, aquatic freshwater criteria are unavailable. Alternative data sources were therefore employed to determine weighting factors for these pollutants based on criteria similar, but not identical, to those used for other pollutants.

The use of "pound equivalent" gives relatively more weight to removal of pollutants that are more toxic. 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, which includes detailed descriptions of how all weighting factors were determined, is entitled "Cost Effectiveness Analysis of Proposed Effluent Standards and Limitations for the Nonferrous Metals Manufacturing Industry (Phase II)" and is included in the record for this rulemaking.

The Agency projects there will be 72 "wet-process" manufacturing facilities covered by this regulation. Thirty-four of these plants will discharge their wastewater directly into navigable waters, and 38 will discharge into publicly owned treatment works (POTW). In addition, there will be 83 other facilities which will not produce any wastewater, and therefore not incur costs as a result of the regulation.

Total capital costs for the discharging plants as a result of this regulation are estimated to be $7 million, while total annual costs, including depreciation and interest, are estimated to be $4.4 million. These costs are expressed in 1982 dollars. The major projected economic impacts associated with these costs are 3 plant closures and 2 production line closures at the BPT level of control with an accompanying employment loss of 47 people. The 3 plant closures and one line closure are in the primary and secondary tin subcategory, while the remaining line closure is in the secondary precious metals subcategory. The tin closures imply a potential loss of 12 percent of production capacity for that subcategory, while the production loss for secondary precious is insignificant. While the impacts of the regulation on tin manufacturers are projected to be significant, in that four of the five discharging plants or lines in the tin subcategory would discontinue production as a result of this regulation, we suspect the assumptions employed in our baseline scenario may be pessimistic. Hence, the Agency solicits comment and plans to obtain further market and plant-specific information to improve the accuracy of our analysis. We intend to request additional financial data under the authority of section 308 of the CWA. Information obtained from these plants will be combined with other public data sources to reassess projected baseline conditions for the tin market. If, at promulgation, after reassessing and updating the financial information, EPA determines that there would be a disproportionate impact on any specific segment of this subcategory, the Agency may establish standards based on less stringent technologies. We will solicit data and information specifically relevant to alternative technologies and the appropriateness of a size cut-off with respect to production levels, especially in light of the additional pollutants that would be discharged to the waters.

No further significant impacts are projected as a result of the regulation. Price increases are not expected to exceed 2.5 percent for any subcategory, and balance of trade effects are minimal. No further production loss beyond that described above is expected to occur.

The Economic Impact Analysis assumed a reasonable rate of monitoring (between one and 30 times per month), varying by size of plant and flow. However, since the regulatory limits are based on monitoring 10 times a month, we performed a sensitivity analysis including costs associated with the increased monitoring activity. The analysis showed three additional plant closures occurring as a result of the higher monitoring costs.

For purposes of this regulation, the Agency created 24 separate subcategories based on metal products produced. The economic analysis focuses on 21 of these subcategories, since the remaining three were exempt from regulation under Paragraph 8 of the Clean Water Act. The 21 subcategories are discussed in detail in the economic impact analysis document. Plant descriptions are provided along with market analyses of the metals products produced in each subcategory.

The methodology employed to determine economic impacts is very similar to that used for the Phase I portion of the Nonferrous Metals Manufacturing category (EPA 440/2-84-004). The approach begins with a screening analysis to identify plants that will be significantly affected by the regulation. This consists of a comparison of a plant's estimated annual compliance costs to its projected revenues. If this ratio is found to exceed 1 percent, the plant is then subjected to a 2-step closure analysis: a net present value test and a liquidity test.

The net present value test is designed to assess the firm's long-term profitability. The viability of the plant is judged by a comparison of its cash flows over the entire compliance period to its current liquidation value. The liquidity test, on the other hand, assesses the firm's short-term solvency during the first five years of compliance. If estimated cash-flows over the five years are negative, the plant is cited as potentially insolvent and in danger of closure. Both tests require the estimation of plant revenues in future years in order to determine income and cash flows for those years. This income is taken to be the average of income between 1978–82, a period which spanned a complete business cycle. Average product price over the period was used in conjunction with the average capacity utilization rate over the period to arrive at an estimate of total sales for each plant in a "normal" year. This figure was then used as the basis for the determination of average income which, minus compliance costs, served as the estimate of cash flow for the specific plant.

Structurally, the approach is identical to that used in the Nonferrous Metals Phase I analysis. The only substantive difference involves the estimation of plant specific compliance costs. The Agency's estimation of costs for plants in the Phase II study was based on effluent data gathered in 1982, when production and wastewater flows were abnormally low as a result of the recession. Since compliance costs are related to production and flow, and 1982 production was severely depressed, it was felt that costs based on 1982 production would not be an accurate estimate of costs that would be actually incurred at the time of compliance. The Agency assumes the industry will recover to "normal" production levels as implied by the average capacity utilization rate from 1978–82. Most plants operated well below this average in 1982; hence we project their output at the time of compliance will be substantially higher. Consequently, compliance costs which reflect 1982 production levels are understated. For purposes of the economic impact analysis, the Agency's initial compliance cost estimates were adjusted upwards for most plants. The adjustment factors reflect the expanded production expected for the compliance period (as implied by the average capacity usage rate from 1978–82), yet also account for economies of scale in the output/compliance cost relationship.

Details concerning specific plants are available in the record of this proposed rulemaking. See also the Economic Impact Analysis document (EPA 440/2–84–009) for subcategory discussions.

BPT: New BPT limitations are proposed for 14 subcategories, with 27 plants incurring compliance costs. Investment costs are estimated to be $3.7 million and total annualized costs are $3.0 million. Significant economic impacts are projected only for the tin subcategory, with 1 plant and 1 production line projected to close as a result of this regulation. The impacts on the other subcategories are small, with price changes ranging from less than one-tenth to two percent. No balance of trade effects are expected. Potential production losses are expected only for tin (less than 10 percent of 1982 industry capacity) and secondary precious metals (less than 1 percent).

BAT: New BAT limitations are proposed for 14 subcategories. Total investment costs for these regulations are estimated to be $4.2 million and total annualized costs are $3.2 million. The incremental costs over BPT are estimated to be $0.5 million in investment costs and $0.2 million in annual costs. No additional closures or production loss beyond those expected at BPT are expected to result from these limitations. The price increases associated with these costs are small, ranging from less than one-tenth to 2.4 percent and the limitations are economically achievable.

PSES: PSES is proposed for 8 subcategories. The costs for this regulation are expected to be $2.8 million investment and $1.2 million total annualized costs. Closures projected to result from these costs include a secondary gold production process line in a secondary precious metals plant and two tin plants. The precious metals plant also produces secondary silver and therefore is integrated with the secondary silver subcategory in the Nonferrous Metals Phase I regulation. It was projected that compliance costs associated with the Phase I regulation will result in the closure of the secondary silver process line as well. The combined effects of the two regulations therefore is the closure of the entire facility and the associated loss of approximately 19 jobs. However, the loss of secondary gold/silver production capacity is minimal. The plant represents less than one-half of one percent of industry capacity for both metals. The effect on tin production is discussed in previous sections of this preamble. Impacts of PSES on the *entire* secondary precious metals subcategory and all other subcategories are small overall. The range of expected price increases is less than one-tenth to 2.5 percent and no further production loss is expected to occur. These standards are economically achievable for the subcategories as a whole.

NSPS/PSNS: New source standards are being proposed for 20 of the 24 subcategories. The technology basis for NSPS and PSNS is the same as for BAT for all subcategories where BAT and PSES are proposed except one, Secondary Indium. Three of the 21 subcategories are subject only to new source limitations because they contain no existing discharging plants. These subcategories are Primary Boron, Primary Cesium and Rubidium and Secondary Mercury. New plants in these subcategories, as well as those in Secondary Indium, will not be at a serious cost disadvantage as a result of these limitations. Total incremental investment costs are estimated to be $31 thousand, with annual costs of $11 thousand. Hence this regulation is not expected to discourage entry into the industry.

The Agency believes this regulation is economically achievable and imposes no significant impacts on any subcategory within the industry. The only possible exception is tin, where projected closures at this point threaten 12 percent of existing industry production capacity. As explained earlier, however, the Agency plans to reassess the tin industry through comment solicitation and direct contact with tin manufacturers between proposal and promulgation of this regulation.

Executive Order 12291

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

Regulatory Flexibility Analysis

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

For each metal subcategory, small entities were defined on the plant level, using annual plant capacity as an indicator of size. A total of 14 plants were identified in 5 subcategories as small, representing 19 percent of all discharging plants. For these 5 subcategories, the Agency evaluated (1) annual compliance costs as a percentage of revenues for small facilities and (2) annual compliance costs as a percent of the cost of production for small entities. Based on this analysis, EPA has determined that there will not be a significant impact on small entities within this category. Therefore the Agency is not required to perform a formal Regulatory Flexibility Analysis. I hereby certify pursuant to 50 U.S.C. 605(b) that this regulation will not have a significant impact on a substantial number of small entities.

SBA Loans

The Agency is continuing to encourage small plants to use Small Business Administration (SBA) financing as needed for pollution control equipment. The three basic programs are (1) the Pollution Control Bond Program, (2) the Section 503 Program, and (3) the Regular Business Loan Program. Eligibility for SBA programs varies by industry. Generally, a company must be independently owned, not dominant in its field, the employee size ranges from 250 to 1500 employees (dependent upon industry), and annual sales revenues ranges from $275,000 to $22 million (varies by industry).

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

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

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

For additional information on the Regular Business Loan and Section 503 Programs, contact your district or local SBA office. The coordinator at EPA headquarters is Ms. Frances Dessell, who may be reached at (200) 382-5373.

XVIII. Nonwater 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 nonwater 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. This regulation has been reviewed by other offices within EPA responsible for these programs.

The following are the nonwater 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, 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 one subcategory, primary and secondary titanium. Plants in this subcategory using lubricants for casting may have organics present in the drift from cooling towers used to cool and recylce casting contact cooling water. The Agency does not consider any of these impacts to be significant.

B. Solid Waste

EPA estimates that the proposed BPT regulation for nonferrous metals manufacturing phase II facilities will generate 8,500 kkg (9,350 tons) of solid wastes (wet basis—1982 production levels) as a result of wastewater treatment. These wastes will be comprised of treatment system sludges containing cyanide and toxic metals, including arsenic, antimony, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc.

EPA estimates that BAT and PSES will increase wastes by approximately 2100 kkg (2310 tons) per year beyond BPT levels. These sludges will necessarily contain additional quantities (and concentrations) of toxic pollutants. NSPS and PSNS will increase the amount of solid waste by less than 5 percent of the BAT and PSES quantities.

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 plans 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 are 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 and filtration. By the addition of a small excess of 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 identified should be 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 VIII of the General Development Document.

C. Energy Requirements

EPA estimates that the achievement of proposed BPT effluent limitations will result in electrical energy consumption of approximately 18.5 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.

XIX. 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.

XX. Upset and Bypass Provisions

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

An upset is an unintentional episode during which effluent limits are exceeded; a bypass, however, is an act of intentional noncompliance during which waste treatment facilities are circumvented in emergency situations. We have, in the past, included bypass provisions in NPDES permits.

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

XXI. Variances and Modifications

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

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

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

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

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

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

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

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

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

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

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

After this regulation is promulgated indirect dischargers and other affected parties may petition the Administrator to examine those factors and determine whether these PSES are properly applicable in specific cases or should be revised. Such petitions must contain specific and detailed support data, documentation, and evidence indicating why the relevant factors justify a more, or less, stringent standard, and must also indicate why those factors could not have been brought to the attention of the Agency in the course of this rulemaking. Accordingly persons should submit all available information suggesting that alternate limitations should be established for specific facilities during the comment period for this regulation.

XXII. Implementation of Limitations and Standards

A. Relation to NPDES Permits

The BPT and BAT limitations and NSPS in this regulation will be applied to individual nonferrous metals manufacturing plants through NPDES permits issued by EPA or approved state agencies, under section 402 of the Act. As discussed in the preceding section of this preamble, these limitations must be applied in all Federal and State NPDES permits except to the extent that variances and modifications are expressly authorized. Other aspects of the interaction between these limitations and NPDES permits are discussed below.

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

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

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

B. Indirect Dischargers

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

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

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

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

A "periodic compliance report" is a report on continuing compliance with all applicable categorical pretreatment standards. It is submitted twice per year (June and December) by indirect dischargers subject to the standards. The report shall provide the concentrations of the regulated pollutants in its discharge to the POTW;

the average and maximum daily flow rates of the facility; the methods used by the indirect discharger to sample and analyze data, and a certification that these methods conform to the methods outlined in the regulations. See 40 CFR 403.12(e).

INDIRECT DISCHARGERS SCHEDULE FOR SUBMITTAL AND COMPLIANCE

Item	Applicable sources	Date or time period	Measured from	Submitted to
Request for Category Determination	Existing	60 days	From effective date of standard	Director (1).
		or 60 days	From Federal Register Development Document Availability.	
	New	Prior to commencement of discharge to POTW.		
Baseline Monitoring	All	180 days	From effective date of standard or final decision on category determination.	Control Authority (2).
Report on Compliance	Existing	90 days	From date for final compliance	Control Authority (2).
	New	90 days	From commencement of discharge to POTW	
Periodic Compliance Reports	All	June and December		Control Authority (2).

(1) Director=a) Chief Administrative Officer of a state water pollution control agency with an approved pretreatment program, or b) EPA Regional Water Division Director, if state does not have an approved pretreatment program.

(2) Control Authority=a) POTW if its pretreatment program has been approved, or b) Director of state water pollution control agency with an approved pretreatment program, or c) EPA Regional Administrator, if state does not have an approved pretreatment program.

XXIII. 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. In preparing this regulation, the agency collected allowable data on the raw wastewaters and treated wastewaters characteristics of each subcategory and compared it to other available treatment effectiveness data. The treatment effectiveness data for lime and settle and lime, settle and filter technology 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, because we believe that these data most appropriately represent the treatment effectiveness of the specific technology. 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 antimony, arsenic, beryllium, boron, cadmium, chromium, cobalt, copper, cyanide, fluoride, germanium, indium, lead, mercury, molybdenum, nickel, radium 226, selenium, silver, thallium, tin, titanium, uranium and zinc 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 (primary and secondary germanium and gallium, secondary indium, secondary nickel, secondary precious metals, primary rare earth metals, primary and secondary tin, primary and secondary titanium, and primary zirconium and hafnium) 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 dispostion.

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. The Agency is proposing BAT, NSPS, PSES, and PSNS based on Options B and C, which include in-process flow reduction of many wastewater streams. We solicit comments on the ability of nonferrous metals manufacturing plants to achieve 90 percent recycle of wet scrubber liquor, and casting contact cooling water. We also solicit comments on the ability of nonferrous metals manufacturing to achieve 90 percent recycle of wet scrubber liquor, where the scrubber is used to control acid fumes emissions.

9. For several subcategories, the Agency is proposing an ammonia limitation on both direct and indirect dischargers. The Agency requests comments on the appropriateness of limiting ammonia in the effluent from indirect dischargers. Also, we request comments on the proposed treatment performance concentrations for ammonia based on stream stripping.

10. In developing the plant-by-plant economic analysis, the Agency made assumptions concerning the effect on final effluent of a poorly operated waste treatement system. For a poorly operated waste treatment system, we assumed a discharge equal to raw waste influent. The agency requests comment on the appropriateness of this assumption.

11. For the secondary precious metals subcategory, we are proposing NSPS and PSNS based, in part, on dry scrubbing of furnace emissions. We solicit comment on the feasibility of this technology in new plants.

12. For the bauxite refining subcategory, we solicit additional data

on red mud lake closure plans for currently operating and shut-down plants. We have discussed the possible limitation of three toxic organic pollutants in rainfall runoff from red mud lakes. We also solicit comments on the regulation of these pollutants.

13. We have proposed that the date for compliance with PSES be three years from the regulation's final promulgation date. We invite comments on the appropriateness of the compliance date.

14. The Agency requests comments on the appropriateness of the cyanide limitations proposed for the secondary precious metals, tin, and zirconium and hafnium subcategories.

15. The Agency is not modifying the promulgated limitations and standards for bauxite refining in this proposed regulation. As a result bauxite plants could continue to discharge equal to the net monthly precipitation falling on the red mud impoundment. EPA has data that indicated these discharges contain phenol, 2-chlorophenol and total phenols (4AAP) in treatable quantities. By using activated carbon adsorption, we project that 4800 lb/yr of phenols would be removed from the discharges of four plants. The investment cost of this removal would be $8.3 million and the annual cost would be $2.1 million.

EPA's present data base does not indicate that these phenols are being discharged in quanties that will present any acute risk to human health or aquatic life. However, under certain conditions these discharges may create taste and odor problems with drinking water supplies downstream of these discharges.

As a result, we intend to collect additional data between proposal and promulgation of this regulation. We solicit data on the presence of phenols in discharges from bauxite plants, as well as comments on the relative significance of these discharges to water quality problems in receiving waters. We also solicit comments and data on the presence of other toxic and nonconventional pollutants (such as toxic metals or iron) in these discharges. If we identify risk to human health, risk to aquatic life or aquatic taste and odor problems sufficient to justify the costs of compliance we intend to promulgate BAT and NSPS limits for phenol, 2-chlorophenol, and phenols (4AAP) based on an achievable daily maximum concentration of 0.010 mg/l for each pollutant. We also solicit comment on the achievability of this concentration using activated carbon adsorption or chemical oxidation (i.e. ozone, permanganate, or hydrogen peroxide).

16. The methodology used to estimate the economic effects of these regulations is discussed in section XVII 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. In this regard we solicit comment on the Agency's reliance on five year production and sales averages for certain facilities and subcategories in which the Agency believes that the available 1982 data is not representative of their future economic status because of the fact that 1982 was a particularly poor year for certain industries due to the recession and because we anticipate higher levels of production and sales due to the economy's recovery. The Agency plans to reassess a number of its estimates used in its economic analysis based on the economic recession and 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 in the international markets. We specifically solicit comment and additional data and information on the Agency's assumptions and calculations in projecting increased production levels and associated pollution removal costs in moving from 1982 levels to the higher 5 year economic average relied upon. We solicit comment both on the methodology used and its application to particular facilities and subcategories.

17 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 asks facilities that have failed to respond to submit their responses. 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 to Ms. Ellen Warhit.

18. In may industries, indirect dischargers are located in urban areas, whereas direct dischargers tend to be located in more rural areas. This can sometimes place indirect dischargers at a disadvantage interms of space availability for installing wastewater treatment. However, EPA has concluded that space availability presents no greater problem for existing indirect dischargers than for existing direct dischargers in the nonferrous metals manufacturing category. We request comment on this conclusion.

19. The Agency has discussed the potential economic impacts of this regulation on the secondary tin subcategory. We solicit comment on the issues raised in these discussions.

20. When estimating the cost of meeting discharge limitations based on lime and settle technology in the cesium-rubidium subcategory the Agency used the cost of land disposal of wastewaters when the quantity of such wastewater was so small as to make the cost of land disposal less than lime and settle treatment. Comment on this costing procedure is requested.

21. The Agency is considering the promulgation of fluoride limitations and standards for the primary molybdenum subcategory. These mass limitations and standards would be based on the treatment performance observed on similar untreated fluoride concentrations in the Electrical and Electronic Products Point Source Category (Phase II). Therefore, we are requesting comment on the achievability of mass limitations and standards calculated based on a daily maximum concentration of 35.0 mg/l and a monthly average concentration of 19.9 mg/l. Further information on this subject and the actual mass limitations are available in the supplemental development document for this subcategory.

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

XXIV List of Subjects in 40 CFR Part 421

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

Dated: May 15, 1984.

William Ruckelshaus,

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 4(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 on 304(b)(1) of the Act.

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

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 dischargers under section 307(b) of the Act.

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

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

Appendix B—Pollutants Selected for Regulation by Subcategory

(a) Subpart A—Bauxite Refining Subcategory
- 24. (2-chlorophenol)
- 65. (phenol), (phenols 4AAP), (pH)

(As discussed earlier, the Agency is considering effluent limitations for discharges from bauxite red mud impoundments. To assist the public in providing comment on this issue, we are providing information in this appendix on the bauxite subcategory.)

(b) Subpart N—Primary Antimony Subcategory
- 114. antimony
- 115. arsenic
- 122. lead
- 123. mercury, total suspended solids (TSS), pH

(c) Subpart O—Primary Beryllium Subcategory
- 117 beryllium
- 119. chromium
- 120. copper, fluoride, total suspended solids (TSS), pH

(d) Subpart P—Primary Boron Subcategory
- 122. lead
- 124. nickel, boron, total suspended solids (TSS), pH

(e) Subpart Q—Primary Cesium and Rubidium Subcategory
- 122. lead
- 127 thallium
- 128. zinc, total suspended solids (TSS), pH

(f) Subpart R—Primary and Secondary Germanium and Gallium Subcategory
- 115. arsenic
- 122. lead
- 128. zinc, fluoride, germanium, total suspended solids (TSS), pH

(g) Subpart S—Secondary Indium Subcategory
- 118. cadmium
- 122. lead
- 128. zinc, indium, total suspended solids (TSS), pH

(h) Subpart T—Secondary Mercury Subcategory
- 122. lead
- 123. mercury, total suspended solids (TSS), pH

(i) Subpart U—Primary Molybdenum and Rhenium Subcategory
- 115. arsenic
- 122. lead
- 124. nickel
- 125. selenium, molybdenum, ammonia (as N), total suspended solids (TSS), pH

(j) Subpart V—Secondary Molybdenum and Vanadium Subcategory
- 114. antimony
- 122. lead
- 124. nickel, molybdenum, ammonia (as N), total suspended solids (TSS), pH

(k) Subpart W—Primary Nickel and Cobalt Subcategory
- 120. copper
- 124. nickel, cobalt, ammonia (as N), total suspended solids (TSS), pH

(l) Subpart X—Secondary Nickel Subcategory
- 119. chromium
- 120. copper
- 124. nickel, total suspended solids (TSS), pH

(m) Subpart Y—Primary Precious Metals and Mercury Subcategory
- 115. arsenic
- 122. lead
- 123. mercury
- 126. silver
- 128. zinc, oil and grease, total suspended solids (TSS), pH

(n) Subpart Z—Secondary Precious Metals Subcategory
- 120. copper
- 121. cyanide
- 128. zinc, ammonia (as N), total suspended solids (TSS), pH

(o) Subpart AA—Primary Rare Earth Metals Subcategory
- 9. hexachlorobenzene
- 119. chromium (total)
- 122. lead
- 124. nickel, total suspended solids (TSS), pH

(p) Subpart AB—Secondary Tantalum Subcategory
- 120. copper
- 122. lead
- 124. nickel
- 128. zinc, total suspended solids (TSS), pH

(q) Subpart AC—Primary and Secondary Tin Subcategory
- 114. antimony
- 121. cyanide
- 122. lead
- 124. nickel, tin, ammonia (as N), fluoride, total suspended solids (TSS), pH

(r) Subpart AD—Primary and Secondary Titanium Subcategory
- 119. chromium (total)
- 122. lead
- 124. nickel
- 127. thallium, titanium, fluoride, oil and grease, total suspended solids (TSS), pH

(s) Subpart AE—Secondary Tungsten and Cobalt Subcategory
- 120. copper
- 124. nickel, cobalt, oil and grease, ammonia (as N), total suspended solids (TSS), pH

(t) Subpart AF—Secondary Uranium Subcategory
- 119. chromium (total)
- 120. copper
- 124. nickel, uranium, ammonia, fluoride, total suspended solids (TSS), pH

(u) Subpart AG—Primary Zirconium and Hafnium Subcategory
- 119. chromium (total)
- 121. cyanide (total)
- 122. lead
- 124. nickel, radium 226, ammonia, total suspended solids (TSS), pH

Appendix C—Toxic Pollutants Not Detected

(a) Subpart A—Bauxite Refining Subcategory
- 2. acrolein
- 3. acrylonitrile
- 4. benzene
- 5. benzidene
- 7 chlorobenzene
- 8. 1,2,4-trichlorobenzene
- 9. hexachlorobenzene
- 10. 1,2-dichloroethane
- 11. 1,1,1-trichloroethane
- 12. hexachloroethane
- 13. 1,1-dichloroethane
- 14. 1,1,2-trichloroethane
- 15. 1,1,2,2-tetrachloroethane
- 16. chloroethane
- 17 Bis(2-chloromethal)ether (Deleted)
- 18. bis(2-chloroethyl)ether (Deleted)
- 19. 2-chloroethyl vinyl ether (mixed)
- 20. 2-chloronaphthalene

22. para-chloro meta-cresol
25. 1,2-dichlorobenzene
26. 1,3-dichlorobenzene
27 1,4-dichlorobenzene
28. 3,3'-dichlorobenzidene
29. 1,1-dichloroethylene
30. 1,2-trans-dichloroethylene
32. 1,2-dichloropropane
33. 1,3-dichloropropylene (1,3-dichloropropene)
35. 2,4-dinitrotoluene
36. 2,6-dinitrotoluene
37 1,2-diphenylhydrazine
38. ethylbenzene
40. 4-chorophenyl 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. Trichlorofluoromethane (Deleted)
50. Dichlorodifluoromethane (Deleted)
51. chlorodibromomethane
52. hexachlorobutadiene
53. hexachlorocyclopentadiene
54. isophorone
56. nitrobenzene
59. 2,4-dinitrophenol
61. N-nitrosodimethylamine
62. N-nitrosodiphenylamine
63. N-nitrosodi-n-propylamine
69. di-n-octyl 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
78. anthracene
79. benzo(ghi)perylene (1,12-benzoperylene)
81. phenanthrene
82. dibenzo (a,h)anthracene (1,2,5,6-dibenzanthracene)
83. ideno (1,2,3-cd)pyrene (2,3,-o-phenylenepyrene)
87 trichloroethylene
88. vinyl chloride (chloroethylene)
89. aldrin
90. diedlrin
94. 4,4'-DDD (p,p'TDE)
105. g-BCH-Delta
113. toxaphene
116. asbestos (fibrous)
117 beryllium*
118. cadmium*
119. chromium (total)*
120. copper*
122. lead*
123. mercury*
124. nickel*
128. zinc*
129. 2,3,7,8-tetra chlorodibenzo-p-dioxin (TCDD)

*We did not analyze for these pollutants in samples of raw wastewater from this subcategory. These pollutants are not believed to be present based on the Agency's best engineering judgment which includes consideration of raw materials and process operations.

(b) Subpart N—Primary Antimony 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. hexachloroethane*
13. 1,1-dichloroethane*
14. 1,1,2-trichloroethane*
15. 1,1,2,2-tetrachloroethane*
16. chloroethane*
17. bis(2-chloromethyl)ether (Deleted)*
18. bis(2-chloroethyl)ether*
19. 2-chloroethyl vinyl ether (mixed)*
20. 2-chloronaphthalene*
21. 2,4,6-trichlorophenol*
22. para-chloro meta-cresol*
23. chloroform (trichloromethane)*
24. 2-chlorophenol*
25. 1,2-dichlorobenzene*
26. 1,3-dichlorobenzene*
27 1,4-dichlorobenzene*
28. 3,3'-dichlorobenzidene*
29. 1,1-dichloroethylene*
30. 1,2-trans-dichloroethylene*
31. 2,4-dichlorophenol*
32. 1,2-dichloropropane*
33. 1,3-dichloropropylene (1,3-dichloropropene)*
34. 2,4-dimethylphenol*
35. 2,4-dinitrotoluene*
36. 2,6-dinitrotoluene
37 1,2-diphenylhydrazine*
38. ethylbenzene*
39. fluoranthene*
40. 4-chorophenyl 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. trichlorofluoromethane (Deleted)*
50. dichlorodifluoromethane (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-nitrosodiphenlamine*
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*
79. benzo (ghi) perylene (1,12-benzoperylene)*
80. fluorene*
81. phenanthrene*
82. dibenzo (a,h) anthracene (1,2,5,6-dibenzanthracene)*
83. ideno (1,2,3-cd) pyrene (2,3-o-phenylenepyrene)*
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 (pp'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. PBC-1242 (Arochlor 1242)*
107 PBC-1254 (Arochlor 1254)*
108. PBC-1221 (Arochlor 1221)*
109. PBC-1232 (Arochlor 1232)*
110. PCB-1248 (Arochlor 1248)*
111. PCB-1260 (Arochlor 1260)*
112. PCB-1016 (Arochlor 1016)*
113. toxaphene*
116. asbestos (fibrous)
117 beryllium*

119. chromium (total)*
121. cyanide (total)*
124. nickle*
125. selenium*
126. silver*
127 thallium*
129. 2,3,7,8-tetra chlorodibenzo-p-dioxin (TCDD)

*We did not analyze for these pollutants in samples of raw wastewater from this subcategory. These pollutants are not believed to be present based on the Agency's best engineering judgement which includes consideration of raw materials and process operations.

(c) Subpart O—Primary Beryllium 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. hexachloroethane*
13. 1,1-dichloroethane*
14. 1,1,2-trichloroethane*
15. 1,1,2,2-tetrachloroethane*
16. chloroethane*
17 bis (2-chloromethyl) ether (Deleted)*
18. bis(2-chloroethyl) ether*
19. 2-chloroethyl vinyl ether (mixed)*
20. 2-chloronaphthalene*
21. 2,4,6-trichlorophenol*
22. para-chloro meta-cresol*
23. chloroform (trichloromethane)*
24. 2-chlorophenol*
25. 1,2-dichlorobenzene*
26. 1,3-dichlorobenzene*
27 1,4-dichlorobenzene*
28. 3,3'-dichlorobenzidene*
29. 1,1-dichloroethylene*
30. 1,2-trans-dichloroethylene*
31. 2,4-dichlorophenol*
32. 1,2-dichloropropane*
33. 1,3-dichloropropylene (1,3-dichloropropene)*
34. 2,4-dimethylphenol*
35. 2,4-dinitrotoluene*
36. 2,6-dinitrotoluene*
37 1,2-diphenylhydrazine*
38. ethylbenzene*
39. fluoranthene*
40. 4-chlorophenyl phenyl ether*
41. 4-bromophenyl phenyl ether*
42. bis(2-chloroisopropyl ether)*
43. bis(2-chloroethoxy) methane*
44. methylene chloride (dichloromethane)*
45. methyl chloride (chloromethane)*
46. methyl bromide (bromomethane)*
47 bromoform (tribromomethane)*
48. dichlorobromomethane*
49. trichlorofluoromethane (Deleted)*
50. dichlorodifluoromethane (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*
79. benzo(ghi)perylene (1,12-benzoperylene)*
80. fluorene*
81. phenanthrene*
82. dibenzo (a,h)anthracene (1,2,5,6-dibenzanthracene)*
83. ideno (1,2,3-cd)pyrene (2,3,-o-phenylenepyrene)*
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)*
107 PCB-1254 (Arochlor 1254)*
108. PCB-1221 (Arochlor 1221)*
109. PCB-1232 (Arochlor 1232)*
110. PCB-1248 (Arochlor 1248)*
111. PCB-1260 (Arochlor 1260)*
112. PCB-1016 (Arochlor 1016)*
113. toxaphene*
116. asbestos (fibrous)
129. 2,3,7,8-tetra chlorodibenzo-p-dioxin (TCDD)

*We did not analyze for these pollutants in samples of raw wastewater from this subcategory. These pollutants are not believed to be present based on the Agency's best engineering judgement which includes consideration of raw materials and process operations.

(d) Subpart P—Primary Boron 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. hexachloroethane
13. 1,1-dichloroethane
14. 1,1,2-trichloroethane
15. 1,1,2,2-tetrachloroethane
16. chloroethane
17. bis(2-chloromethyl)ether (Deleted)
18. bis(2-chloroethyl)ether
19. 2-chloroethyl vinyl ether (mixed)
20. 2-chloronaphthalene
21. 2,4,6-trichlorophenol
22. para-chloro meta-cresol
24. 2-chlorophenol
25. 1,2-dichlorobenzene
26. 1,3-dichlorobenzene
27 1,4-dichlorobenzene
28. 3,3'-dichlorobenzidene
29. 1,1-dichloroethylene
30. 1,2-trans-dichloroethylene
31. 2,4-dichlorophenol
32. 1,2-dichloropropane
33. 1,3-dichloropropylene (1,3-dichloropropene)
34. 2,4-dimethylphenol
35. 2,4-dinitrotoluene
36. 2,6-dinitrotoluene
37. 1,2-diphenylhydrazine
38. ethylbenzene
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)
49. trichlorofluoromethane (Deleted)
50. dichlorodifluoromethane (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
78. anthracene
79. benzo(ghi)perylene (1,12-benzoperylene)
80. fluorene
81. phenanthrene
82. dibenzo (a,h)anthracene (1,1,5,6-dibenzanthracene)
83. ideno (1,2,3-cd)pyrene (2,3,-o-phenylenepyrene)
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)
107 PCB–1254 (Arochlor 1254)
108. PCB–1221 (Arochlor 1221)
109. PCB–1232 (Arochlor 1232)
110. PCB–1248 (Arochlor 1248)
111. PCB–1260 (Arochlor 1260)
112. PCB—1016 (Arochlor 1016)
113. toxaphene
116. asbestos (fibrous)
129. 2,3,7,8-tetra chlorodibenzo-p-dioxin (TCDD)

(e) Subpart Q—Primary Cesium and Rubidium Subcategory
1. acenaphthene*
2. acrolein*
3. acrylonitrile*
4. benzene*
5. benzidine*
6. carbon tetrachloride (tetrachloromethane)*
7 chlorobenzene*
8. 1,2,4–trichlorobenzene*
9. hexachlorobenzene*
10. 1,2-dichloroethane*
11. 1,1,1-trichloroethane*
12. hexachloroethane*
13. 1,1-dichloroethane*
14. 1,1,2-trichloroethane*
15. 1,1,2,2-tetrachloroethane*
16. chloroethane*
17 bis(2-chloromethyl) ether (Deleted)*
18. bis(2-chloroethyl) ether*
19. 2-chloroethyl vinyl ether (mixed)*
20. 2-chloronaphthalene*
21. 2,4,6-trichlorophenol*
22. para-chloro meta-cresol*
23. chloroform (trichloromethane)*
24. 2-chlorophenol*
25. 1,2-dichlorobenzene*
26. 1,3-dichlorobenzene*
27 1,4-dichlorobenzene*
28. 3.3'-dichlorobenzidene*
29. 1,1-dichloroethylene*
30. 1,2-trans-dichloroethylene*
31. 2,4-dichlorophenol*
32. 1,2-dichloropropane*
33. 1,3-dichloropropylene (1,3-dichloropropene)*
34. 2,4-dimethylphenol*
35. 2,4-dinitrotoluene*
36. 2,6-dinitrotoluene*
37 1,2-diphenylhydrazine*
38. ethylbenzene*
39. fluoranthene*
40. 4-chlorophenyl phenyl ether*
41. 4-bromophenyl phenyl ether*
42. bis(2-chloroisopropyl) ether*
43. bis(2-chloroethoxy) methane*
44. methylene chloride (dichloromethane)*
45. methyl chloride (chloromethane)*
46. methyl bromide (bromomethane)*
47 bromoform (tribromomethane)*
48. dichlorobromomehane*
49. trichlorofluoromethane (Deleted)*
50. dichlorodifluoromethane (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 butylbenzyl 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*
79. benzo (ghi) perylene (1,12-benzoperylene)*
80. fluorene*
81. phenanthrene*
82. dibenzo (a,h) anthracene (1,2,5,6-dibenzanthracene)*
83. ideno (1,2,3-cd) pyrene (2,3,-o-phenylenepyrene)*
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)*
107 PCB–1254 (Arochlor 1254)*
108. PCB–1221 (Arochlor 1221) *
109. PCB–1232 (Arochlor 1232)*
110. PCB–1248 (Arochlor 1248)*
111. PCB–1260 (Arochlor 1260)*
112. PCB–1016 (Arochlor 1016)*
113. toxaphene*
116. asbestos (fibrous)
129. 2,3,7,8-tetra chlorodibenzo-p-dioxin (TCDD)

*We did not analyze for these pollutants in samples of raw wastewater from this subcategory. These pollutants are not believed to be present based on the Agency's best engineering judgement which includes consideration of raw materials and process operations.

(f) Subpart R–Primary and Secondary Germanium and Gallium Subcategory

1. acenaphthene
2. acrolein
3. acrylonitrile
5. benzidene
6. carbon tetrachloride (tetrachloromethane)
7 chlorobenzene
8.1,2,4-trichlorobenzene
10. 1,2-dichloroethane
11. 1,1,1-trichloroethane
12. hexachloroethane
13. 1,1-dichloroethane
14. 1,1,2-trichloroethane
15. 1,1,2,2-tetrachloroethane
16. chloroethane
17 bis (2-chloromethyl) ether (Deleted)
18. bis (2-chloroethyl) ether
19. 2-chloroethyl vinyl ether (mixed)
20. 2-chloronaphthalene
22. para-chloro meta-cresol
24. 2-chlorophenol
25. 1,2-dichlorobenzene
26. 1,3-dichlorobenzene
27 1,4-dichlorobenzene
28. 3,3'-dichlorobenzidene
29. 1,1-dichloroethylene
30. 1,2-trans-dichloroethylene
31. 2,4-dichlorophenol
32. 1,2-dichloropropane
33. 1,3-dichloropropylene (1,3-dichloropropene)
34. 2,4-dimethylphenol
35. 2,4-dinitrotoluene
36. 2,6-dinitrotoluene
37 1,2-diphenylhydrazine
38. ethylbenzene
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 (Deleted)
50. dichlorodifluoromethane (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
65. phenol
67 butyl benzyl 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
79. benzo(ghi)perylene (1,12-benzoperylene)
80. fluorene
81. phenanthrene
82. dibenzo (a,h)anthracene (1,2,5,6-dibenzanthracene)
83. ideno (1,2,3-cd)pyrene (2,3,-o-phenylenepyrene)
84. pyrene
85. tetrachloroethylene
86. toluene
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)
107 PCB–1254 (Arochlor 1254)
108. PCB–1221 (Arochlor 1221)
109. PCB–1232 (Arochlor 1232)
110. PCB–1248 (Arochlor 1248)
111. PCB–1260 (Arochlor 1260)
112. PCB–1016 (Arochlor 1016)
113. toxaphene
116. asbestos (fibrous)
129. 2,3,7,8-tetra chlorodibenzo-p-dioxin (TCDD)

(g) Subpart S—Secondary Indium 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. hexachloroethane
13. 1,1-dichloroethane
14. 1,1,2-trichloroethane
15. 1,1,2,2-tetrachloroethane
16. chloroethane
17 bis(2-chloromethyl)ether (Deleted)
18. bis(2-chloroethyl)ether
19. 2-chloroethyl vinyl ether (mixed)
20. 2-chloronaphthalene
21. 2,4,6-trichlorophenol
22. para-chloro meta-cresol
23. chloroform (trichloromethane)
24. 2-chlorophenol
25. 1,2-dichlorobenzene
26. 1,3-dichlorobenzene
27 1,4-dichlorobenzene
28. 3,3'-dichlorobenzidene
29. 1,1-dichloroethylene
30. 1,2-trans-dichloroethylene
31. 2,4-dichlorophenol
32. 1,2-dichloropropane
33. 1,3-dichloropropylene (1,3-dichloropropene)
34. 2,4-dimethylphenol
35. 2,4-dinitrotoluene
36. 2,6-dinitrotoluene
37. 1,2-diphenylhydrazine
38. ethylbenzene
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 (Deleted)
50. dichlorodifluoromethane (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
66. bis(2-ethylhexyl) phthalate
67 butyl benzyl phthalate
69. di-n-octyl 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
79. benzo(ghi)perylene (1,12-

benzoperylene)
80. fluorene
81. phenanthrene
82. dibenzo (a,h)anthracene (1,2,5,6-dibenzanthracene)
83. indeno (1,2,3-cd)pyrene (2,3,-o-phenylenepyrene)
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
104. r-BHC (lindane)-Gamma
105. g-BHC-Delta
106. PCB-1242 (Arochlor 1242)
107 PCB-1254 (Arochlor 1254)
108. PCB-1221 (Arochlor 1221)
109. PCB-1232 (Arochlor 1232)
110. PCB-1248 (Arochlor 1248)
111. PCB-1260 (Arochlor 1260)
112. PCB-1016 (Arochlor 1016)
113. toxaphene
116. asbestos (fibrous)
129. 2,3,7;8-tetra chlorodibenzo-p-dioxin (TCDD)

(h) Subpart T—Secondary Mercury 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. 1,2,4-dichloroethane*
11. 1,1,1-trichloroethane*
12. hexachloroethane*
13. 1,1-dichloroethane*
14. 1,1,2-trichloroethane*
15. 1,1,2,2-tetrachloroethane*
16. chloroethane*
17 bis(2-chloromethyl)ether (Deleted)*
18. bis(2-chloroethyl)ether*
19. 2-chloroethyl vinyl ether (mixed)*
20. 2-chloronaphthalene*
21. 2,4,6-trichlorophenol*
22. para-chloro meta-cresol*
23. chloroform (trichloromethane)*
24. 2-chlorophenol*
25. 1,2-dichlorobenzene*
26. 1,3-dichlorobenzene*
27 1,4-dichlorobenzene*
28. 3,3'-dichlorobenzidene*
29. 1,1-dichloroethylene*
30. 1,2-trans-dichloroethylene*
31. 2,4-dichlorophenol*
32. 1,2-dichloropropane*
33. 1,3-dichloropropylene (1,3-dichloropropene)*
34. 2,4-dimethylphenol*
35. 2,4-dinitrotoluene*
36. 2,6-dinitrotoluene*
37 1,2-diphenylhydrazine*
38. ethylbenzene*
39. fluoranthene*
40. 4-chlorophenyl phenyl ether*
41. 4-bromophenyl phenyl ether*
42. bis(2-chloroisopropyl)ether*
43. bis(2-chlorethoxy)methane*
44. methylene chloride (dichloromethane)*
45. methyl chloride (chloromethane)*
46. methyl bromide (bromomethane)*
47 bromoform (tribromomethane)*
48. dichlorobromomethane*
49. trichlorofluoromethane (Deleted)*
50. dichlorodifluoromethane (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*
79. benzo(ghi)perylene (1,12-benzoperylene)*
80. fluorene*
81. phenanthrene*
82. dibenzo (a,h)anthracene (1,2,5,6-dibenzanthracene)*
83. ideno (1,2,3-cd)pyrene (2,3,-o-phenylenepyrene)*
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)*
107 PCB-1254 (Arochlor 1254)*
108. PCB-1221 (Arochlor 1221)*
109. PCB-1232 (Arochlor 1232)*
110. PCB-1248 (Arochlor 1248)*
111. PCB-1260 (Arochlor 1260)*
112. PCB-1016 (Arochlor 1016)*
113. toxaphene*
116. asbestos (fibrous)
121. cyanide (total)*
129. 2,3,7,8-tetra chlorodibenzo-p-dioxin (TCDD)

*We did not analyze for these pollutants in samples of raw wastewater from this subcategory. These pollutants are not believed to be present based on the Agency's best engineering judgement which includes consideration of raw materials and process operations.

(i) Subpart U—Primary Molybdenum and Rhenium 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. hexachloroethane
13. 1,1-dichloroethane
14. 1,1,2-trichloroethane
15. 1,1,2,2-tetrachloroethane
16. chloroethane
17 bis(2-chloromethyl) ether (Deleted)
18. bis(2-chloroethyl) ether
19. 2-chloroethyl vinyl ether (mixed)
20. 2-chloronaphthalene

21. 2,4,6-trichlorophenol
22. para-chloro meta-cresol
23. chloroform (trichloromethane)
24. 2-chlorophenol
25. 1,2-dichlorobenzene
26. 1,3-dichlorobenzene
27 1,4-dichlorobenzene
28. 3,3-dichlorobenzidene
29. 1,1-dichloroethylene
30. 1,2-trans-dichloroethylene
31. 2,4-dichlorophenol
32. 1,2-dichloropropane
33. 1,3-dichloropropylene (1,3-dichloropropene)
34. 2,4-dimethylphenol
35. 2,4-dinitrotoluene
36. 2,6-dinitrotoluene
37 1,2-diphenylhydrazine
38. ethylbenzene
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 (Deleted)
50. dichlorodifluoromethane (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
79. benzo (ghi) perylene (1,2-benzoperylene)
80. fluorene
81. phenanthrene
82. dibenzo (a,h) anthracene (1,2,5,6-dibenzanthracene)
83. ideno (1,2,3-cd) pyrene (2,3 -o-phenylenepyrene)
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
105. g-BHC-Delta
106. PCB-1242 (Arochlor 1242)
107 PCB-1254 (Arochlor 1254)
108. PCB-1221 (Arochlor 1221)
109. PCB-1232 (Arochlor 1232)
110. PCB-1248 (Arochlor 1248)
111. PCB-1260 (Arochlor 1260)
112. PCB-1016 (Arochlor 1016)
113. toxaphene
116. asbestos (fibrous)
129. 2,3,7,8-chlorodibenzo-p-dioxin (TCDD)

(j) Subpart V—Secondary Molybdenum and Vanadium 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. hexachloroethane*
13. 1,1-dichloroethane*
14. 1,1,2-trichloroethane*
15. 1,1,2,2-tetrachloroethane*
16. chloroethane*
17 bis(2-chloromethyl)ether (Deleted)*
18. bis(2-chloroethyl)ether*
19. 2-chloroethyl vinyl ether (mixed)*
20. 2-chloronaphthalene*
21. 2,4,6-trichlorophenol*
22. para-chloro meta-cresol*
23. chloroform (trichloromethane)*
24. 2-chlorophenol*
25. 1,2-dichlorobenzene*
26. 1,3-dichlorobenzene*
27. 1,4-dichlorobenzene*
28. 3,3'-dichlorobenzidene*
29. 1,1-dichloroethylene*
30. 1,2-trans-dichloroethylene*
31. 2,4-dichlorophenol*
32. 1,2-dichloropropane*
33. 1,3-dichloropropylene (1,3-dichloropropene)*
34. 2,4-dimethylphenol*
35. 2,4-dinitrotoluene*
36. 2,6-dinitrotoluene*
37 1,2-diphenylhydrozine*
38. ethylbenzene*
39. fluoranthene*
40. 4-chlorophenyl phenyl ether*
41. 4-bromophenyl phenyl ether*
42. bis(2-chloroisopropyl)ether*
43. bis(2-chloroethoxy)methane*
44. methylene chloride (dichloromethane)*
45. methyl chloride (chloromethane)*
46. methyl bromide (bromomethane)*
47 bromoform (tribromomethane)*
48. dichlorobromomethane*
49. trichlorofluoromethane (Deleted)*
50. dichlorodifluoromethane (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*
79. benzo(ghi)perylene (1,12-benzoperylene)*
80. fluorene*
81. phenanthrene*
82. dibenzo (a,h)anthracene (1,2,5,6-debenzanthracene)*
83. ideno (1,2,3-cd)pyrene (2,3,-o-phenylenepyrene)*
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)*
107 PCB-1254 (Arochlor 1254)*
108. PCB-1221 (Arochlor 1221)*
109. PCB-1232 (Arochlor 1232)*
110. PCB-1248 (Arochlor 1248)*
111. PCB-1260 (Arochlor 1260)*
112. PCB-1016 (Arochlor 1016)*
113. toxaphene*
116. asbestos (fibrous)
121. cyanide (total)*
125. selenium*
126. silver*
127 thallium*
129. 2,3,7,8-tetra chlorodibenzo-p-dioxin (TCDD)

*We did not analyze for these pollutants in samples of raw wastewater from this subcategory. These pollutants are not believed to be present based on the Agency's best engineering judgement which includes consideration of raw materials and process operations.

(k) Subpart W—Primary Nickel and Cobalt Subcategory

1. acenaphthene
2. acrolein
3. acrylonitrile
5. benzidene
6. carbon tetrachloride (tetrachloromethane)
7 chlorobenzene
8. 1,2,4-trichlorobenzene
9. hexachlorobenzene
10. 1,2-dichloroethane
11. 1,1,1-trichloroethane
12. hexachloroethane
13. 1,1-dichloroethane
14. 1,1,2-trichloroethane
15. 1,1,2,2-tetrachloroethane
16. chloroethane
17 bis(2-chloromethyl)ether (Deleted)
18. bis(2-chloroethyl)ether
19. 2-chloroethyl vinyl ether (mixed)
20. 2-chloronaphthalene
21. 2,4,6-trichlorophenol
22. para-chloro meta-cresol
23. chloroform (trichloromethane)
24. 2-chlorophenol
25. 1,2-dichlorobenzene
26. 1,3-dichlorobenzene
27 1,4-dichlorobenzene
28. 3,3'-dichlorobenzene
29. 1,1-dichloroethylene
30. 1,2-trans-dichloroethylene
31. 2,4-dichlorophenol
32. 1,2-dichloropropane
33. 1,3-dichloropropylene (1,3-dichloropropene)
34. 2,4-dimethylphenol
35. 2,4-dinitrotoluene
36. 2,6-dinitrotoluene
37 1,2-diphenylhydrazine
38. ethylbenzene
39. fluoranthene
40. 4-chlorophenyl phenyl ether
41. 4-bromophenyl phenyl ether
42. bis(2-chloroisopropyl)ether
43. bis(2-chloroethoxy)methane
44. methylene chloride (dichloromethane)
45. methyl chloride (chloromethane)
46. methyl bromide (bromomethane)
47 bromoform (tribromomethane)
48. dichlorobromomethane
49. trichlorofluoromethane (Deleted)
50. dichlorodifluoromethane (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
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
79. benzo(ghi)perylene (1,12-benzoperylene)
80. fluorene
81. phenanthrene
82. dibenzo (a,h)anthracene (1,2,5,6-dibenzanthracene)
83. ideno (1,2,3-cd)pyrene (2,3-o-phenylenepyrene)
84. pyrene
85. tetrachloroethylene
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)
107 PCB-1254 (Arochlor 1254)
108. PCB-1221 (Arochlor 1221)
109. PCB-1232 (Arochlor 1232)
110. PCB-1248 (Arochlor 1248)
111. PCB-1260 (Arochlor 1260)
112. PCB-1016 (Arochlor 1016)
113. toxaphene
116. asbestos (fibrous)
121. cyanide*
129. 2,3,7,8-tetra chlorodibenzo-p-dioxin (TCDD)

* We did not analyze for this pollutant in samples of raw wastewater from this subcategory. These pollutants are not believed to be present based on the Agency's best engineering judgment which includes consideration of raw materials and process operations.

(l) Subpart X—Secondary Nickel 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. hexachloroethane*
13. 1,1-dichloroethane*
14. 1,1,2-trichloroethane*
15. 1,1,2,2-tetrachloroethane*
16. chloroethane*
17 bis(2-chloromethyl)ether (Deleted)*
18. bis(2-chloroethyl)ether*
19. 2-chloroethyl vinyl ether (mixed)*
20. 2-chloronaphthalene*
21. 2,4,6-trichlorophenol*
22. para-chloro meta-cresol*
23. chloroform (trichloromethane)*

24. 2-chlorophenol*
25. 1,2-dichlorobenzene*
26 1,3-dichlorobenzene*
27 1,4-dichlorobenzene*
28. 3,3'-dichlorobenzidene*
29. 1,1-dichloroethylene*
30. 1,2-trans-dichloroethylene*
31. 2,4-dichlorophenol*
32. 1,2-dichloropropane*
33. 1,3-dichloropropylene (1,3-dichloropropene)*
34. 2,4-dimethylphenol*
35. 2,4-dinitrotoluene*
36. 2,6-dinitrotoluene*
37 1,2-diphenylhydrazine*
38. ethylbenzene*
39. fluoranthene*
40. 4-chlorophenyl phenyl ether*
41. 4-bromophenyl phenyl ether*
42. bis(2-chloroisopropyl)ether*
43. bis(2-chloroethoxy)methane*
44. methylene chloride (dichloromethane)*
45. methyl chloride (chloromethane)*
46. methyl bromide (bromomethane)*
47 bromoform (tribromomethane)*
48. dichlorobromomethane*
49. trichlorofluoromethane (Deleted)*
50. dichlorodifluoromethane (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. diethylphthalate*
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*
79. benzo(ghi)perylene (1,12-benzoperylene)*
80. fluorene*
81. phenanthrene*
82. dibenzo (a,h)anthracene (1,2,5,6-dibenzanthracene)*
83. ideno (1,2,3-cd)pyrene (2,3-o-phenylenepyrene)*
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)*
107 PCB-1254 (Arochlor 1254)*
108. PCB-1221 (Arochlor 1221)*
109. PCB-1232 (Arochlor 1232)*
110. PCB-1248 (Arochlor 1248)*
111. PCB-1260 (Arochlor 1260)*
112. PCB-1016 (Arochlor 1016)*
113. toxaphene*
116. asbestos (fibrous)
129. 2,3,7,8-tetra chlorodibenzo-p-dioxin (TCDD)

*We did not analyze for these pollutants in samples of raw wastewater from this subcategory. These pollutants are not believed to be present based on the Agency's best engineering judgement which includes consideration of raw materials and process operations.

(m) Subpart Y—Primary Precious Metals and Mercury Subcategory

1. acenaphthene
2. acrolein
3. acrylonitrile
5. benzidene
6. carbon tetrachloride (tetrachloromethane)
7 chlorobenzene
8. 1,2,4-trichlorobenzene
9. hexachlorobenzene
10. 1,2-dichloroethane
11. 1,1,1-trichloroethane
12. hexachloroethane
13. 1,1-dichloroethane
14. 1,1,2-trichloroethane
15. 1,1,2,2-tetrachloroethane
16. chloroethane
17 bis(2-chloromethyl)ether (Deleted)
18. bis(2-chloroethyl)ether
19. 2-chloroethyl vinyl ether (mixed)
20. 2-chloronaphthalene
21. 2,4,6-trichlorophenol
22. para-chloro meta-cresol
23. chloroform
24. 2-chlorophenol
25. 1,2-dichlorobenzene
26. 1,3-dichlorobenzene
27 1,4-dichlorobenzene
28. 3,3'-dichlorobenzidene
29. 1,1-dichloroethylene
30. 1,2-trans-dichloroethylene
31. 2,4-dichlorophenol
32. 1,2-dichloropropane
33. 1,3-dichloropropylene (1,3-dichloropropene)
34. 2,4-dimethylphenol
35. 2,4-dinitrotoluene
36. 2,6-dinitrotoluene
37 1,2-diphenylhydrazine
38. ethylbenzene
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 (Deleted)
50. dichlorodifluoromethane (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
67. butyl benzyl phthalate
69. di-n-octyl phthalate
71. dimethyl phthalate
72. benzo(a)anthracene (1,2-benzanthracene)
73. benzo(a)pyrene (3,4-benzopyrene)
74. 3,4-benzofluoranthene
75. benzo(k)fluoranthene (11,12-benzofluoranthene)
76. chrysene
77 acenaphthylene
79. benzo(ghi)perylene (1,12-benzoperylene)
80. fluorene
81. phenanthrene
82. dibenzo (a,h)anthracene (1,2,5,6-dibenzanthracene)
83. ideno (1,2,3,-cd)pyrene (2,3,-o-phenylenepyrene)
84. pyrene
85. tetrachlorethylene
87. trichloroethylene
88. vinyl chloride (chlorethylene)
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)
107 PCB-1254 (Arochlor 1254)
108. PCB-1221 (Arochlor 1221)
109. PCB-1232 (Arochlor 1232)
110. PCB-1248 (Arochlor 1248)
111. PCB-1260 (Arochlor 1260)
112. PCB-1016 (Arochlor 1016)
113. toxaphene
116. asbestos (fibrous)
129. 2,3,7,8-tetra chlorodibenzo-p-dioxin (TCDD)

(n) Subpart Z—Secondary Precious Metals Subcategory
1. acenaphthene
2. acrolein
3. acrylonitrile
5. benzidene
8. 1,2,4,-trichlorobenzene
9. hexachlorobenzene
12. hexachloroethane
13. 1,1-dichloroethane
14. 1,1,2-trichloroethane
15. 1,1,2,2-tetrachloroethane
16. chloroethane
17 bis(2-chloromethyl)ether (Deleted)
18. bis(2-chloroethyl)ether
19. 2-chloroethyl vinyl ether (mixed)
20. 2-chloronaphthalene
22. para-chloro meta-cresol
25. 1,2-dichlorobenzene
26. 1,3-dichlorobenzene
27 1,4-dichlorobenzene
28. 3,3'-dichlorobenzidene
29. 1,1-dichloroethylene
30. 1,2-trans-dichloroethylene
31. 2,4-dichlorophenol
32. 1,2-dichloropropane
33. 1,3-dichloropropylene (1,3-dichloropropene)
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)
49. trichlorofluoromethane (Deleted)
50. dichlorodifluoromethane (Deleted)
52. hexachlorobutadiene
53. hexachlorocyclopentadiene
55. naphthalene
56. nitrobenzene
58. 4-nitrophenol
59. 2,4-dinitrophenol
60. 4,6-dinitro-o-cresol
61. N-nitrosodimethylamine
63. N-nitrosodi-n-propylamine
64. pentachorophenol
67 butyl benzyl 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
79. benzo(ghi)perylene (1,12-benzoperylene)
80. fluorene
81. phenanthrene
82. dibenzo (a,h)anthracene (1,2,5,6-dibenzanthracene)
83. ideno (1,2,3,-cd)pyrene (2,3,-o-phenylenepyrene)
84. pyrene
85. tetrachloroethylene
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)*
107 PCB-1254 (Arochlor 1254)*
108. PCB-1221 (Arochlor 1221)*
109. PCB-1232 (Arochlor 1232)*
110. PCB-1248 (Arochlor 1248)*
111. PCB-1260 (Arochlor 1260)*
112. PCB-1016 (Arochlor 1016)*
113. toxaphene*
116. asbestos (fibrous)
129. 2,3,7,8-tetra chlorodibenzo-p-dioxin (TCDD)

*We did not analyze for these pollutants in samples of raw wastewater from this subcategory. These pollutants are not believed to be present based on the Agency's best engineering judgement which includes consideration of raw materials and process operations.

(o) Subpart AA—Primary Rare Earth Metals Subcategory
1. acenaphthene
2. acrolein
3. acrylonitrile
5. benzidene
8. 1,2,4-trichlorobenzene
10. 1,2-dichloroethane
11. 1,1,1-trichloroethane
12. hexachloroethane
13. 1,1-dichloroethane
14. 1,1,2-trichloroethane
15. 1,1,2,2,-tetrachloroethane
16. chloroethane
17 bis(2-chloromethyl)ether (Deleted)
18. bis(2-chloroethyl)ether
19. 2-chloroethyl vinyl ether (mixed)
20. 2-chloronaphthalene
22. para-chloro meta-cresol
24. 2-chlorophenol
25. 1,2-dichlorobenzene
26. 1,3-dichlorobenzene
27 1,4-dichlorobenzene
28. 3,3'-dichlorobenzidene
29. 1,1-dichloroethylene
30. 1,2-trans-dichloroethylene
31. 2,4-dichlorophenol
32. 1,2-dichloropropane
33. 1,3-dichloropropylene (1,3-dichloropropene)
34. 2,4-dimethylphenol
35. 2,4-dinitrotoluene
36. 2,6-dinitrotoluene
37 1,2-diphenylhydrazine
38. ethylbenzene
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)
50. dichlorodifluorthane (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
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
79. benzo(ghi)perylene (1,12-benzoperylene)
80. fluorene
81. phenanthrene
82. dibenzo (a,h)anthracene (1,2,5,6-dibenzanthracene)
83. ideno (1,2,3,-cd)pyrene (2,3,-o-phenylenepyrene)
84. pyrene
85. tetrachloroethylene
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)
107 PCB-1254 (Arochlor 1254)
108. PCB-1221 (Arochlor 1221)
109. PCB-1232 (Arochlor 1232)
110. PCB-1248 (Arochlor 1248)
111. PCB-1260 (Arochlor 1260)
112. PCB-1016 (Arochlor 1016)
113. toxaphene
116. asbestos (fibrous)
129. -2,3,7,8-tetra chlorodibenzo-p-dioxin (TCDD)

(p) Subpart AB—Secondary Tantalum 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. hexachloroethane*
13. 1,1-dichloroethane*
14. 1,1,2-trichloroethane*
15. 1,1,2,2-tetrachloroethane*
16. chloroethane*
17 bis(2-chloromethyl)ether (Deleted)*
18. bis(2-chloroethyl)ether*
19. 2-chloroethyl vinyl ether (mixed)*
20. 2-chloronaphthalene*
21. 2,4,6-trichlorophenol*
22. para-chloro meta-cresol*
23. chloroform (trichloromethane)*
24. 2-chlorophenol*
25. 1,2-dichlorobenzene*
26. 1,3-dichlorobenzene*
27 1,4-dichlorobenzene*
28. 3,3'-dichlorobenzidene*
29. 1,1-dichloroethylene*
30. 1,2-trans-dichloroethylene*
31. 2,4-dichlorophenol*
32. 1,2-dichloropropane*
33. 1,3-dichloropropylene (1,3-dichloropropene)*
34. 2,4-dimethylphenol*
35. 2,4-dinitrotoluene*
36. 2,6-dinitrotoluene*
37 1,2-diphenylhydrazine*
38. ethylbenzene*
39. fluoranthene*
40. 4-chlorophenyl phenyl ether*
41. 4-bromophenyl phenyl ether*
42. bis(2-chloroisopropyl)ether*
43. bis(2-chloroethoxy)methane*
44. methylene chloride (dichloromethane)*
45. methyl chloride (chloromethane)*
46. methyl bromide (bromomethane)*
47 bromoform (tribromomethane)*
48. dichlorobromomethane*
49. trichlorofluoromethane (Deleted)*
50. dichlorodifluoromethane (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 benyl 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*
79. benzo(ghi)perylene (1,12-benzoperylene)*
80. fluorene*
81. phenanthrene*
82. dibenzo (a,h)anthracene (1,2,5,6-dibenzanthracene)*
83. ideno (1,2,3-cd)pyrene (2,3,-o-phenylenepyrene)*
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)*
107. PCB-1254 (Arochlor 1254)*
108. PCB-1221 (Arochlor 1221)*
109. PCB-1232 (Arochlor 1232)*
110. PCB-1248 (Arochlor 1248)*
111. PCB-1260 (Arochlor 1260)*
112. PCB-1016 (Arochlor 1016)*
113. toxaphene*
116. asbestos (fibrous)
121. cyanide (total)*
129. 2,3,7,8-tetra chlorodibenzo-p-dioxin (TCDD)

* We did not analyze for these pollutants in samples of raw wastewater from this subcategory. These pollutants are not believed to be present based on the Agency's best engineering judgment which includes consideration of raw materials and process operations.

(q) Subpart AC—Primary and Secondary Tin Subcategory

1. acenaphthene
2. acrolein
3. acrylonitrile
5. benzidene
6. carbon tetrachloride (tetrachloromethane)
7 chlorobenzene
8. 1,2,4-trichlorobenzene
10. 1,2-dichloroethane
12. hexachloroethane
13. 1,1-dichloroethane
14. 1,1,2-trichloroethane
15. 1,1,2,2-tetrachloroethane
16. chloroethane

17 bis(2-chloromethyl)ether (Deleted)
18. bis(2-chloroethyl)ether
19. 2-chloroethyl vinyl ether (mixed)
20. 2-chloronaphthalene
21. 2,4,6-trichlorophenol
22. para-chloro meta-cresol
24. 2-chlorophenol
25. 1,2-dichlorobenzene
26. 1,3-dichlorobenzene
27 1,4-dichlorobenzene
28. 3,3'-dichlorobenzidene
30. 1,2-trans-dichloroethylene
31. 2,4-dichlorophenol
32. 1,2-dichloropropane
33. 1,3-dichloropropylene (1,3-dichloropropene)
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)
47 bromoform (tribromomethane)
48. dichlorobromomethane
49. trichlorofluoromethane (Deleted)
50. dichlorodifluoromethane (Deleted)
51. chlorodibromomethane
52. hexachlorobutadiene
53. hexachlorocyclopentadiene
54. isophorone
56. nitorbenzene
60. 4,6-dinitro-o-cresol
61. N-nitrosocimethylamine
63. N-nitrosodi-n-propylamine
64. pentachlorophenol
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
79. benzo(ghi)perylene (1,12-benzoperylene)
82. dibenzo (a,h)anthracene (1,2,5,6-dibenzanthracene)
83. ideno (1,2,3-cd)pyrene (2,3,-o-phenylenepyrene)
85. tetrachloroethylene
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)
107 PCB-1254 (Arochlor 1254)
108. PCB-1221 (Arochlor 1221)
109. PCB-1232 (Arochlor 1232)
110. PCB-1248 (Arochlor 1248)
111. PCB-1260 (Arochlor 1260)
112. PCB-1016 (Arochlor 1016)
113. toxaphene
116. asbestos (fibrous)
129. 2,3,7,8-tetra chlorodibenzo-p-dioxin (TCDD)

(r) Subpart AD—Primary and Secondary Titanium Subcategory
1. acenaphthene
2. acrolein
3. acrylonitrile
5. benzidene
6. carbon tetrachloride (tetrachloromethane)
7 chlorobenzene
8. 1,2,4-trichlorobenzene
9. hexachlorobenzene
10. 1,2-dichloroethane
12. hexachloroethane
14. 1,1,2-trichloroethane
15. 1,1,2,2-tetrachloroethane
16. chloroethane
17 bis(2-chloromethyl)ether (Deleted)
18. bis(2-chloroethyl)ether
19. 2-chloroethyl vinyl ether (mixed)
20. 2-chloronaphthalene
22. para-chloro meta-cresol
24. 2-chlorophenol
25. 1,2-dichlorobenzene
26. 1,3-dichlorobenzene
27 1,4-dichlorobenzene
28. 3,3'-dichlorobenzidene
29. 1,1-dichloroethylene
30. 1,2-trans-dichloroethylene
32. 1,2-dichloropropane
33. 1,3-dichloropropylene (1,3-dichloropropene)
34. 2,4-dimethylphenol
35. 2,4-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)
49. trichlorofluoromethane (Deleted)
50. dichlorodifluoromethane (Deleted)
52. hexachlorobutadiene
53. hexachlorocyclopentadiene
54. isophorone
55. naphthalene
56 nitrobenzene
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)
73. benzo(a)pyrene (3,4-benzopyrene)
74. 3,4-benzofluoranthene
76. chrysene
77 acenaphthylene
78. anthracene
79. benzo(ghi)perylene (1,12-benzoperylene)
80. fluorene
81. phenanthrene
82. dibenzo (a,h)anthracene (1,2,5,6-dibenzanthracene)
83. ideno (1,2,3-cd)pyrene (2,3-o-phenylenepyrene)
84. pyrene
85. tetrachloroethylene
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
97 endosulfan sulfate
98. endrin
99. endrin aldehyde
100. heptachlor
101. heptachlor epoxide
104. r-BHC (lindane)-Gamma
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)
112. PCB-1016 (Arochlor 1016)
113. toxaphene
116. asbestos (fibrous)
129. 2,3,7,8-tetra chlorodibenzo-p-dioxin (TCDD)

(s) Subpart AE—Secondary Tungsten and Cobalt Subcategory
1. acenaphthene*
2. acrolein*
3. acrylonitrile*
4. benzene*
5. benzidene*
6. carbon tetrachloride (tetrachloromethane)*
7 chlorobenzene*
8. 1,2,4-trichlorobenzene*
9. hexaschlorobenzene*
10. 1,2-dichloroethane*
11. 1,1,1-trichloroethane*
12. hexachloroethane*
13. 1,1-dichloroethane*
14. 1,1,2-trichloroethane*
15. 1,1,2,2-tetrachloroethane*
16. chloroethane*

17 bis(2-chloromethyl)ether (Deleted)*
18. bis(2-chloroethyl)ether*
19. 2-chloroethyl vinyl ether (mixed)*
20. 2-chloronaphthalene*
21. 2,4,6-trichlorophenol*
22. para-chloro meta-cresol*
23. chloroform (trichloromethane)*
24. 2-chlorophenol*
25. 1,2-dichlorobenzene*
26. 1,3'-dichlorobenzene*
27 1,4-dichlorobenzene*
28. 3,3'-dichlorobenzidene*
29. 1,1-dichloroethylene*
30. 1,2-trans-dichloroethylene*
31. 2,4-dichlorophenol*
32. 1,2-dichloropropane*
33. 1,3-dichloropropylene (1,3-dichloropropene)*
34. 2,4-dimethylphenol*
35. 2,4-dinitrotoluene*
36. 2,6-dinitrotoluene*
37 1,2-diphenylhydrazine*
38. ethylbenzene*
39. fluoranthene*
40. 4-chlorophenyl phenyl ether*
41. 4-bromophenyl phenyl ether*
42. bis(2-chloroisopropyl)ether*
43. bis(2-chloroethoxy)methane*
44. methylene chloride (dichloromethane)*
45. methyl chloride (chloromethane)*
46. methyl bromide (bromomethane)*
47 bromoform (tribromomethane)*
48. dichlorobromomethane*
49. trichlorofluoromethane (Deleted)*
50. dichlorodifluoromethane (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-nitrosodimethylamine*
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*
79. benzo(ghi)perylene (1,12-benzoperylene)*
80. fluorene*
81. phenanthrene*
82. dibenzo (a,h)anthracene (1,2,5,6-dibenzanthracene)*
83. ideno (1,2,3-cd)pyrene (2,3,-o-phenylenepyrene)*
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)*
107 PCB-1254 (Arochlor 1254)*
108. PCB-1221 (Arochlor 1221)*
109. PCB-1232 (Arochlor 1232)*
110. PCB-1248 (Arochlor 1248)*
111. PCB-1260 (Arochlor 1260)*
112. PCB-1016 (Arochlor 1016)*
113. toxaphene*
116. asbestos (fibrous)
129. 2,3,7,8-tetra chlorodibenzo-p-dixoxin (TCDD)

*We did not analyze for these pollutants in samples of raw wastewater from this subcategory. These pollutants are not believed to be present based on the Agency's best engineering judgement which includes consideration of raw materials and process operations.

(t) Subpart AF—Secondary Uranium 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. hexachloroethane*
13. 1,1-dichloroethane*
14. 1,1,2-trichloroethane*
15. 1,1,2,2-tetrachloroethane*
16. chloroethane*
17 bis(2-chloromethyl)ether (Deleted)*
18. bis(2-chloroethyl)ether*
19. 2-chloroethyl vinyl ether (mixed)*
20. 2-chloronaphtalene*
21. 2,4,6-trichlorophenol*
22. para-chloro metha-cresol*
23. chloroform (trichloromethane)*
24. 2-chlorophenol*
25. 1,2-dichlorobenzene*
26. 1,3-dichlorobenzene*
27. 1,4-dichlorobenzene*
28. 3,3'-dichlorobenzidene*
29. 1,1-dichloroethylene*
30. 1,2-trans-dichloroethylene*
31. 2,4-dichlorophenol*
32. 1,2-dichloropropane*
33. 1,3-dichloropropylene (1,3-dichloropropene)*
34. 2,4-dimethylphenol*
35. 2,4-dinitrotoluene*
36. 2,6-dinitortoluene*
37. 1,2-diphenylhydrazine*
38. ethylebenzene*
39. fluoranthene*
40. 4-chlorophenyl phenyl ether*
41. 4-bromophenyl phenyl ether*
42. bis(2-chloroisopropyl)ether*
43. bis(2-chloroethoxy)methane*
44. methylene chloride (dichloromethane)*
45. methyl chloride (chloromethane)*
46. methyl bromide (bromomethane)*
47 bromoform (tribromomethane)*
48. dichlorobromomethane*
49. trichlorofluoromethane (Deleted)*
50. dichlorodifluoromethane (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. petachlorophenol*
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. dimethvl 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*
79. benzo(ghi)perylene (1,12-benzoperylene)*
80. fluorene*
81. phenanthrene*
82. dibenzo (a,h) anthracene (1,2,5,6-dibenzanthracene)*
83. ideno (1,2,3-cd)pyrene (2,3,-o-phenylenepyrene)*
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)*
107 PCB-1254 (Arochlor 1254)*
108. PCB-1221 (Arochlor 1221)*
109. PCB-1232 (Arochlor 1232)*
110. PCB-1248 (Arochlor 1248)*
111. PCB-1260 (Arochlor 1260)*
112. PCB-1016 (Arochlor 1016)*
113. toxaphene*
116. asbestos (fibrous)
121. cyanide (total)*
129. 2,3,7,8-tetra chlorodibenzo-p-dioxin (TCDD)

*We did not analyze for these pollutants in samples of raw wastewater from this subcategory. These pollutants are not believed to be present based on the Agency's best engineering judgement which includes consideration of raw materials and process operations.

(u) Subpart AG—Primary Zirconium and Hafnium 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. hexachloroethane
13. 1,1-dichloroethane
14. 1,1,2-trichloroethane
15. 1,1,2,2-tetrachloroethane
16. chloroethane
17 bis(2-chloromethyl)ether (Deleted)
18. bis(2-chloroethyl)ether
19. 2-chloroethyl vinyl ether (mixed)
20. 2-chloronaphthalene
21. 2,4,6-trichlorophenol
22. para-chloro meta-cresol
24. 2-chlorophenol
25. 1,2-dichlorobenzene
26. 1,3-dichlorobenzene
27 1,4-dichlorobenzene
28. 3,3'-dichlorobenzidene
29. 1,1-dichloroethylene
30. 1,2-trans-dichloroethylene
31. 2,4-dichlorophenol
32. 1,2-dichloropropane
33. 1,3-dichloropropylene (1,3-dichloropropene)
34. 2,4-dimethylphenol
35. 2,4-dinitrotoluene
36. 2,6-dinitrotoluene
37 1,2-diphenylhydrazine
38. ethylbenzene
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)
49. trichlorofluoromethane (Deleted)
50. dichlorodifluoromethane (Deleted)
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
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
79. benzo(ghi)perylene (1,12-benzoperylene)
80. fluorene
81. phenanthrene
82. dibenzo (a,h)anthracene (1,2,5,6-dibenzanthracene)
83. ideno (1,2,3-cd)pyrene (2,3,-o-phenylenepyrene)
84. pyrene
85. tetrachloroethylene.
86. toluene.
87 trichloroethylene
88. vinyl chloride (chloroethylene)
89. aldrin
90. diedrin
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)
107. PCB-1254 (Arochlor 1254)
108. PCB-1221 (Arochlor 1221)
109. PCB-1232 (Arochlor 1232)
110. PCB-1248 (Arochlor 1248)
111. PCB-1260 (Arochlor 1260)
112. PCB-1016 (Arochlor 1016)
113. toxaphene
116. asbestos (fibrous)
129. 2,3,7,8-tetra chlorodibenzo-p-dioxin (TCDD)

Appendix D—Toxic Pollutants Detected Below the Analytical Quantification Limit

(a) Subpart A—Bauxite Refining Subcategory
1. acenaphthene
6. carbon tetrachloride (tetrachloromethane)
34. 2,4-dimethylphenol
39. fluoranthene
48. dichlorobromomethane
64. pentachlorophenol
67 butly benzyl phthalate
80. fluorene
84. Pyrene
86. toluene
91. chlordane (technical mixture and metabolites)
92. 4,4'-DDT
93. 4,4'-DDE (p,p'DDX)
95. a-endosulfan-Alpha
96. b-endosulfan-Beta
97 endosulfan sulfate
98. endrin
99. endrin aldehyde
100. heptachlor
101. heptachlor epoxide
102. a-BHC-Alpha
103. b-BHC-Beta

104. r-BHC (lindane)-Gamma
106. PCB-1242 (Arochlor 1242)
107 PCB-1254 (Arochlor 1254)
108. PCB-1221 (Arochlor 1221)
109. PCB-1232 (Arochlor 1232)
110. PCB-1248 (Arochlor 1248)
111. PCB-1260 (Arochlor 1260)
112. PCB-1016 (Arochlor 1016)
114. antimony
121. cyanide (total)
125. selenium
126. silver

(b) Subpart O—Primary Beryllium Subcategory
114. antimony
121. cyanide
125. selenium
127 thallium

(c) Subpart P—Primary Boron Subcategory
51. dichlorodibromomethane
55. naphthalene
66. bis(2-ethylhexyl)phthalate
68. di-n-butyl phthalate
69. di-n-octyl phthalate
70. diethyl phthalate
114. antimony
117 beryllium
123. mercury
126. silver

(d) Subpart Q—Primary Cesium and Rubidium Subcategory
121. cyanide (total)

(e) Subpart R—Primary and Secondary Germanium and Gallium Subcategory
21. 2,4,6-trichlorophenol
23. chloroform
64. pentachlorophenol
66. bis(2-ethylhexyl)phthalate
68. di-n-butyl phthalate
87 trichloroethylene
123. mercury

(f) Subpart S—Secondary Indium Subcategory
68. di-n-butyl phthalate
70. diethyl phthalate
71. dimethyl phthalate
103. beta-BHC
114. antimony
115. arsenic
123. mercury

(g) Subpart T—Secondary Mercury Subcategory
114. antimony
117. beryllium
119. chromium (total)
120. copper
124. nickel
125. selenium
126. silver

(h) Subpart U—Primary Molybdenum and Rhenium Subcategory
44. methylene chloride
104. gamma-BHC
114. antimony
127 thallium

(i) Subpart V—Secondary Molybdenum and Vanadium Subcategory
123. mercury

(j) Subpart W—Primary Nickel and Cobalt Subcategory
4. benzene
86. toluene
114. antimony
115. arsenic
117 beryllium
119. chromium
122. lead
126. silver
127 thallium

(k) Subpart X—Secondary Nickel Subcategory
114. antimony
117 beryllium
118. cadmium
121. cyanide
122. lead
123. mercury
125. selenium
126. silver
127 thallium

(l) Subpart Y—Primary Precious Metals and Mercury Subcategory
65. phenol
66. bis(2-ethylhexyl)phthalate
68. di-n-butyl phthalate
78. anthracene
81. phenanthrene
114. antimony

(m) Subpart Z—Secondary Precious Metals Subcategory
4. benzene
7 chlorobenzene
10. 1,2-dichloroethane
21. 2,4,6-trichlorophenol
24. 2-chlorophenyl
34. 2,4-dimethylphenol
44. methylene chloride (dichloromethane)
47 bromoform (tribromomethane)
48. dichlorobromomethane
51. chlorodibromomethane
54. isophorone
62. N-nitrosodiphenylamine
68. di-n-butyl phthalate
69. di-n-octyl phthalate
70. diethyl phthalate
71. dimethyl phthalate
86. toluene

(n) Subpart AA—Primary Rare Earth Metals Subcategory
7 chlorobenzene
21. 2,4,6-trichlorophenol
47 bromoform (tribromomethane)
65. phenol
86. toluene
114. antimony
117 beryllium

(o) Subpart AB—Secondary Tantalum Subcategory
117 beryllium
118. cadmium
119. chromium
125. selenium
127 thallium

(p) Subpart AC—Primary and Secondary Tin Subcategory
9. hexachlorobenzene
11. 1,1,1-trichloroethane
23. chloroform
29. 1,1-dichloroethylene
34. 2,4-dimethylphenol
37 1,2-diphenylhydrazine
39. fluoranthene
55. naphthalene
62. n-nitrosodimethylamine
68. di-n-butyl phthalate
78. Anthracene
80. fluorene
81. phenanthrene
87. trichloroethylene

(q) Subpart AD—Primary and Secondary Titanium Subcategory
13. 1,1-dichloroethane
21. 2,4,6-trichlorophenol
23. chloroform (trichloromethane)
31. 2,4-dichlorophenol
36. 2,6-dinitrotoluene
48. dichlorobromomethane
51. chlorodibromomethane
57. 2-nitrophenol
70. diethyl phthalate
71. dimethyl phthalate
75. benzo(k)fluoranthene (11,12-benzofluoranthene)
88. vinyl chloride (chloroethylene)
107. PCB-1254 (Arochlor 1254)
117 beryllium

(r) Subpart AF—Secondary Uranium Subcategory
114. antimony
123. mercury
126. silver
127. thallium

(s) Subpart AG—Primary Zirconium and Hafnium Subcategory
55. naphthalene
66. bis)2-ethylhexyl)phthalate
68. di-n-butyl phthalate
69. di-n-octyl phthalate
70. diethyl phthalate
114. antimony
126. silver

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

(a) Subpart A—Bauxite Refining Subcategory
115. arsenic
127. thallium

(b) Subpart O—Primary Beryllium Subcategory
115. arsenic
123. mercury

(c) Subpart P—Primary Boron Subcategory
115. arsenic
120. copper
125. selenium

(d) Subpart Q—Primary Cesium and Rudibium Subcategory
123. mercury

125. selenium
(e) Subpart R—Primary and Secondary Germanium and Gallium Subcategory
117 beryllium
(f) Subpart S—Secondary Indium Subcategory
117 beryllium
120. copper
(g) Subpart T—Secondary Mercury Subcategory
115. arsenic
118. cadmium
(h) Subpart U—Primary Molybdenum and Rhenium Subcategory
117. beryllium
118. cadmium
121. cyanide
123. mercury
(i) Subpart V—Secondary Molybdenum and Vanadium Subcategory
120. copper
(j) Subpart W—Primary Nickel and Cobalt Subcategory
66. bis(2-ethylhexyl)phthalate
118. cadmium
123. mercury
125. selenium
(k) Subpart Y—Primary Precious Metals and Mercury Subcategory
117 beryllium
125. selenium
(l) Subpart Z—Secondary Precious Metals Subcategory
57 2-nitrophenol
123. mercury
(m) Subpart AA—Primary Rare Earth Metals Subcategory
121. cyanide (total)
123. mercury
(n) Subpart AB—Secondary Tantalum Subcategory
115. arsenic
123. mercury
(o) Subpart AC—Primary and Secondary Tin Subcategory
117 beryllium
123. mercury
(p) Subpart AD—Primary and Secondary Titanium Subcategory
123. mercury
(q) Subpart AE—Secondary Tungsten and Cobalt Subcategory
117 beryllium
125. selenium
(r) Subpart AF—Secondary Uranium Subcategory
117 beryllium
(s) Subpart AG—Primary Zirconium and Hafnium Subcategory
115. arsenic
117 beryllium
120. copper
123. mercury
125. selenium

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

(a) Subpart A—Bauxite Refining Subcategory
23. chloroform (trichloromethane)
44. methylene chloride
55. naphthalene
60. 2,4-dinitro-o-cresol
66. bis(2-ethylhexyl) phthalate
68. di-n-butyl phthalate
70. diethyl phthatate
71. dimethyl phthalate
77 acenaphthylene
85. tetrachloroethylene
(b) Subpart O—Primary Beryllium Subcategory
118. cadmium
122. lead
124. nickel
126. silver
128. zinc
(c) Subpart P—Primary Boron Subcategory
23. chloroform
44. methylene chloride
48. dichlorobromomethane
67 butyl benzyl phthalate
121. cyanide
(d) Subpart R—Primary and Secondary Germanium and Gallium Subcategory
4. benzene
9. hexachlorobenzene
44. methylene chloride
121. cyanide
(e) Subpart S—Secondary Indium Subcategory
44. methylene chloride
64. pentachlorophenol
65. phenol
121. cyanide
(f) Subpart U—Primary Molybdenum and Rhenium Subcategory
126. silver
(g) Subpart Y—Primary Precious Metals and Mercury Subcategory
4. benzene
44. methylene chloride
70. diethyl phthalate
86. toluene
121. cyanide
(h) Subpart Z—Secondary Precious Metals Subcategory
6. carbon tetrachloride
11. 1,1,1-trichloroethane
23. chloroform
65. phenol
66. bis (2-ethylhexyl) phthalate
117 beryllium
(i) Subpart AA—Primary Rare Earth Metals Subcategory
6. carbon tetrachloride (tetrachloromethane)
23. chloroform (trichloromethane)
44. methylene chloride (dichloromethane)
48. dichlorobromomethane
49. trichlorofluoromethane (Deleted)
51. chlorodibromomethane
66. bis (2-ethylhexyl) phthalate
(j) Subpart AC—Primary and Secondary Tin Subcategory
4. benzene
38. ethylbenzene
44. methylene chloride
57 2-nitorophenol
58. 4-nitrophenol
59. 2,4-dinitrophenol
65. phenol
66. bis (2-ethylhexyl) phthalate
67 butyl benzyl phthalate
84. pyrene
86. toluene
88. vinyl chloride
(k) Subpart AD—Primary and Secondary Titanium Subcategory
4. benzene
11. 1,1,1-trichloroethane
44. methylene chloride
64. pentachlorophenol
65. phenol
66. bis (2-ethylhexyl) phthalate
67 butyl benzyl phthalate
68. di-n-butyl phthalate
69. di-n-octyl phthalate
86. totuene
87 trichoroethylene
94. 4,4'-DDD(p,p' TDE)
95. a-endosulfan-alpha
102. a-BHC-alpha
103. b-BHC-beta
115. arsenic
121. cyanide
125. selenium
126. silver
(l) Subpart AE—Secondary Tungsten and Cobalt Subcategory
114. antimony
121. cyanide
123. mercury
127 thallium
(m) Subpart AG—Primary Zirconium and Hafnium Subcategory
23. chloroform (trichloroethane)
44. methylene choloride (dichloromethane)
48. dichlorobromomethane
51. chlorodibromomethane
67. butyl benzyl phthalate

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

(a) Subpart N—Primary Antimony Subcategory
118. cadmium
120. copper
128. zinc
(b) Subpart P—Primary Boron Subcategory
118. cadmium
119. chromium (total)
127 thallium
128. zinc

(c) Subpart Q—Primary Cesium and Rubidium Subcategory
114. antimony
115. arsenic
117 beryllium
118. cadmium
119. chromium (total)
120. copper
124. nickel
126. silver
(d) Subpart R—Primary and Secondary Germanium and Gallium
114. antimony
118. cadmium
119. chromium
120. copper
124. nickel
125. selenium
126. silver
127 thallium
(e) Subpart S—Secondary Indium Subcategory
119. chromium
124. nickel
125. selenium
126. silver
127 thallium
(f) Subpart T—Secondary Mercury Subcategory
127 thallium
128. zinc
(g) Subpart U—Primary Molybdenum and Rhenium Subcategory
119. chromium (total)
120. copper
128. zinc
(h) Subpart V—Secondary Molybdenum and Vanadium Subcategory
115. arsenic
117 beryllium
118. cadmium
119. chromium
128. zinc
(i) Subpart W—Primary Nickel and Cobalt Subcategory
128. zinc
(j) Subpart X—Secondary Nickel Subcategory
115. arsenic
128. zinc
(k) Subpart Y—Primary Precious Metals and Mercury Subcategory
118. cadmium
119. chromium
120. copper
124. nickel
125. selenium
127 thallium
(l) Subpart Z—Secondary Precious Metals Subcategory
114. antimony
115. arsenic
118. cadmium
119. chromium
122. lead
124. nickel
125. selenium
126. silver
127 thallium
(m) Subpart AA—Primary Rare Earth Metals Subcategory
4. benzene
115. arsenic
118. cadmium
120. copper
125. selenium
126. silver
127 thallium
128. zinc
(n) Subpart AB—Secondary Tantalum Subcategory
114. antimony
126. silver
(o) Subpart AC—Primary and Secondary Tin Subcategory
115. arsenic
118. cadmium
119. chromium
120. copper
125. selenium
126. silver
127 thallium
128. zinc
(p) Subpart AD—Primary and Secondary Titanium Subcategory
114. antimony
118. cadmium
120. copper
128. zinc
(q) Subpart AG—Secondary Tungsten and Cobalt Subcategory
115. arsenic
118. cadmium
119. chromium
122. lead
126. silver
128. zinc
(r) Subpart AF—Secondary Uranium Subcategory
115. arsenic
118. cadmium
122. lead
125. selenium
128. zinc
(s) Subpart AG—Primary Zirconium and Hafnium Subcategory
118. cadmium
127 thallium
128. zinc.

For the reasons discussed above, EPA proposes to amend 40 CFR Part 421 as follows:

PART 421—NONFERROUS METALS MANUFACTURING POINT SOURCE CATEGORY

1. The authority citation for Part 421 is revised to read as follows:

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

§ 421.1-421.5 [Redesignated]

2. Sections 421.1 through 421.5 are redesignated as §§ 421.01 through 421.05 respectively.

3. Newly redesignated § 421.04 is revised to read as follows:

§ 421.04 Compliance date for PSES.

The PSES compliance date in subparts A through H is March 8, 1987. The PSES compliance date for plants regulated under subpart I promulgated March 8, 1984 is also March 8, 1987 The PSES compliance date for plants proposed for inclusion under subpart I by this rulemaking is posed to be three years after the date of promulgation. The PSES compliance date for plants in subpart J through subpart AG is proposed to be three years after the date of promulgation.

4. The undesignated paragraph of § 421.12 is revised to read as follows:

§ 421.12 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:

5. Section 421.13 is amended by adding an undesignated paragraph preceding paragraph (a) to read as follows:

§ 421.13 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:

Note.—The Agency is considering establishing a concentration limitation for 2-chlorophenol, phenol, and phenols (4-AAP) at a level of 0.010 mg/1. See full discussion in section XI of the preamble to this regulation.

6. Section 421.16 is revised to read as follows:

§ 421.16 Pretreatment standards for new sources.

Any new sources subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403.

Subpart I—Metallurgical Acid Plants Subcategory

§ 421.90 [Amended]

7 Section 421.90 is amended by removing the word "and" following "primary zinc facilities" and by inserting the phrase ", and primary molybdenum facilities," before the word "including."

8. Section 421.92 is revised to make technical changes required in converting kg/kkg units to mg/kg units. Also, the text of § 421.91 and §§ 421.93–421.96, which are not proposed to be amended, is set out for the convenience of the commentor. Comments are requested on how these sections apply to primary molybdenum and rhenium facilities.

§ 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 125.30–125.32, 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):

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of 100 percent sulfuric acid capacity	
Cadmium	0.180	0.030
Copper	5.000	2.000
Lead	1.800	0.790
Zinc	3.600	0.S00
Total suspended solids	305.000	152.000
pH	(¹)	(¹)

¹ Within the range of 6.0 to 9.0 at all times.

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

Except as provided in 40 CFR 125.30–125.32, any existing point source subject to this subpart shall achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable:

Subpart I—Metallurgical Acid Plant

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of 100 percent sulfuric acid capacity	
Arsenic	3.550	1.456
Cadmium	.511	.204
Copper	3.269	1.558
Lead	.715	.332
Zinc	2.605	1.073

§ 421.94 Standards of performance for new sources.

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

Subpart I—Metallurgical Acid Plant

NSPS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of 100 percent sulfuric acid capacity	
Arsenic	3.550	1.456
Cadmium	.511	.204
Copper	3.269	1.558
Lead	.715	.332
Zinc	2.605	1.073
Total suspended solids	38.310	30.650
pH	(¹)	(¹)

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

§ 421.95 Pretreatment standards for existing sources.

Except as provided in 40 CFR 403.7 and 403.13, any existing source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for existing sources. The mass of wastewater pollutants in metallurgical acid plant blowdown introduced into a POTW shall not exceed the following values:

Subpart I—Metallurgical Acid Plant

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of 100 percent sulfuric acid capacity	
Cadmium	.511	.204
Zinc	2.605	1.073

§ 421.96 Pretreatment standards for new sources.

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

Subpart I—Metallurgical Acid Plant

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of 100 percent sulfuric acid capacity	
Arsenic	3.550	1.456
Cadmium	.511	.204
Copper	3.269	1.550
Lead	.715	.332
Zinc	2.605	1.073

9. Subparts N through AG are added to read as follows:

Subpart N—Primary Antimony Subcategory

Subpart O—Primary Beryllium Subcategory

Subpart P—Primary Boron Subcategory

Sec.
421.162–421.163 [Reserved]
421.164 Standards of performance for new sources.
421.165 [Reserved]
421.166 Pretreatment standards for new sources.
421.167 [Reserved]

Subpart Q—Primary Cesium and Rubidium Subcategory

421.170 Applicability: Description of the primary cesium and rubidium subcategory.
421.171 Specialized definitions.
421.172–421.173 [Reserved]
421.174 Standards of performance for new sources.
421.175 [Reserved]
421.176 Pretreatment standards for new sources.
421.177 [Reserved]

Subpart R—Primary and Secondary Germanium and Gallium Subcategory

421.180 Applicability: Description of the primary and secondary germanium and gallium subcategory.
421.181 Specialized definitions.
421.182 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.
421.183 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.
421.184 Standards of performance for new sources.
421.185 Pretreatment standards for existing sources.
421.186 Pretreatment standards for new sources.
421.187 [Reserved]

Subpart S—Secondary Indium Subcategory

421.190 Applicability: Description of the secondary indium subcategory.
421.191 Specialized definitions.
421.192–421.193 [Reserved]
421.194 Standards of performance for new sources.
421.195 Pretreatment standards for existing sources.
421.196 Pretreatment standards for new sources.
421.197 [Reserved]

Subpart T—Secondary Mercury Subcategory

421.200 Applicability: Description of the secondary mercury subcategory.
421.201 Specialized definitions.
421.202–421.203 [Reserved]
421.204 Standards of performance for new sources.
421.205 [Reserved]
421.206 Pretreatment standards for new sources.
421.207 [Reserved]

Subpart U—Primary Molybdenum and Rhenium Subcategory

421.210 Applicability: Description of the primary molybdenum and rhenium subcategory.

Sec.
421.211 Specialized definitions.
421.212 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.
421.213 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.
421.214 Standards of performance for new sources.
421.215 [Reserved]
421.216 Pretreatment standards for new sources.
421.217 [Reserved]

Subpart V—Secondary Molybdenum and Vanadium Subcategory

421.220 Applicability: Description of the secondary molybdenum and vanadium subcategory.
421.221 Specialized definitions.
421.222 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.
421.223 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.
421.224 Standard of performance for new sources.
421.225 [Reserved]
421.226 Pretreatment standards for new sources.
421.227 [Reserved]

Subpart W—Primary Nickel and Cobalt Subcategory

421.230 Applicability: Description of the primary nickel and cobalt subcategory.
421.231 Specialized definitions.
421.232 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.
421.233 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.
421.234 Standards of performance for new sources.
421.235 [Reserved]
421.236 Pretreatment standards for new sources.
421.237 [Reserved]

Subpart X—Secondary Nickel Subcategory

421.240 Applicability: Description of the secondary nickel subcategory.
421.241 Specilized definitions.
421.242–421.243 [Reserved]
421.244 Standards of performance for new sources.
421.245 Pretreatment standards for existing sources.
421.246 Pretreatment standards for new sources.
421.247 [Reserved]

Subpart Y—Primary Precious Metals and Mercury Subcategory

Sec.
421.250 Applicability: Description of the primary precious metals and mercury subcategory.
421.251 Specialized definitions.
421.252 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.
421.253 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.
421.254 Standards of performance for new sources.
421.255 [Reserved]
421.256 Pretreatment standards for new sources.
421.257 [Reserved]

Subpart Z—Secondary Precious Metals Subcategory

421.260 Applicability: Description of the secondary precious metals subcategory.
421.261 Specialized definitions.
421.262 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.
421.263 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.
421.264 Standards of performance for new sources.
421.265 Pretreatment standards for existing sources.
421.266 Pretreatment standards for new sources.
421.267 [Reserved]

Subpart AA—Primary Rare Earth Metals Subcategory

421.270 Applicability: Description of the primary rare earth metals subcategory.
421.271 Specialized definitions.
421.272 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.
421.273 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.
421.274 Standards of performance for new sources.
421.275 Pretreatment standards for existing sources
421.276 Pretreatment standards for new sources
421.277 [Reserved]

Subpart AB—Secondary Tantalum Subcategory

421.280 Applicability: Description of the secondary tantalum subcategory.
421.281 Specialized definitions.

Subpart N—Primary Antimony Subcategory

§ 421.140 Applicability: Description of the primary antimony subcategory.

The provisions of this subpart are applicable to discharges resulting from the production of antimony at primary antimony facilities.

§ 421.141 Specialized definitions.

For the purposes of this subpart the general definitions, abbreviations, and methods of analysis set forth in 40 CFR Part 401 shall apply to this subpart.

§ 421.142 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) *Sodium Antimonate Autoclave Wastewater.*

BPT LIMITATIONS FOR THE PRIMARY ANTIMONY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of antimony contained in sodium antimonate product	
Antimony	20.360	9.079
Arsenic	14.830	6.100
Lead	2.979	1.419
Mercury	1.773	0.709
Total suspended solids	290.600	138.300
pH	(¹)	(¹)

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

(b) *Fouled Anolyte.*

BPT LIMITATIONS FOR THE PRIMARY ANTIMONY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of antimony metal produced by electrowinning	
Antimony	20.360	9.079
Arsenic	14.830	6.100
Lead	2.979	1.419
Mercury	1.773	0.709
Total suspended solids	290.600	138.300
pH	(¹)	(¹)

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

§ 421.143 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) *Sodium Antimonate Autoclave Wastewater.*

BAT LIMITATIONS FOR THE PRIMARY ANTIMONY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of antimony contained in sodium antimonate product	
Antimony	13.690	6.100
Arsenic	9.859	4.043
Lead	1.986	0.922
Mercury	1.064	0.426

(b) *Fouled Anolyte.*

BAT LIMITATIONS FOR THE PRIMARY ANTIMONY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of antimony produced by electrowinning	
Antimony	13.690	6.100
Arsenic	9.859	4.043
Lead	1.986	0.922
Mercury	1.064	0.426

§ 421.144 Standards of performance for new sources.

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

(a) *Sodium Antimonate Autoclave Wastewater.*

NSPS FOR THE PRIMARY ANTIMONY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of antimony contained in sodium antimonate product	
Antimony	13.690	6.100
Arsenic	9.859	4.043
Lead	1.986	0.922
Mercury	1.064	0.426
Total suspended solids	106.400	85.120
pH	(¹)	(¹)

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

(b) *Fouled Anolyte.*

NSPS FOR THE PRIMARY ANTIMONY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of antimony metal produced by electrowinning	
Antimony	13.690	6.100
Arsenic	9.859	4.043
Lead	1.986	0.922
Mercury	1.064	0.426
Total suspended solids	106.400	85.120

NSPS FOR THE PRIMARY ANTIMONY SUBCATEGORY—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.

§ 421.145 [Reserved]

§ 421.146 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 antimony process wastewater introduced into a POTW shall not exceed the following values:

(a) *Sodium Antimonate Autoclave Wastewater.*

PSNS FOR THE PRIMARY ANTIMONY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of antimony contained in sodium antimonate product	
Antimony	13.690	6.100
Arsenic	9.859	4.043
Lead	1.986	0.922
Mercury	1.064	0.426

(b) *Fouled Anolyte.*

PSNS FOR THE PRIMARY ANTIMONY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of antimony metal produced by electrowinning	
Antimony	13.690	6.100
Arsenic	9.859	4.043
Lead	1.986	0.922
Mercury	1.064	0.426

§ 421.147 [Reserved]

Subpart O—Primary Beryllium Subcategory

§ 421.150 Applicability: Description of the primary beryllium subcategory.

The provisions of this subpart are applicable to discharges resulting from the production of beryllium by primary beryllium facilities processing beryllium ore concentrates or beryllium hydroxide raw materials.

§ 421.151 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.

§ 421.152 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) *Solvent Extration Raffinate-Bertrandite Ore.*

BPT LIMITATIONS FOR THE PRIMARY BERYLLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of beryllium carbonate precipitated (as beryllium)	
Beryllium	2,762.000	1,146.000
Chromium (total)	963.200	404.300
Copper	4,267.000	2,245.000
Fluoride	78,600.000	44,920.000
Total suspended solids	92,080.000	43,790.000
pH	(¹)	(¹)

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

(b) *Solvent Extraction Raffinate-Beryl Ore.*

BPT LIMITATIONS FOR THE PRIMARY BERYLLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of beryllium carbonate precipitated (as beryllium)	
Beryllium	245.000	102.000
Chromium (total)	83.000	33.000
Copper	380.000	200.000
Fluoride	7,000.000	4,000.000
Total suspended solids	8,200.000	3,900.000
pH	(¹)	(¹)

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

(c) *Beryllium Carbonate Filtrate.*

BPT LIMITATIONS FOR THE PRIMARY BERYLLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of beryllium carbonate precipitated (as beryllium)	
Beryllium	263.800	103.400
Chromium (total)	94.370	33.610

BPT LIMITATIONS FOR THE PRIMARY BERYLLIUM SUBCATEGORY—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Copper	407.500	214.500
Fluoride	7,507.000	4,290.000
Total suspended solids	8,794.000	4,183.000
pH	(1)	(1)

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

(d) *Beryllium Hydroxide Filtrate.*

BPT LIMITATIONS FOR THE PRIMARY BERYLLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum monthly average
	mg/kg (pounds per million pounds) of beryllium hydroxide precipitated (as beryllium)	
Beryllium	64.780	26.860
Chromium (total)	23.170	9.479
Copper	100.100	52.660
Fluoride	1,843.000	1,053.000
Total suspended solids	2,159.000	1,027.000
pH	(1)	(1)

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

(e) *Beryllium Oxide Calcining Furnace Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE PRIMARY BERYLLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum monthly average
	mg/kg (pounds per million pounds) of beryllium oxide produced	
Beryllium	324.400	134.500
Chromium (total)	116.100	47.470
Copper	501.100	263.700
Fluoride	9,231.000	5,275.000
Total suspended solids	10,810.000	5,143.000
pH	(1)	(1)

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

(f) *Beryllium Hydroxide Supernatant.*

BPT LIMITATIONS FOR THE PRIMARY BERYLLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum monthly average
	mg/kg (pounds per million pounds) of beryllium hydroxide produced (as beryllium)	
Beryllium	128.300	53.210
Chromium (total)	45.900	18.780
Copper	198.200	104.300
Fluoride	3,652.000	2,087.000
Total suspended solids	4,277.000	2,035.000
pH	(1)	(1)

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

(g) *Process Condensates.*

BPT LIMITATIONS FOR THE PRIMARY BERYLLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum monthly average
	mg/kg (pounds per million pounds) of beryllium pebbles produced	
Beryllium	0.000	0.000
Chromium (total)	0.000	0.000
Copper	0.000	0.000
Fluoride	0.000	0.000
Total suspended solids	0.000	0.000
pH	(1)	(1)

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

(h) *Fluoride Furnace Scrubber.*

BPT LIMITATIONS FOR THE PRIMARY BERYLLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of beryllium pebbles produced	
Beryllium	2.712	1.125
Chromium (total)	0.970	0.397
Copper	4.190	2.205
Fluoride	77.180	44.100
Total suspended solids	90.410	43.000
pH	(1)	(1)

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

(i) *Chip Leaching.*

BPT LIMITATIONS FOR THE PRIMARY BERYLLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum monthly average
	mg/kg (pounds per million pounds) of beryllium metal leached	
Beryllium	5.833	2.419
Chromium (total)	2.087	0.854
Copper	9.010	4.742
Fluoride	166.000	94.840
Total suspended solids	194.400	92.470
pH	(1)	(1)

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

§ 421.153 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) *Solvent Extraction Raffinate-Bertrandite Ore.*

BAT LIMITATIONS FOR THE PRIMARY BERYLLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum monthly average
	mg/kg (pounds per million pounds) of beryllium carbonate precipitated (as beryllium)	
Beryllium	1,842.000	763.600
Chromium (total)	831.000	336.900
Copper	2,875.000	1,370.000
Fluoride	78,600.000	44,920.000

(b) *Solvent Extraction Raffinate-Beryl Ore.*

BAT LIMITATIONS FOR THE PRIMARY BERYLLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum monthly average
	mg/kg (pounds per million pounds) of beryllium carbonate precipitated (as beryllium)	
Beryllium	164.000	68.000
Chromium (total)	74.000	30.000
Copper	256.000	122.000
Fluoride	7,000.000	4,000.000

(c) *Beryllium Carbonate Filtrate.*

BAT LIMITATIONS FOR THE PRIMARY BERYLLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of beryllium carbonate precipitated (as beryllium)	
Beryllium	175.900	72.930
Chromium (total)	79.360	32.170
Copper	274.600	130.900
Fluoride	7,507.000	4,290.000

(d) *Beryllium Hydroxide Filtrate.*

BAT LIMITATIONS FOR THE PRIMARY BERYLLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of beryllium hydroxide precipitated (as beryllium)	
Beryllium	43.180	17.910
Chromium (total)	19.490	7.899
Copper	67.410	32.130
Fluoride	1,843.000	1,053.000

(e) *Beryllium Oxide Calcining Furnace Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE PRIMARY BERYLLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of beryllium oxide produced	
Beryllium	21.630	8.967
Chromium (total)	9.758	3.956
Copper	33.760	16.030
Fluoride	923.100	527.500

(f) *Beryllium Hydroxide Supernatant.*

BAT LIMITATIONS FOR THE PRIMARY BERYLLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of beryllium hydroxide produced (as beryllium)	
Beryllium	85.550	35.470
Chromium (total)	38.600	15.650
Copper	133.600	63.640
Fluoride	3,652.000	2,037.000

(g) *Process Condensates.*

BAT LIMITATIONS FOR THE PRIMARY BERYLLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of beryllium pebbles produced	
Beryllium	0.000	0.000
Chromium (total)	0.000	0.000
Copper	0.000	0.000
Fluoride	0.000	0.000

(h) *Fluoride Furnace Scrubber.*

BAT LIMITATIONS FOR THE PRIMARY BERYLLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of beryllium pebbles produced	
Beryllium	1.808	0.750
Chromium (total)	0.816	0.331
Copper	2.823	1.345
Fluoride	77.180	44.100

(i) *Chip Leaching.*

BAT LIMITATIONS FOR THE PRIMARY BERYLLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of beryllium metal leached	
Beryllium	3.003	1.612
Chromium (total)	1.755	0.711
Copper	6.070	2.833
Fluoride	100.000	54.840

§ 421.154 Standards of performance for new sources.

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

(a) *Solvent Extraction Raffinate-Bertrandite Ore.*

NSPS FOR THE PRIMARY BERYLLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of beryllium carbonate precipitated (as beryllium)	
Beryllium	1,842.000	763.600
Chromium (total)	831.000	333.800
Copper	2,875.000	1,370.000
Fluoride	78,000.000	44,900.000
Total suspended solids	33,000.000	26,850.000
pH	(¹)	(¹)

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

(b) *Solvent Extraction Raffinate-Beryl Ore.*

NSPS FOR THE PRIMARY BERYLLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of beryllium carbonate precipitated (as beryllium)	
Beryllium	104.000	63.000
Chromium (total)	74.000	30.000
Copper	250.000	122.000
Fluoride	7,000.000	4,000.000
Total suspended solids	3,000.000	2,400.000
pH	(¹)	(¹)

[1] Within range of 7.5 to 10.0 at all times.

(c) *Beryllium Carbonate Filtrate.*

NSPS FOR THE PRIMARY BERYLLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of beryllium carbonate precipitated (as beryllium)	
Beryllium	175.900	72.900
Chromium (total)	79.380	32.170
Copper	274.600	130.900
Fluoride	7,507.000	4,290.000
Total suspended solids	3,217.000	2,574.000
pH	(¹)	(¹)

[1] Within range of 7.5 to 10.0 at all times.

(d) *Beryllium Hydroxide Filtrate.*

NSPS FOR THE PRIMARY BERYLLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of beryllium hydroxide precipitated (as beryllium)	
Beryllium	43.180	17.910
Chromium (total)	19.430	7.839
Copper	67.410	32.130
Fluoride	1,843.000	1,053.000
Total suspended solids	783.900	632.000
pH	(¹)	(¹)

[1] Within range of 7.5 to 10.0 at all times.

(e) *Beryllium Oxide Calcining Furnace Wet Air Pollution Control.*

NSPS FOR THE PRIMARY BERYLLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of beryllium oxide produced	
Beryllium	21.630	8.967
Chromium (total)	9.758	3.956
Copper	33.760	16.090
Fluoride	923.100	527.500
Total suspended solids	335.600	316.500
pH	(¹)	(¹)

[1] Within range of 7.5 to 10.0 at all times.

(f) *Beryllium Hydroxide Supernatant.*

NSPS FOR THE PRIMARY BERYLLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of beryllium hydroxide produced (as beryllium)	
Beryllium	85.550	35.470
Chromium (total)	38.600	15.650
Copper	133.600	63.640
Fluoride	3,652.000	2,037.000
Total suspended solids	1,565.000	1,252.000
pH	(¹)	(¹)

[1] Within range of 7.5 to 10.0 at all times.

(g) *Process Condensates.*

NSPS FOR THE PRIMARY BERYLLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of beryllium pebbles produced	
Beryllium	0.000	0.000
Chromium (total)	0.000	0.000
Copper	0.000	0.000
Fluoride	0.000	0.000
Total suspended solids	0.000	0.000
pH	(1)	(1)

[1] Within range of 7.5 to 10.0 at all times.

(h) *Fluoride Furnace Scrubber.*

NSPS FOR THE PRIMARY BERYLLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of beryllium pebbles produced	
Beryllium	1.808	0.750
Chromium (total)	0.816	0.331
Copper	2.823	1.345
Fluoride	77.180	44.100
Total suspended solids	33.080	26.460
pH	(1)	(1)

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

(i) *Chip Leaching.*

NSPS FOR THE PRIMARY BERYLLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of beryllium metal leached	
Beryllium	3.889	1.612
Chromium (total)	1.755	0.711
Copper	6.070	2.893
Fluoride	166.000	94.840
Total suspended solids	71.130	58.910
ph	(1)	(1)

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

§ 421.155 [Reserved]

§ 421.156 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 beryllium process wastewater introduced into a POTW shall not exceed the following values:

(a) *Solvent Extraction Raffinate-Bertrandite Ore.*

PSNS FOR THE PRIMARY BERYLLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of beryllium carbonate precipitated (as beryllium)	
Beryllium	1,842.000	763.600
Chromium (total)	831.000	336.900
Copper	2,875.000	1,370.000
Fluoride	78,600.000	44,920.000

(b) *Solvent Extraction Raffinate-Beryl Ore.*

PSNS FOR THE PRIMARY BERYLLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of beryllium carbonate precipitated (as beryllium)	
Beryllium	164.000	68.000
Chromium (total)	74.000	30.000
Copper	256.000	122.000
Fluoride	7,000.000	4,000.000

(c) *Beryllium Carbonate Filtrate.*

PSNS FOR THE PRIMARY BERYLLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of beryllium arbonate precipitated (as beryllium)	
Beryllium	175.900	72.930
Chromium (total)	79.360	32.170
Copper	274.600	130.900
Fluoride	7,507.000	4,290.000

(d) *Beryllium Hydroxide Filtrate.*

PSNS FOR THE PRIMARY BERYLLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of beryllium hydroxide precipitated (as beryllium)	
Beryllium	43.180	17.910
Chromium (total)	19.490	7.899
Copper	67.410	32.130
Fluoride	1,843.000	1,053.000

(e) *Beryllium Oxide Calcining Furnace Wet Air Pollution Control.*

PSNS FOR THE PRIMARY BERYLLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of beryllium oxide produced	
Beryllium	21.630	8.987
Chromium (total)	9.758	3.956
Copper	33.760	16.090
Fluoride	923.100	527.500

(f) *Beryllium Hydroxide Supernatant.*

PSNS FOR THE PRIMARY BERYLLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of beryllium hydroxide produced (as beryllium)	
Beryllium	85.550	35.470
Chromium (total)	38.600	15.650
Copper	133.600	63.640
Fluoride	3,652.000	2,087.000

(g) *Process Condensates.*

PSNS FOR THE PRIMARY BERYLLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of beryllium pebbles produced	
Beryllium	0.000	0.000
Chromium (total)	0.000	0.000
Copper	0.000	0.000
Fluoride	0.000	0.000

(h) *Fluoride Furnace Scrubber.*

PSNS FOR THE PRIMARY BERYLLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of beryllium pebbles produced	
Beryllium	1.808	0.750
Chromium (total)	0.816	0.331
Copper	2.823	1.345
Fluoride	77.180	44.100

(i) *Chip Leaching.*

PSNS FOR THE PRIMARY BERYLLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of beryllium metal leached	
Beryllium	3.889	1.612
Chromium (total)	1.755	0.711
Copper	6.070	2.893
Fluoride	166.000	94.840

§ 421.157 [Reserved]

Subpart P—Primary Boron Subcategory

§ 421.160 Applicability: Description of the primary boron subcategory.

The provisions of this subpart are applicable to discharges resulting from the production of boron by primary boron facilities processing boric oxide or diborane raw materials.

§ 421.161 Specialized definitions.

For the purposes of this subpart the general definitions, abbreviations, and methods of analysis set forth in 40 CFR Part 401 shall apply to this subpart.

§ § 421.162–421.163 [Reserved]

§ 421.164 Standards of performance for new sources.

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

(a) *Reduction Product Acid Leachate.*

NSPS FOR THE PRIMARY BORON SUBCATEGORY

Pollutant or Pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of boron powder produced	
Lead	61.490	29.280
Nickel	281.100	185.900
Boron	162.08	66.60
Total suspended solids	6,003.000	2,855.000
pH	(¹)	(¹)

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

(b) *Boron Wash Water.*

NSPS FOR THE PRIMARY BORON SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of boron powder produced	
Lead	13.990	6.660
Nickel	63.940	42.290
Boron	36.880	15.200
Total suspended solids	1,366.000	649.400

NSPS FOR THE PRIMARY BORON SUBCATEGORY—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.

§ 421.165 [Reserved]

§ 421.166 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 boron process wastewater introduced into a POTW shall not exceed the following values:

(a) *Reduction Product Acid Leachate.*

PSNS FOR THE PRIMARY BORON SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of boron powder produced	
Lead	61.490	29.280
Nickel	281.100	185.900
Boron	162.08	66.60

(b) *Boron Wash Water.*

PSNS FOR THE PRIMARY BORON SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of boron powder produced	
Lead	13.990	6.660
Nickel	63.940	42.290
Boron	36.880	15.200

§ 421.167 [Reserved]

Subpart Q—Primary Cesium and Rubidium Subcategory

§ 421.170 Applicability: Description of the primary cesium and rubidium subcategory.

The provisions of this subpart are applicable to discharges resulting from the production of cesium or rubidium by primary cesium and rubidium facilities.

§ 421.171 Specialized definitions.

For the purposes of this subpart the general definitions, abbreviations and methods of analysis set forth in 40 CFR Part 401 shall apply to this subpart.

§§ 421.172–421.173 [Reserved]

§ 421.174 Standards of performance for new sources.

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

(a) *Spent Acid and Crystallizer Rinse Water from Cesium Production.*

NSPS FOR THE PRIMARY CESIUM AND RUBIDIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of pollucite (Cs) ore digested	
Lead	3.705	1.720
Thallium	18.530	7.543
Zinc	13.500	5.558
Total suspended solids	193.500	159.800
pH	(¹)	(¹)

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

(b) *Spent Acid and Crystallizer Rinse Water from Rubidium Production.*

NSPS FOR THE PRIMARY CESIUM AND RUBIDIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of lepidolite (Rb) ore digested	
Lead	2.224	1.037
Thallium	11.170	4.543
Zinc	8.133	3.351
Total suspended solids	119.700	95.750
pH	(¹)	(¹)

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

§ 421.175 [Reserved]

§ 421.176 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 cesium and rubidium process wastewater introduced into a POTW shall not exceed the following values:

(a) *Spent Acid and Crystallizer Rinse Water from Cesium Production.*

PSNS FOR THE PRIMARY CESIUM AND RUBIDIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of pollucite (Cs) ore digested	
Lead	3.705	1.720

PSNS FOR THE PRIMARY CESIUM AND RUBIDIUM SUBCATEGORY—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Thallium	18.530	7.543
Zinc	13.500	5.558

(b) *Spent Acid and Crystallizer Rinse Water from Rubidium Production.*

PSNS FOR THE PRIMARY CESIUM AND RUBIDIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Lb/kg (pound per million pounds) of lepidolite (Rb) ore digested	
Lead	2.234	1.037
Thallium	11.170	4.548
Zinc	8.139	3.351

§ 421.177 [Reserved]

Subpart R—Primary and Secondary Germanium and Gallium Subcategory

§ 421.180 Applicability: Description of the primary and secondary germanium and gallium subcategory.

(a) The provisions of this subpart are applicable to discharges resulting from the production of germanium or gallium from primary and secondary germanium and gallium facilities.

(b) There are two levels of BPT, BAT, NSPS, PSES and PSNS provisions for this subpart. Level A provisions are applicable to facilities which only reduce germanium dioxide in a hydrogen furnace and then wash and rinse the germanium product in conjunction with zone refining. The level B provisions are applicable to all other facilities in the subcategory.

§ 421.181 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.

§ 421.182 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) Level A.

(1) *Acid Wash and Rinse Water.*

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY GERMANIUM AND GALLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of germanium washed	
Arsenic	325.500	133.900
Lead	65.400	31.150
Zinc	227.400	94.990
Germanium	68.520	28.030
Fluoride	5,450.000	3,115.000
Total suspended solids	6,385.000	3,037.000
pH	(1)	(1)

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

(b) Level B.

(1) *Still Liquor.*

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY GERMANIUM AND GALLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of germanium chlorinated	
Arsenic	131.7000	54.180
Lead	26.460	12.600
Zinc	91.980	38.430
Germanium	27.720	11.340
Fluoride	2,205.000	1,260.000
Total suspended solids	2,583.000	1,229.000
pH	(1)	(1)

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

(2) *Chlorinator Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY GERMANIUM AND GALLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of germanium chlorinated	
Arsenic	27.530	11.330
Lead	5.532	2.634
Zinc	19.230	8.034
Germanium	5.795	2.371
Fluoride	461.000	263.400
Total suspended solids	540.000	256.800
pH	(1)	(1)

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

(3) *Germanium Hydrolysis Filtrate.*

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY GERMANIUM AND GALLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of germanium hydrolyzed	
Arsenic	39.440	16.230
Lead	7.926	3.774
Zinc	27.550	11.510
Germanium	8.303	3.397
Fluoride	660.500	377.400
Total suspended solids	773.700	368.000
pH	(1)	(1)

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

(4) *Acid Wash and Rinse Water.*

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY GERMANIUM AND GALLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of germanium washed	
Arsenic	325.500	133.900
Lead	65.400	31.150
Zinc	227.400	94.990
Germanium	68.520	28.030
Fluoride	5,450.000	3,115.00
Total suspended solids	6,385.000	3,037.000
pH	(1)	(1)

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

(5) *Gallium Hydrolysis Filtrate.*

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY GERMANIUM AND GALLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of gallium hydrolyzed	
Arsenic	69.330	28.530
Lead	13.930	8.634
Zinc	48.430	20.240
Germanium	14.600	5.971
Fluoride	1,161.000	663.400
Total suspended solids	1,360.000	640.800
pH	(1)	(1)

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

(6) *Solvent Extraction Raffinate.*

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY GERMANIUM AND GALLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of gallium produced by solvent extraction	
Arsenic	39.340	16.190
Lead	7.905	3.764
Zinc	27.480	11.480
Germanium	8.281	3.388
Fluoride	658.700	376.400
Total suspended solids	771.600	367.000
pH	(1)	(1)

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

§ 421.183 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) Level A.

(1) *Acid Wash and Rinse Water.*

BAT LIMITATIONS FOR THE PRIMARY AND SECONDARY GERMANIUM AND GALLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of germanium washed	
Arsenic	325.500	133.900
Lead	65.400	31.150
Zinc	227.400	94.990
Germanium	68.520	28.030
Fluoride	5,450.000	3,115.000

(b) Level B.

(1) *Still Liquor.*

BAT LIMITATIONS FOR THE PRIMARY AND SECONDARY GERMANIUM AND GALLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of germanium chlorinated	
Arsenic	87.570	35.910
Lead	17.640	8.190
Zinc	64.260	26.460
Germanium	23.310	9.450
Fluoride	2,205.000	1,260.000

(2) *Chlorinator Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE PRIMARY AND SECONDARY GERMANIUM AND GALLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of germanium chlorinated	
Arsenic	18.310	7.507
Lead	3.628	1.712
Zinc	13.440	5.532
Germanium	4.873	1.976
Fluoride	461.000	263.400

(3) *Germanium Hydrolysis Filtrate.*

BAT LIMITATIONS FOR THE PRIMARY AND SECONDARY GERMANIUM AND GALLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of germanium hydrolyzed	
Arsenic	26.230	10.760
Lead	5.224	2.453
Zinc	10.220	7.909
Germanium	6.032	2.031
Fluoride	650.500	377.490

(4) *Acid Wash and Rinse Water.*

BAT LIMITATIONS FOR THE PRIMARY AND SECONDARY GERMANIUM AND GALLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of germanium washed	
Arsenic	216.500	88.760
Lead	43.000	20.220
Zinc	159.900	65.400
Germanium	57.000	23.000
Fluoride	5,450.000	3,115.000

(5) *Gallium Hydrolysis Filtrate.*

BAT LIMITATIONS FOR THE PRIMARY AND SECONDARY GERMANIUM AND GALLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of gallium hydrolyzed	
Arsenic	46.110	18.910
Lead	9.228	4.312
Zinc	33.840	13.930
Germanium	12.270	4.976
Fluoride	1,161.000	603.400

(6) *Solvent Extraction Raffinate.*

BAT LIMITATIONS FOR THE PRIMARY AND SECONDARY GERMANIUM AND GALLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of gallium produced by solvent extraction	
Arsenic	26.160	10.730
Lead	5.270	2.447
Zinc	10.200	7.835
Germanium	6.804	2.823
Fluoride	658.700	376.400

§ 421.184 Standards of performance for new sources.

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

(a) Level A.

(1) *Acid Wash and Rinse Water.*

NSPS FOR THE PRIMARY AND SECONDARY GERMANIUM AND GALLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of germanium washed	
Arsenic	325.500	133.900
Lead	65.400	31.150
Zinc	227.400	94.990
Germanium	68.520	28.030
Fluoride	5,450.000	3,115.000
Total suspended solids	6,335.000	3,037.000
pH	(1)	(1)

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

(b) Level B.

(1) *Still Liquor.*

NSPS FOR THE PRIMARY AND SECONDARY GERMANIUM AND GALLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of germanium chlorinated	
Arsenic	87.570	35.910
Lead	17.640	8.190
Zinc	64.260	26.460
Germanium	23.310	9.450
Fluoride	2,205.000	1,260.000
Total suspended solids	945.000	756.000
pH	(1)	(1)

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

(2) *Chlorinator Wet Air Pollution Control.*

NSPS FOR THE PRIMARY AND SECONDARY GERMANIUM AND GALLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of germanium chlorinated	
Arsenic	18.310	7.507
Lead	3.628	1.712
Zinc	13.440	5.532
Germanium	4.873	1.976
Fluoride	461.000	263.400
Total suspended solids	197.600	159.100
pH	(1)	(1)

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

(3) *Germanium Hydrolysis Filtrate.*

NSPS FOR THE PRIMARY AND SECONDARY GERMANIUM AND GALLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of germanium hydrolyzed	
Arsenic	26.230	10.760
Lead	5.284	2.453
Zinc	19.250	7.926
Germanium	6.982	2.831
Fluoride	660.500	377.400
Total suspended solids	283.100	226.500
pH	(¹)	(¹)

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

(4) *Acid Wash and Rinse Water.*

NSPS FOR THE PRIMARY AND SECONDARY GERMANIUM AND GALLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of germanium washed	
Arsenic	216.500	88.760
Lead	43.600	20.250
Zinc	158.900	65.400
Germanium	57.620	23.360
Fluoride	5,450.000	3,115.000
Total suspended solids	2,336.000	1,869.000
pH	(¹)	(¹)

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

(5) *Gallium Hydrolysis Filtrate.*

NSPS FOR THE PRIMARY AND SECONDARY GERMANIUM AND GALLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of gallium hydrolyzed	
Arsenic	46.110	18.910
Lead	9.288	4.312
Zinc	33.840	13.930
Germanium	12.270	4.976
Fluoride	1,161.000	663.400
Total suspended solids	497.600	398.100
pH	(¹)	(¹)

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

(6) *Solvent Extraction Raffinate.*

NSPS FOR THE PRIMARY AND SECONDARY GERMANIUM AND GALLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of gallium produced by solvent extraction	
Arsenic	26.160	10.730
Lead	5.270	2.447
Zinc	19.200	7.905
Germanium	6.964	2.832
Flouride	658.700	376.400
Total suspended solids	282.300	225.900
pH	(¹)	(¹)

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

§ 421.185 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 and secondary germanium and gallium process wastewater introduced into a POTW must not exceed the following values:

(a) Level A.

(1) *Acid Wash and Rinse Water.*

PSES FOR THE PRIMARY AND SECONDARY GERMANIUM AND GALLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of germanium washed	
Arsenic	325.500	133.900
Lead	65.400	31.150
Zinc	227.400	94.990
Germanium	68.520	28.030
Flouride	5,450.000	3,115.000

(b) Level B.

(1) *Still Liquor.*

PSES FOR THE PRIMARY AND SECONDARY GERMANIUM AND GALLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of germanium chlorinated	
Arsenic	87.570	35.910
Lead	17.640	8.190
Zinc	64.260	26.460
Germanium	23.310	9.450
Flouride	2,205.000	1,260.000

(2) *Chlorinator Wet Air Pollution Control.*

PSES FOR THE PRIMARY AND SECONDARY GERMANIUM AND GALLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of germanium chlorinated	
Arsenic	18.310	7.507
Lead	3.688	1.712
Zinc	13.440	5.532
Germanium	4.873	1.976
Flouride	461.000	263.400

(3) *Germanium Hydrolysis Filtrate.*

PSES FOR THE PRIMARY AND SECONDARY GERMANIUM AND GALLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of germanium hydrolyzed	
Arsenic	26.230	10.760
Lead	5.284	2.453
Zinc	19.250	7.926
Germanium	6.982	2.831
Flouride	660.500	377.400

(4) *Acid Wash and Rinse Water.*

PSES FOR THE PRIMARY AND SECONDARY GERMANIUM AND GALLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of germanium washed	
Arsenic	216.500	88.760
Lead	43.600	20.250
Zinc	158.900	65.400
Germanium	57.620	23.360
Flouride	5,450.000	3,115.000

(5) *Gallium Hydrolysis Filtrate.*

PSES FOR THE PRIMARY AND SECONDARY GERMANIUM AND GALLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of gallium hydrolyzed	
Arsenic	52.610	21.560
Lead	10.600	4.921
Zinc	38.610	15.900
Germanium	14.010	5.678
Flouride	1,325.000	757.000

(6) *Solvent Extraction Raffinate.*

PSES FOR THE PRIMARY AND SECONDARY GERMANIUM AND GALLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of gallium produced by solvent extraction	
Arsenic	26.160	10.730
Lead	5.270	2.447
Zinc	19.200	7.905
Germanium	6.964	2.823
Fluoride	658.700	376.400

§ 421.186 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 and secondary germanium and gallium process wastewater introduced into a POTW shall not exceed the following values:

(a) Level A.

(a) *Acid Wash and Rinse Water.*

PSNS FOR THE PRIMARY AND SECONDARY GERMANIUM AND GALLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of germanium washed	
Arsenic	325.500	133.900
Lead	65.400	31.150
Zinc	227.400	94.920
Germanium	63.520	28.030
Fluoride	5,450.000	3,115.000

(b) Level B.

(1) *Still Liquor.*

PSNS FOR THE PRIMARY AND SECONDARY GERMANIUM AND GALLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of germanium chlorinated	
Arsenic	87.570	35.910
Lead	17.640	8.190
Zinc	64.260	26.460
Germanium	23.310	9.450
Fluoride	2,205.000	1,260.000

(2) *Chlorinator Wet Air Pollution Control.*

PSNS FOR THE PRIMARY AND SECONDARY GERMANIUM AND GALLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of germanium chlorinated	
Arsenic	18.310	7.507
Lead	3.688	1.712
Zinc	13.440	5.532
Germanium	4.873	1.976
Fluoride	461.000	263.400

(3) *Germanium Hydrolysis Filtrate.*

PSNS FOR THE PRIMARY AND SECONDARY GERMANIUM AND GALLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of germanium hydrolyzed	
Arsenic	26.230	10.760
Lead	5.284	2.453
Zinc	19.250	7.909
Germanium	6.992	2.831
Fluoride	600.500	377.400

(4) *Acid Wash and Rinse Water.*

PSNS FOR THE PRIMARY AND SECONDARY GERMANIUM AND GALLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of germanium washed	
Arsenic	216.500	88.760
Lead	43.600	20.250
Zinc	159.900	65.400
Germanium	57.620	23.230
Fluoride	5,450.000	3,115.000

(5) *Gallium Hydrolysis Filtrate.*

PSNS FOR THE PRIMARY AND SECONDARY GERMANIUM AND GALLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of gallium hydrolyzed	
Arsenic	46.110	18.910
Lead	9.233	4.312
Zinc	33.840	13.880
Germanium	12.270	4.978
Fluoride	1,161.000	663.400

(6) *Solvent Extraction Raffinate.*

PSNS FOR THE PRIMARY AND SECONDARY GERMANIUM AND GALLIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of gallium produced by solvent extraction	
Arsenic	26.100	10.730
Lead	5.270	2.447
Zinc	10.200	7.835
Germanium	6.994	2.823
Fluoride	659.700	376.400

§ 421.187 [Reserved]

Subpart S—Secondary Indium Subcategory

§ 421.190 Applicability: Description of the secondary indium subcategory.

The provisions of this subpart are applicable to discharges resulting from the production of indium at secondary indium facilities processing spent electrolyte solutions and scrap indium metal raw materials.

§ 421.191 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.

§ 421.192–421.193 [Reserved]

§ 421.194 Standards of performance for new sources.

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

(a) *Displacement Tank Supernatant.*

NSPS FOR THE SECONDARY INDIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of indium metal produced	
Cadmium	1.233	0.495
Lead	1.733	0.805
Zinc	6.314	2.600
Indium	2.291	0.929
Total suspended solids	92.850	74.280
pH	(1)	(1)

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

(b) *Spent Electrolyte.*

NSPS FOR THE SECONDARY INDIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of indium metal refined	
Cadmium	7.160	2.864
Lead	10.030	4.654
Zinc	36.520	15.040
Indium	13.250	5.370
Total suspended solids	537.000	429.600
pH	(1)	(1)

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

§ 421.195 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 indium process wastewater introduced into a POTW must not exceed the following values:

(a) *Displacement Tank Supernatant.*

PSES FOR THE SECONDARY INDIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of indium metal produced	
Cadmium	2.105	0.929
Lead	2.600	1.238
Zinc	9.038	3.776
Indium	2.724	1.114

(b) *Spent Electrolyte.*

PSES FOR THE SECONDARY INDIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of indium metal refined	
Cadmium	12.170	5.370
Lead	15.040	7.160
Zinc	52.270	21.840
Indium	15.750	6.444

§ 421.196 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 indium process wastewater introduced into a POTW shall not exceed the following values:

(a) *Displacement Tank Supernatant.*

PSNS FOR THE SECONDARY INDIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of indium metal produced	
Cadmium	1.238	0.495
Lead	1.733	0.805
Zinc	6.314	2.600
Indium	2.291	0.929

(a) *Spent Electrolyte.*

PSNS FOR THE SECONDARY INDIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of indium metal refined	
Cadmium	7.160	2.864
Lead	10.030	4.654
Zinc	36.520	15.040
Indium	13.250	5.370

§421.197 [Reserved]

Subpart T—Secondary Mercury Subcategory

§421.200 Applicability: Description of the secondary mercury subcategory.

The provisions of this subpart are applicable to discharges resulting from the production of mercury from secondary mercury facilities processing recycled mercuric oxide batteries and other mercury containing scrap raw materials.

§421.201 Specialized definitions.

For the purpose of this subpart the general definitions, abbreviations, and methods of analysis set forth in 40 CFR Part 4401 shall apply to this subpart.

§§ 421.202–421.203 [Reserved]

§421.204 Standards of performance for new sources.

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

(b) *Spent Battery Electrolyte.*

NSPS FOR THE SECONDARY MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mercury produced from batteries	
Lead	0.030	0.014
Mercury	0.016	0.006
Total suspended solids	1.590	1.272
pH	(1)	(1)

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

(b) *Acid Wash and Rinse Water.*

NSPS FOR THE SECONDARY MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mercury washed and rinsed	
Lead	0.00056	0.00026
Mercury	0.00030	0.00012
Total suspended solids	0.030	0.024
pH	(1)	(1)

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

(c) *Furnace Wet Air Pollution Control.*

NSPS FOR THE SECONDARY MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mercury processed through furnace	
Lead	0.000	0.000
Mercury	0.000	0.000
Total suspended solids	0.000	0.000
pH	(1)	(1)

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

§ 421.205 [Reserved]

§ 421.206 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 achieves the following pretreatment standards for new sources. The mass of wastewater pollutants in secondary mercury process wastewater introduced into a POTW shall not exceed the following values:

(a) *Spent Battery Electrolyte.*

PSNS FOR THE SECONDARY MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mercury produced from batteries	
Lead	0.030	0.014
Mercury	0.016	0.006

(b) *Acid Wash and Rinse Water.*

PSNS FOR THE SECONDARY MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mercury washed and rinsed	
Lead	0.00056	0.00026
Mercury	0.00030	0.00012

(c) *Furnace Wet Air Pollution Control.*

PSNS FOR THE SECONDARY MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mercury processed through furnace	
Lead	0.000	0.000

PSNS FOR THE SECONDARY MERCURY SUBCATEGORY—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Mercury	0.000	0.000

§ 421.207 [Reserved]

Subpart U—Primary Molybdenum and Rhenium Subcategory

§ 421.210 Applicability: Description of the primary molybdenum and rhenium subcategory.

The provisions of this subpart are applicable to discharges resulting from the production of molybdenum or rhenium by primary molybdenum and rhenium facilities.

§ 421.211 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.

§ 421.212 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) *Molybdenum Sulfide Leaching.*

BPT LIMITATIONS FOR THE PRIMARY MOLYBDENUM AND RHENIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of molybdenum sulfide leached	
Arsenic	0.968	0.393
Lead	0.195	0.093
Nickel	0.889	0.588
Selenium	0.570	0.255
Molybdenum	2.680	1.100
Ammonia (as N)	61.350	26.970
Total suspended solids	18.980	9.029
pH	(¹)	(¹)

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

(b) *Roaster SO_2 Scrubber.*

BPT LIMITATIONS FOR THE PRIMARY MOLYBDENUM AND RHENIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of molybdenum sulfide roasted	
Arsenic	3.503	1.444
Lead	0.705	0.336
Nickel	3.224	2.133
Selenium	2.065	0.924
Molybdenum	8.705	3.600
Ammonia (as N)	223.000	83.330
Total suspended solids	60.840	32.740
pH	(¹)	(¹)

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

(c) *Molybdic Oxide Leachate.*

BPT LIMITATIONS FOR THE PRIMARY MOLYBDENUM AND RHENIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of ammonium molybdate produced	
Arsenic	14.850	6.103
Lead	2.993	1.421
Nickel	13.640	9.020
Selenium	8.795	3.936
Molybdenum	41.000	16.920
Ammonia (as N)	841.000	413.700
Total suspended solids	231.200	109.500
pH	(¹)	(¹)

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

(d) *Reduction Furnace Scrubber.*

BPT LIMITATIONS FOR THE PRIMARY MOLYBDENUM AND RHENIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of molybdenum metal produced	
Arsenic	47.800	19.630
Lead	9.617	4.500
Nickel	43.970	29.090
Selenium	28.170	12.000
Molybdenum	132.370	54.570
Ammonia (as N)	2234.000	1334.000
Total suspended solids	923.800	448.500
pH	(¹)	(¹)

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

(e) *Depleted Rhenium Scrubbing Solution.*

BPT LIMITATIONS FOR THE PRIMARY MOLYBDENUM AND RHENIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of molybdenum sulfide roasted	
Arsenic	1.497	0.616
Lead	0.301	0.143
Nickel	1.375	0.909
Selenium	0.831	0.334
Molybdenum	4.140	1.170
Ammonia (as N)	84.850	41.700
Total suspended solids	29.330	13.960
pH	(¹)	(¹)

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

§ 421.213 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) *Molybdenum Sulfide Leaching.*

BAT LIMITATIONS FOR THE PRIMARY MOLYBDENUM AND RHENIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of molybdenum sulfide leached	
Arsenic	0.644	0.264
Lead	0.130	0.060
Nickel	0.255	0.171
Selenium	0.380	0.171
Molybdenum	1.790	0.730
Ammonia (as N)	61.350	26.970

(b) *Roaster SO_2 Scrubber.*

BAT LIMITATIONS FOR THE PRIMARY MOLYBDENUM AND RHENIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of molybdenum sulfide roasted	
Arsenic	2.334	0.957
Lead	0.470	0.218
Nickel	0.924	0.621
Selenium	1.377	0.621
Molybdenum	6.433	2.637
Ammonia (as N)	223.800	98.330

(c) *Molybdic Oxide Leachate.*

BAT LIMITATIONS FOR THE PRIMARY MOLYBDENUM AND RHENIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of ammonium molybdate produced	
Arsenic	9.872	4.048
Lead	1.983	0.923
Nickel	3.906	2.623

BAT LIMITATIONS FOR THE PRIMARY MOLYBDENUM AND RHENIUM SUBCATEGORY—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Selenium	5.824	2.628
Molybdenum	27.440	11.220
Ammonia (as N)	941.000	413.700

(d) *Reduction Furnace Scrubber.*

BAT LIMITATIONS FOR THE PRIMARY MOLYBDENUM AND RHENIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of molybdenum metal produced	
Arsenic	3.183	1.308
Lead	0.641	0.298
Nickel	1.260	0.647
Selenium	1.878	0.647
Molybdenum	8.850	3.620
Ammonia (as N)	303.400	133.400

(e) *Depleted Rhenium Scrubbing Solution.*

BAT LIMITATIONS FOR THE PRIMARY MOLYBDENUM AND RHENIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of molybdenum sufide roasted	
Arsenic	0.995	0.408
Lead	0.201	0.093
Nickel	0.394	0.265
Selenium	0.587	0.265
Molybdenum	2.770	1.130
Ammonia (as N)	94.850	41.700

§ 421.214 Standards of performance for new sources.

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

(a) *Molybdenum Sulfide Leaching.*

NSPS LIMITATIONS FOR THE PRIMARY MOLYBDENUM AND RHENIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of molybdenum sulfide leached	
Arsenic	0.644	0.264
Lead	0.130	0.060
Nickel	0.255	0.171
Selenium	0.380	0.171
Molybdenum	1.790	0.730
Ammonia (as N)	61.350	26.970
Total suspended	8.945	5.556
pH	(1)	(1)

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

(b) *Roaster SO_2 Scrubber.*

NSPS FOR THE PRIMARY MOLYBDENUM AND RHENIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of molybdenum sulfide roasted	
Arsenic	2.334	0.957
Lead	0.470	0.218
Nickel	0.924	0.621
Selenium	1.377	0.621
Molybdenum	6.498	2.687
Ammonia (as N)	223.800	98.390
Total suspended solids	25.190	20.150
pH	(1)	(1)

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

(c) *Molybdic Oxide Leachate.*

NSPS FOR THE PRIMARY MOLYBDENUM AND RHENIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of ammonium molybdate produced	
Arsenic	9.872	4.048
Lead	1.989	0.923
Nickel	3.806	2.628
Selenium	5.824	2.628
Molybdenum	27.440	11.220
Ammonia (as N)	941.000	413.700
Total suspended solids	106.600	85.230
pH	(1)	(1)

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

(d) *Reduction Furnace Scrubber.*

NSPS FOR THE PRIMARY MOLYBDENUM AND RHENIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of molybdenum metal produced	
Arsenic	3.183	1.308
Lead	0.641	0.298
Nickel	1.260	0.847
Selenium	1.878	0.847
Molybdenum	8.850	3.620
Ammonia (as N)	303.400	133.400
Total suspended solids	34.350	27.480
pH	(1)	(1)

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

(e) *Depleted Rhenium Scrubbing Solution.*

NSPS FOR THE PRIMARY MOLYBDENUM AND RHENIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of molybdenum sulfide roasted	
Arsenic	0.995	0.408
Lead	0.201	0.093
Nickel	0.394	0.265
Selenium	0.587	0.265
Molybdenum	2.770	1.130
Ammonia (as N)	94.850	41.700

NSPS FOR THE PRIMARY MOLYBDENUM AND RHENIUM SUBCATEGORY—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Total suspended solids	10.740	8.592
pH	(1)	(1)

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

§ 421.215 [Reserved]

§ 421.216 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 molybdenum and rhenium process wastewater introduced into a POTW shall not exceed the following values:

(a) *Molybdenum Sulfide Leaching.*

PSNS FOR THE PRIMARY MOLYBDENUM AND RHENIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of molybdenum sulfide leached	
Arsenic	0.644	0.264
Lead	0.130	0.060
Nickel	0.255	0.171
Selenium	0.380	0.171
Molybdenum	1.780	0.730
Ammonia (as N)	61.350	26.970

(b) *Roaster SO_2 Scrubber.*

PSNS FOR THE PRIMARY MOLYBDENUM AND RHENIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of molybdenum sulfide roasted	
Arsenic	2.334	0.957
Lead	0.470	0.218
Nickel	0.924	0.621
Selenium	1.377	0.621
Molybdenum	6.498	2.687
Ammonia (as N)	223.800	98.390

(c) *Molybdic Oxide Leachate.*

PSNS FOR THE PRIMARY MOLYBDENUM AND RHENIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of ammonium molybdate produced	
Arsenic	9.872	4.048
Lead	1.989	0.923

PSNS FOR THE PRIMARY MOLYBDENUM AND RHENIUM SUBCATEGORY—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Nickel	3.906	2.628
Selenium	5.824	2.628
Molybdenum	27.440	11.220
Ammonia (as N)	941.000	413.700

(d) *Reduction Furnace Scrubber.*

PSNS FOR THE PRIMARY MOLYBDENUM AND RHENIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of molybdenum metal produced	
Arsenic	3.183	1.306
Lead	0.641	0.298
Nickel	1.260	0.847
Selenium	1.878	0.847
Molybdenum	8.850	3.620
Ammonia (as N)	303.400	133.400

(e) *Depleted Rhenium Scrubbing Solution.*

PSNS FOR THE PRIMARY MOLYBDENUM AND RHENIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of molybdenum sulfide roasted	
Arsenic	0.995	0.403
Lead	0.201	0.093
Nickel	0.394	0.265
Selenium	0.597	0.265
Molybdenum	2.770	1.130
Ammonia (as N)	94.850	41.700

§ 421.217 [Reserved]

Subpart V—Secondary Molybdenum and Vanadium Subcategory

§ 421.220 Applicability: Description of the secondary molybdenum and vanadium subcategory.

The provisions of this subpart are applicable to discharges resulting from the production of molybdenum or vanadium by secondary molybdenum and vanadium facilities.

§ 421.221 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.

§ 421.222 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) *Leach Tailings.*

BPT LIMITATIONS FOR THE SECONDARY MOLYBDENUM AND VANADIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of molybdenum and vanadium produced	
Antimony	35.930	16.050
Lead	5.287	2.533
Nickel	24.930	15.930
Molybdenum	72.590	29.820
Ammonia (as N)	1031.000	730.400
Total suspended solids	514.200	244.000
pH	(1)	(1)

[1] Within the range of 7.5 to 10.0 at all times

(b) *Molybdendum Filtrate.*

BPT LIMITATIONS FOR THE SECONDARY MOLYBDENUM AND VANADIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of molybdenum produced	
Antimony	222.700	99.300
Lead	32.500	15.500
Nickel	143.000	93.550
Molybdenum	440.000	104.990
Ammonia (as N)	10,220.000	4,519.000
Total suspended solids	3,182.000	1,513.000
pH	(1)	(1)

[1] Within the range of 7.5 to 10.0 at all times

(c) *Vanadium Decomposition Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE SECONDARY MOLYBDENUM AND VANADIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of vanadium produced by decomposition	
Antimony	0.000	0.000
Lead	0.000	0.000
Nickel	0.000	0.000
Molybdenum	0.000	0.000
Ammonia (as N)	0.000	0.000
Total suspended solids	0.000	0.000
pH	(1)	(1)

[1] Within the range of 7.5 to 10.0 at all times

(d) *Molybdenum Drying Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE SECONDARY MOLYBDENUM AND VANADIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of molybdenum produced	
Antimony	0.000	0.000
Lead	0.000	0.000
Nickel	0.000	0.000
Molybdenum	0.000	0.000
Ammonia (as N)	0.000	0.000
Total suspended solids	0.000	0.000
pH	(1)	(1)

[1] Within the range of 7.5 to 10.0 at all times

§ 421.223 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) *Leach Tailings.*

BAT LIMITATIONS FOR THE SECONDARY MOLYBDENUM AND VANADIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of molybdenum and vanadium produced	
Antimony	24.200	10.730
Lead	3.511	1.630
Nickel	6.837	4.640
Molybdenum	43.450	19.810
Ammonia (as N)	1,651.000	730.400

(b) *Molybdenum Filtrate.*

BAT LIMITATIONS FOR THE SECONDARY MOLYBDENUM AND VANADIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of molybdenum produced	
Antimony	143.800	66.740
Lead	21.730	10.090
Nickel	42.630	28.710
Molybdenum	212.600	86.910
Ammonia (as N)	289.770	122.540

(c) *Vanadium Decomposition Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE SECONDARY MOLYBDENUM AND VANADIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of vanadium produced by decomposition	
Antimony	0.000	0.000
Lead	0.000	0.000
Nickel	0.000	0.000
Molybdenum	0.000	0.000
Ammonia (as N)	0.000	0.000

(d) *Molybdenum Drying Wet Air Pullution Control.*

BAT LIMITATIONS FOR THE SECONDARY MOLYBDENUM AND VANADIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of molybdenum produced	
Antimony	0.000	0.000
Lead	0.000	0.000
Nickel	0.000	0.000
Molybdenum	0.000	0.000
Ammonia (as N)	0.000	0.000

§ 421.224 Standards of performance for new sources.

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

(a) *Leach Tailings.*

NSPS FOR THE SECONDARY MOLYBDENUM AND VANADIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of molybdenum and vanadium produced	
Antimony	24.200	10.790
Lead	3.511	1.630
Nickel	6.897	4.640
Molybdenum	48.450	19.810
Ammonia (as N)	1,661.000	730.400
Total suspended solids	188.100	150.500
pH	(¹)	(¹)

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

(b) *Molybdenum Filtrate.*

NSPS FOR THE SECONDARY MOLYBDENUM AND VANADIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of molybdenum produced	
Antimony	149.800	66.740
Lead	21.730	10.090
Nickel	42.680	28.710
Molybdenum	299.770	122.540
Ammonia (as N)	10,280.000	4,519.000
Total suspended solids	1,164.000	931.200

NSPS FOR THE SECONDARY MOLYBDENUM AND VANADIUM SUBCATEGORY—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.

(c) *Vanadium Decomposition Wet Air Pollution Control.*

NSPS FOR THE SECONDARY MOLYBDENUM AND VANADIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of vanadium produced by decomposition	
Antimony	0.000	0.000
Lead	0.000	0.000
Nickel	0.000	0.000
Molybdenum	0.000	0.000
Ammonia (as N)	0.000	0.000
Total suspended solids	0.000	0.000
pH	(¹)	(¹)

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

(d) *Molybdenum Drying Wet Air Pollution Control.*

NSPS FOR THE SECONDARY MOLYBDENUM AND VANADIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of molybdenum produced	
Antimony	0.000	0.000
Lead	0.000	0.000
Nickel	0.000	0.000
Molybdenum	0.000	0.000
Ammonia (as N)	0.000	0.000
Total suspended solids	0.000	0.000
pH	(¹)	(¹)

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

§ 421.225 [Reserved]

§ 421.226 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 molybdenum and vanadium process wastewater introduced into a POTW shall not exceed the following values:

(a) *Leach Tailings.*

PSNS FOR THE SECONDARY MOLYBDENUM AND VANADIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of molybdenum and vanadium produced	
Antimony	24 200	10.790
Lead	3.511	1.630
Nickel	6 897	4 640
Molybdenum	48.450	19.810
Ammonia (as N)	1,661.000	730 400

(b) *Molybdenum Filtrate.*

PSNS FOR THE SECONDARY MOLYBDENUM AND VANADIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of molybdenum produced	
Antimony	149.800	60.740
Lead	21.730	10.090
Nickel	42 680	28.710
Molybdenum	299.770	122.540
Ammonia (as N)	10,280.000	4,519.000

(c) *Vanadium Decomposition Wet Air Pollution Control.*

PSNS FOR THE SECONDARY MOLYBDENUM AND VANADIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of vanadium produced by decomposition	
Antimony	0.000	0.000
Lead	0.000	0.000
Nickel	0.000	0.000
Molybdenum	0.000	0.000
Ammonia (as N)	0.000	0.000

(d) *Molybdenum Drying Wet Air Pollution Control.*

PSNS FOR THE SECONDARY MOLYBDENUM AND VANADIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of molybdenum produced	
Antimony	0.000	0 000
Lead	0.000	0.000
Nickel	0 000	0.000
Molybdenum	0.000	0.000
Ammonia (as N)	0.000	0.000

§ 421.227 [Reserved].

Subpart W—Primary Nickel and Cobalt Subcategory

§ 421.230 Applicability: Description of the primary nickel and cobalt subcategory.

The provisions of this subpart are applicable to discharges resulting from the production of nickel or cobalt by primary nickel and cobalt facilities processing ore concentrate raw materials.

§ 421.231 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.

§ 421.232 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) *Raw Material Dust Control.*

BPT LIMITATIONS FOR THE PRIMARY NICKEL AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of copper, nickel, and cobalt in the crushed raw material	
Copper	0.146	0.077
Nickel	0.148	0.098
Ammonia (as N)	10.260	4.400
Cobalt	0.016	0.007
Total suspended solids	3 157	1.502
pH	(¹)	(¹)

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

(b) *Nickel Wash Water.*

BPT LIMITATIONS FOR THE PRIMARY NICKEL AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of nickel powder washed	
Copper	0.064	0.034
Nickel	0.065	0.043
Ammonia (as N)	4.510	1.940
Cobalt	0.007	0.003
Total suspended solids	1.389	0.661
pH	(¹)	(¹)

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

(c) *Nickel Reduction Decant.*

BPT LIMITATIONS FOR THE PRIMARY NICKEL AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of nickel reduced	
Copper	24.120	12.700
Nickel	24.300	16.120
Ammonia (as N)	1,002.600	725.500
Cobalt	2.605	1.143
Total suspended solids	520.500	247.600
pH	(¹)	(¹)

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

(d) *Cobalt Reduction Decant.*

BPT LIMITATIONS FOR THE PRIMARY NICKEL AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of cobalt reduced	
Copper	40.600	21.400
Nickel	41.000	27.180
Ammonia (as N)	2,651.000	1,023.000
Cobalt	4.404	1.926
Total suspended solids	877.000	417.000
pH	(¹)	(¹)

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

§ 421.233 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) *Raw Material Dust Control.*

BAT LIMITATIONS FOR THE PRIMARY NICKEL AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of copper, nickel, and cobalt in the crushed raw material	
Copper	0.099	0.047
Nickel	0.042	0.028
Ammonia (as N)	10.200	4.480
Cobalt	0.011	0.005

(b) *Nickel Wash Water.*

BAT LIMITATIONS FOR THE PRIMARY NICKEL AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of nickel powder washed	
Copper	0.043	0.021
Nickel	0.019	0.013
Ammonia (as N)	4.430	1.970
Cobalt	0.005	0.002

(c) *Nickel Reduction Decant*

BAT LIMITATIONS FOR THE PRIMARY NICKEL AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of nickel reduced	
Copper	16.250	7.744
Nickel	6.932	4.697
Ammonia (as N)	1,632.000	739.50
Cobalt	1.778	0.839

(d) *Cobalt Reduction Decant.*

BAT LIMITATIONS FOR THE PRIMARY NICKEL AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of cobalt reduced	
Copper	27.330	13.050
Nickel	11.770	7.917
Ammonia (as N)	2,832.000	1,245.000
Cobalt	2.936	1.433

§ 421.234 Standards of performance for new sources.

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

(a) *Raw Material Dust Control.*

NSPS FOR THE PRIMARY NICKEL AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of copper, nickel, and cobalt in the crushed raw material	
Copper	0.099	0.047
Nickel	0.042	0.028
Ammonia (as N)	10.200	4.480
Cobalt	0.011	0.005
Total suspended solids	1.155	0.924
pH	(¹)	(¹)

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

(b) *Nickel Wash Water.*

NSPS FOR THE PRIMARY NICKEL AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of nickel powder washed	
Copper	0.043	0.021
Nickel	0.019	0.013
Ammonia (as N)	4.490	1.970
Cobalt	0.005	0.002
Total suspended solids	0.508	0.407
pH	(1)	(1)

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

(c) *Nickel Reduction Decant.*

NSPS FOR THE PRIMARY NICKEL AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of nickel reduced	
Copper	16.250	7.744
Nickel	6.982	5.697
Ammonia (as N)	1,682.000	739.500
Cobalt	1.778	0.889
Total suspended solids	290.400	152.400
pH	(1)	(1)

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

(d) *Cobalt Reduction Decant.*

NSPS FOR THE PRIMARY NICKEL AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of cobalt reduced	
Copper	27.390	13.050
Nickel	11.770	7.917
Ammonia (as N)	2,835.000	1,179.000
Cobalt	2.996	1.498
Total suspended solids	321.000	256.800
pH	(1)	(1)

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

§ 421.235 [Reserved]

§ 421.236 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 nickel and cobalt process wastewater introduced into a POTW shall not exceed the following values:

(a) *Raw Material Dust Control.*

PSNS FOR THE PRIMARY NICKEL AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of copper, nickel, and cobalt in the crushed raw material	
Copper	0.099	0.047
Nickel	0.042	0.028
Ammonia (as N)	10.200	4.480
Cobalt	0.011	0.005

(b) *Nickel Wash Water.*

PSNS FOR THE PRIMARY NICKEL AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of nickel powder washed	
Copper	0.043	0.021
Nickel	0.019	0.013
Ammonia (as N)	4.490	1.970
Cobalt	0.005	0.002

(c) *Nickel Reduction Decant.*

PSNS FOR THE PRIMARY NICKEL AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of nickel reduced	
Copper	16.250	7.744
Nickel	6.982	4.697
Ammonia (as N)	1,682.000	739.50
Cobalt	1.778	0.889

(d) *Cobalt Reduction Decant.*

PSNS FOR THE PRIMARY NICKEL AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of cobalt reduced	
Copper	27.390	13.050
Nickel	11.770	7.917
Ammonia (as N)	2,835.000	1,179.000
Cobalt	2.996	1.498

§ 421.237 [Reserved]

Subpart X—Secondary Nickel Subcategory

§ 421.240 Applicability: Description of the secondary nickel subcategory.

The provisions of this subpart are applicable to discharges resulting from the production of nickel by secondary nickel facilities processing slag, spent acids, or scrap metal raw materials.

§ 421.241 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.

§§ 421.242–421.243 [Reserved]

§ 421.244 Standards of performance for new sources.

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

(a) *Slag Reclaim Tailings.*

NSPS FOR THE SECONDARY NICKEL SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of slag reclaim nickel produced	
Chromium (total)	37.670	15.410
Copper	162.700	85.600
Nickel	164.400	109.700
Total suspended solids	3,510.000	1,669.000
pH	(1)	(1)

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

(b) *Acid Reclaim Leaching Filtrate.*

NSPS FOR THE SECONDARY NICKEL SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of acid reclaim nickel produced	
Chromium (total)	1.848	0.749
Copper	6.394	3.047
Nickel	2.747	1.848
Total suspended solids	74.930	59.940
pH	(1)	(1)

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

(c) *Acid Reclaim Leaching Belt Filter Backwash.*

NSPS FOR THE SECONDARY NICKEL SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of acid reclaim nickel produced	
Chromium (total)	0.444	0.180
Copper	1.535	0.731
Nickel	0.660	0.444
Total suspended solids	17.990	14.390
pH	(1)	(1)

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

§ 421.245 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 nickel process wastewater introduced into a POTW must not exceed the following values:

(a) *Slag Reclaim Tailings.*

PSES FOR THE SECONDARY NICKEL SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of slag reclaim nickel produced	
Chromium (total)	37.670	15.410
Copper	162.700	85.600
Nickel	164.400	108.700

(b) *Acid Reclaim Leaching Filtrate.*

PSES FOR THE SECONDARY NICKEL SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of acid reclaim nickel produced	
Chromium (total)	1.848	0.749
Copper	6.394	3.047
Nickel	2.747	1.848

(c) *Acid Reclaim Leaching Belt Filter Backwash.*

PSES FOR THE SECONDARY NICKEL SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of acid reclaim nickel produced	
Chromium (total)	0.444	0.180
Copper	1.535	0.731
Nickel	0.660	0.444

§ 421.246 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 nickel process wastewater introduced into a POTW shall not exceed the following values:

(a) *Slag Reclaim Tailings.*

PSNS FOR THE SECONDARY NICKEL SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of slag reclaim nickel produced	
Chromium (total)	37.670	15.410
Copper	162.700	85.600
Nickel	164.400	108.700

(b) *Acid Reclaim Leaching Filtrate.*

PSNS FOR THE SECONDARY NICKEL SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of acid reclaim nickel produced	
Chromium (total)	1.848	0.749
Copper	6.394	3.047
Nickel	2.747	1.848

(c) *Acid Reclaim Leaching Belt Filter Backwash.*

PSNS FOR THE SECONDARY NICKEL SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of acid reclaim nickel produced	
Chromium (total)	0.444	0.180
Copper	1.535	0.731
Nickel	0.660	0.444

§ 421.247 [Reserved]

Subpart Y—Primary Precious Metals and Mercury Subcategory

§ 421.250 Applicability: Description of the primary precious metals and mercury subcategory.

The provisions of this subpart are applicable to discharges resulting from the production of gold, silver, or mercury by primary precious metals and mercury facilities.

§ 421.251 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.

§ 421.252 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 technololgy currently available:

(a) *Smelter Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of gold and silver smelted	
Arsenic	27.530	11.350
Lead	5.544	2.640
Mercury	3.300	1.320
Silver	5.412	2.244
Zinc	19.270	8.052
Oil and Grease	264.000	158.400
Total suspended solids	541.200	257.400
pH	(¹)	(¹)

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

(b) *AgCl Reduction Spent Solution.*

BPT LIMITATIONS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of silver produced by silver solution reduction	
Arsenic	0.636	0.244
Lead	0.163	0.020
Mercury	0.100	0.040
Silver	0.164	0.063
Zinc	0.524	0.244
Oil and Grease	8.000	4.800
Total suspended solids	16.400	7.800
pH	(¹)	(¹)

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

(c) *Electrolytic Cells Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of gold refined electrolytically	
Arsenic	413.800	170.300
Lead	83.160	33.600
Mercury	49.500	19.800
Silver	81.160	33.660
Zinc	283.100	120.800
Oil and Grease	3,960.000	2,376.000
Total suspended solids	8,118.000	3,861.000
pH	(¹)	(¹)

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

(d) *AgNO3 Electrolyte Preparation Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of silver in electrolyte produced	
Arsenic	0.105	0.043
Lead	0.021	0.010
Mercury	0.013	0.005
Silver	0.021	0.009
Zinc	0.073	0.031
Oil and Grease	1.000	0.600
Total suspended solids	2.050	0.975
pH	(¹)	(¹)

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

(e) *Ag Crystals Wash Water.*

BPT LIMITATIONS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of silver crystals washed	
Arsenic	0.608	0.249
Lead	0.122	0.058
Mercury	0.073	0.029
Silver	0.119	0.049
Zinc	0.423	0.177
Oil and Grease	5.800	3.480
Total suspended solids	11.890	5.655
pH	(¹)	(¹)

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

(f) *Gold Slimes Acid and Water Wash.*

BPT LIMITATIONS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of gold slimes washed	
Arsenic	8.360	3.440
Lead	1.680	0.800
Mercury	1.000	0.400
Silver	1.640	0.680
Zinc	5.840	2.440
Oil and Grease	80.000	48.000
Total suspended solids	164.000	78.000
pH	(¹)	(¹)

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

(g) *Calciner Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mercury condensed	
Arsenic	388.800	160.000
Lead	78.120	37.200
Mercury	46.500	18.600
Silver	76.260	31.620
Zinc	271.600	113.500
Oil and Grease	3,720.000	2,232.000
Total suspended solids	7,626.000	3,627.000
pH	(¹)	(¹)

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

(h) *Calcine Quench.*

BPT LIMITATIONS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mercury condensed	
Arsenic	36.780	15.140
Lead	7.392	3.520
Mercury	4.400	1.760
Silver	7.216	2.992
Zinc	25.700	10.740
Oil and Grease	352.000	211.200
Total suspended solids	721.600	343.200
pH	(¹)	(¹)

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

(i) *Stack Gas Cooling.*

BPT LIMITATIONS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mercury condensed	
Arsenic	8.674	3.569
Lead	1.743	0.830
Mercury	1.038	0.415
Silver	1.702	0.706
Zinc	6.059	2.532
Oil and Grease	83.000	49.800
Total suspended solids	170.200	80.930
pH	(¹)	(¹)

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

(j) *Hg Calcining Condensate.*

BPT LIMITATIONS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mercury condensed	
Arsenic	28.840	11.870
Lead	5.796	2.760
Mercury	3.450	1.380
Silver	5.658	2.346
Zinc	20.150	8.418
Oil and Grease	276.000	165.600
Total suspended solids	565.800	269.100
pH	(¹)	(¹)

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

(k) *Hg Cleaning Bath.*

BPT LIMITATIONS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mercury condensed	
Arsenic	2.926	1.204
Lead	0.588	0.280
Mercury	0.350	0.140
Silver	0.574	0.238
Zinc	2.044	0.854
Oil and Grease	28.000	16.800
Total suspended solids	57.400	27.300
pH	(¹)	(¹)

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

§ 421.253 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) *Smelter Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of gold and silver smelted	
Arsenic	1.807	0.741
Lead	0.364	0.169
Mercury	0.195	0.078
Silver	0.377	0.158
Zinc	1.326	0.540

(b) *AgCl Reduction Spent Solution.*

BAT LIMITATIONS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of silver produced by silver solution reduction	
Arsenic	0.556	0.228
Lead	0.112	0.052
Mercury	0.060	0.024
Silver	0.116	0.048
Zinc	0.408	0.168

(c) *Electrolytic Cells Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of gold refined electrolytically	
Arsenic	27.520	11.290
Lead	5.544	2.574
Mercury	2.970	1.188
Silver	5.742	2.376
Zinc	20.200	8.316

(d) *AgNO3 Electrolyte Preparation Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of silver in electrolyte produced	
Arsenic	0.070	0.029
Lead	0.014	0.007
Mercury	0.008	0.003
Silver	0.015	0.006
Zinc	0.051	0.021

(e) *Ag Crystals Wash Water.*

BAT LIMITATIONS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of silver crystals washed	
Arsenic	0.403	0.165
Lead	0.081	0.038
Mercury	0.044	0.017
Silver	0.084	0.035
Zinc	0.296	0.122

(f) *Gold Slimes Acid and Water Wash.*

BAT LIMITATIONS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of gold slimes washed	
Arsenic	5.560	2.280
Lead	1.120	0.520
Mercury	0.600	0.240
Silver	1.160	0.480
Zinc	4.080	1.680

(g) *Calciner Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mercury condensed	
Arsenic	30.500	12.540
Lead	6.100	2.880
Mercury	3.000	1.300
Silver	6.000	2.640
Zinc	22.440	9.240

(h) *Calcine Quench.*

BAT LIMITATIONS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mercury condensed	
Arsenic	24.470	10.000
Lead	4.903	2.200
Mercury	2.640	1.056
Silver	5.104	2.112
Zinc	17.950	7.332

(i) *Stack Gas Cooling.*

BAT LIMITATIONS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mercury condensed	
Arsenic	5.709	2.330
Lead	1.162	0.540
Mercury	0.623	0.240
Silver	1.204	0.493
Zinc	4.233	1.743

(j) *Hg Calcining Condensate.*

BAT LIMITATIONS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mercury condensed	
Arsenic	19.180	7.898
Lead	3.864	1.734
Mercury	2.070	0.828
Silver	4.092	1.655
Zinc	14.080	5.789

(k) *Hg Cleaning Bath.*

BAT LIMITATIONS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mercury condensed	
Arsenic	1.946	0.793
Lead	0.392	0.182
Mercury	0.210	0.084
Silver	0.406	0.163
Zinc	1.423	0.583

§ 421.254 Standards of performance for new sources.

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

(a) *Smelter Wet Air Pollution Control.*

NSPS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of gold and silver smelted	
Arsenic	1.807	0.741
Lead	0.364	0.169
Mercury	0.195	0.078
Silver	0.377	0.156
Zinc	1.326	0.546
Oil and Grease	13.000	13.000
Total suspended solids	19.500	15.600
pH	(1)	(1)

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

(b) *AgCl Reduction Spent Solution.*

NSPS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of silver produced by silver solution reduction	
Arsenic	0.556	0.228
Lead	0.112	0.052
Mercury	0.060	0.024
Silver	0.116	0.043
Zinc	0.403	0.168
Oil and Grease	4.000	4.000
Total suspended solids	6.000	4.800
pH	(1)	(1)

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

(c) *Electrolytic Cells Wet Air Pollution Control.*

NSPS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of gold refined electrolytically	
Arsenic	27.520	11.290
Lead	5.544	2.574
Mercury	2.970	1.183
Silver	5.742	2.376

NSPS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Zinc	20.200	8.316
Oil and Grease	198.000	198.000
Total suspended solids	297.000	237.600
pH	(¹)	(¹)

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

(d) *AgNO3 Electrolyte Preparation Wet Air Pollution Control.*

NSPS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of silver in electrolyte produced	
Arsenic	0.070	0.029
Lead	0.014	0.007
Mercury	0.008	0.003
Silver	0.015	0.006
Zinc	0.051	0.021
Oil and Grease	0.500	0.500
Total suspended solids	0.750	0.600
pH	(¹)	(¹)

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

(e) *Ag Crystals Wash Washer.*

NSPS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of silver crystals washed	
Arsenic	0.403	0.165
Lead	0.081	0.038
Mercury	0.044	0.017
Silver	0.084	0.035
Zinc	0.296	0.122
Oil and Grease	2.900	2.900
Total suspended solids	4.350	3.480
pH	(¹)	(¹)

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

(f) *Gold Slimes Acid and Water Wash.*

NSPS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of gold slimes washed	
Arsenic	5.560	2.280
Lead	1.120	0.520
Mercury	0.600	0.240
Silver	1.160	0.480
Zinc	4.080	1.680
Oil and Grease	40.000	40.000
Total suspended solids	60.000	48.000
pH	(¹)	(¹)

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

(g) *Calciner Wet Air Pollution Control.*

NSPS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mercury condensed	
Arsenic	30.580	12.540
Lead	6.160	2.860
Mercury	3.300	1.320
Silver	6.380	2.640
Zinc	22.440	9.240
Oil and Grease	220.000	220.000
Total suspended solids	330.000	264.000
pH	(¹)	(¹)

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

(h) *Calcine Quench.*

NSPS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mercury condensed	
Arsenic	24.470	10.030
Lead	4.928	2.288
Mercury	2.640	1.056
Silver	5.104	2.112
Zinc	17.950	7.392
Oil and Grease	176.000	176.000
Total suspended solids	264.000	211.200
pH	(¹)	(¹)

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

(i) *Stack Gas Cooling.*

NSPS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mercury condensed	
Arsenic	5.769	2.366
Lead	1.162	0.540
Mercury	0.623	0.249
Silver	1.204	0.498
Zinc	4.233	1.743
Oil and Grease	41.500	41.500
Total suspended solids	62.250	49.800
pH	(¹)	(¹)

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

(j) *Hg Calcining Condensate.*

NSPS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mercury condensed	
Arsenic	19.180	7.866
Lead	3.864	1.794
Mercury	2.070	0.828
Silver	4.002	1.656
Zinc	14.080	5.796
Oil and Grease	138.000	138.000
Total suspended solids	207.000	165.600
pH	(¹)	(¹)

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

(k) *Hg Cleaning Bath.*

NSPS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mercury condensed	
Arsenic	1.946	0.798
Lead	0.392	0.182
Mercury	0.210	0.084
Silver	0.406	0.168
Zinc	1.428	0.588
Oil and Grease	14.000	14.000
Total suspended solids	21.000	16.800
pH	(¹)	(¹)

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

§ 421.255 [Reserved]

§ 421.256 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 precious metals and mercury process wastewater introduced into a POTW shall not exceed the following values:

(a) *Smelter Wet Air Pollution Control.*

PSNS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of gold and silver smelted	
Arsenic	1.807	0.741
Lead	0.364	0.169
Mercury	0.195	0.078
Silver	0.377	0.150
Zinc	1.326	0.546

(b) *AgCl Reduction Spent Solution.*

PSNS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of silver produced by silver solution reduction	
Arsenic	0.556	0.228
Lead	0.112	0.052

PSNS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Mercury	0.060	0.024
Silver	0.116	0.048
Zinc	0.408	0.169

(c) *Electrolytic Cells Wet Air Pollution Control.*

PSNS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of gold refined electrolytically	
Arsenic	27.520	11.230
Lead	5.544	2.574
Mercury	2.970	1.188
Silver	5.742	2.376
Zinc	20.200	8.316

(d) *AgNO3 Electrolyte Preparation Wet Air Pollution Control.*

PSNS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of silver in electrolyte produced	
Arsenic	0.070	0.029
Lead	0.014	0.007
Mercury	0.008	0.003
Silver	0.015	0.006
Zinc	0.051	0.021

(e) *Ag Crystals Wash Water.*

PSNS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of silver crystals washed	
Arsenic	0.403	0.165
Lead	0.081	0.039
Mercury	0.044	0.017
Silver	0.084	0.035
Zinc	0.296	0.122

(f) *Gold Slimes Acid and Water Wash.*

PSNS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of gold slimes washed	
Arsenic	5.560	2.280
Lead	1.120	0.520
Mercury	0.600	0.240

PSNS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Silver	1.100	0.400
Zinc	4.000	1.600

(g) *Calciner Wet Air Pollution Control.*

PSNS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mercury condensed	
Arsenic	30.590	12.540
Lead	6.100	2.590
Mercury	3.300	1.320
Silver	6.600	2.640
Zinc	22.440	9.240

(h) *Calcine Quench.*

PSNS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mercury condensed	
Arsenic	24.470	10.090
Lead	4.903	2.203
Mercury	2.640	1.056
Silver	5.104	2.112
Zinc	17.650	7.332

(i) *Stack Gas Cooling.*

PSNS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mercury condensed	
Arsenic	5.700	2.333
Lead	1.162	0.540
Mercury	0.623	0.240
Silver	1.204	0.498
Zinc	4.233	1.743

(j) *Hg Calcining Condensate.*

PSNS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mercury condensed	
Arsenic	19.100	7.898
Lead	3.894	1.734
Mercury	2.070	0.863

PSNS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Silver	4.002	1.656
Zinc	14.020	5.796

(k) *Hg Cleaning Bath.*

PSNS FOR THE PRIMARY PRECIOUS METALS AND MERCURY SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mercury condensed	
Arsenic	1.946	0.793
Lead	0.332	0.182
Mercury	0.210	0.084
Silver	0.406	0.163
Zinc	1.423	0.523

§ 421.257 [Reserved]

Subpart Z—Secondary Precious Metals Subcategory

§ 421.260 Applicability: description of the secondary precious metals subcategory.

The provisions of this subpart are applicable to discharges resulting from the production of precious metals at secondary precious metals facilities.

§ 421.261 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) The term "precious metals" shall mean gold, platinum, palladium, rhodium, iridium, osmium, and ruthenium.

§ 421.262 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) *Furnace Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of precious metals, including silver, routed through furnace	
Copper	136.400	71.800
Cyanide (total)	20.820	8.616
Zinc	104.800	43.800
Ammonia (as N)	9,583.000	4,205.000
Total suspended solids	2,944.000	1,400.000
pH	(1)	(1)

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

(b) *Raw Material Granulation.*

BPT LIMITATIONS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of precious metal contained in the raw material which is granulated	
Copper	0.000	0.000
Cyanide (total)	0.000	0.000
Zinc	0.000	0.000
Ammonia (as N)	0.000	0.000
Total suspended solids	0.000	0.000
pH	(1)	(1)

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

(c) *Spent Plating Solutions.*

BPT LIMITATIONS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/liter of spent plating solution used as a raw material	
Copper	1.900	1.000
Cyanide (total)	0.290	0.120
Zinc	1.460	0.610
Ammonia (as N)	133.300	58.600
Total suspended solids	41.000	19.500
pH	(1)	(1)

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

(d) *Spent Cyanide Stripping Solutions.*

BPT LIMITATIONS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of precious metals produced by cyanide stripping	
Copper	2.090	1.100
Cyanide (total)	0.319	0.132
Zinc	1.606	0.671
Ammonia (as N)	146.800	64.420
Total suspended solids	45.100	21.450
pH	(1)	(1)

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

(e) *Refinery Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of precious metals, including silver, produced in refinery	
Copper	39.900	21.000
Cyanide (total)	6.090	2.520
Zinc	30.660	12.810
Ammonia (as N)	2,802.000	1,230.000
Total suspended solids	861.000	409.500
pH	(1)	(1)

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

(f) *Gold Solvent Extraction Raffinate and Wash Water.*

BPT LIMITATIONS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of gold produced by solvent extraction process	
Copper	1.197	0.630
Cyanide (total)	0.183	0.076
Zinc	0.920	0.384
Ammonia (as N)	84.070	36.890
Total suspended solids	25.830	12.290
pH	(1)	(1)

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

(g) *Gold Spent Electrolyte.*

BPT LIMITATIONS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of gold produced by electrolytic refining	
Copper	0.017	0.009
Cyanide (total)	0.003	0.001
Zinc	0.013	0.005
Ammonia (as N)	1.160	0.510
Total suspended solids	0.357	0.170
pH	(1)	(1)

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

(h) *Gold Precipitation and Filtration.*

BPT LIMITATIONS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of gold precipitated	
Copper	8.360	4.400
Cyanide (total)	1.276	0.528
Zinc	6.424	2.684
Ammonia (as N)	583.800	257.700
Total suspended solids	180.400	85.800
pH	(1)	(1)

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

(i) *Platinum Precipitation and Filtration.*

BPT LIMITATIONS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of platinum precipitated	
Copper	9.880	5.200
Cyanide (total)	1.508	0.624
Zinc	7.592	3.172
Ammonia (as N)	693.800	304.500
Total suspended solids	213.200	101.400
pH	(1)	(1)

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

(j) *Palladium Precipitation and Filtration.*

BPT LIMITATIONS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of palladium precipitated	
Copper	6.650	3.500
Cyanide (total)	1.015	0.420
Zinc	5.110	2.135
Ammonia (as N)	467.000	205.000
Total suspended solids	143.500	60.250
pH	(1)	(1)

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

(k) *Other Platinum Group Metals Precipitation and Filtration.*

BPT LIMITATIONS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or Pollutant Property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of other platinum group metals precipitated	
Copper	9.880	5.200
Cyanide (total)	1.508	0.624
Zinc	7.592	3.172
Ammonia (as N)	693.900	304.500
Total suspended solids	213.200	101.400
pH	(1)	(1)

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

(l) *Spent Solutions from PGC Salt Production.*

BPT LIMITATIONS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or Pollutant Property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of gold contained in PGC product	
Copper	1.710	0.900
Cyanide (total)	0.261	0.100
Zinc	1.314	0.540
Ammonia (as N)	120.100	52.700
Total suspended solids	36.900	17.550
pH	(1)	(1)

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

(m) *Equipment and Floor Wash.*

BPT LIMITATIONS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or Pollutant Property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of other precious metals, including silver, produced in refinery	
Copper	0.000	0.000
Cyanide (total)	0.000	0.000
Zinc	0.000	0.000
Ammonia (as N)	0.000	0.000
Total suspended solids	0.000	0.000
pH	[1]	[1]

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

§ 421.263 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) *Furnace Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or Pollutant Property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of precious metals, including silver, routed through furnace	
Copper	5.760	2.745
Cyanide (total)	0.900	0.360
Zinc	4.590	1.890
Ammonia (as N)	600.500	263.500

(b) *Raw Material Granulation.*

BAT LIMITATIONS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or Pollutant Property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of precious metals contained in the raw material which is granulated	
Copper	0.000	0.000
Cyanide (total)	0.000	0.000
Zinc	0.000	0.000
Ammonia (as N)	0.000	0.000

(c) *Spent Plating Solutions.*

BAT LIMITATIONS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or Pollutant Property	Maximum for any 1 day	Maximum for monthly average
	mg/liter of spent plating solution used as a raw material	
Copper	1.280	0.610
Cyanide (total)	0.200	0.080
Zinc	1.020	0.420
Ammonia (as N)	133.300	58.600

(d) *Spent Cyanide Stripping Solutions.*

BAT LIMITATIONS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of precious metals produced by cyanide stripping	
Copper	1.403	0.671
Cyanide (total)	0.220	0.088
Zinc	1.122	0.462
Ammonia (as N)	146.800	64.420

(e) *Refinery Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of precious metals, including silver, produced in refinery	
Copper	1.280	0.610
Cyanide (total)	0.200	0.080
Zinc	1.020	0.420
Ammonia (as N)	133.300	58.600

(f) *Gold Solvent Extraction Raffinate and Wash Water.*

BAT LIMITATIONS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of gold produced by solvent extraction process	
Copper	0.638	0.304
Cyanide (total)	0.128	0.051
Zinc	0.643	0.265
Ammonia (as N)	84.070	36.890

(g) *Gold Spent Electrolyte.*

BAT LIMITATIONS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of gold produced by electrolytic refining	
Copper	0.011	0.005
Cyanide (total)	0.002	0.001
Zinc	0.009	0.004
Ammonia (as N)	1.160	0.510

(h) *Gold Precipitation and Filtration.*

BAT LIMITATIONS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of gold precipitated	
Copper	5.632	2.684
Cyanide (total)	0.880	0.352
Zinc	4.488	1.848
Ammonia (as N)	593.800	257.700

(i) *Platinum Precipitation and Filtration.*

BAT LIMITATIONS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of platinum precipitated	
Copper	6.656	3.172
Cyanide (total)	1.040	0.416
Zinc	5.304	2.184
Ammonia (as N)	630.900	304.500

(j) *Palladium Precipitation and Filtration.*

BAT LIMITATIONS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of palladium precipitated	
Copper	4.480	2.135
Cyanide (total)	0.700	0.280
Zinc	3.570	1.470
Ammonia (as N)	457.000	205.000

(k) *Other Platinum Group Metals Precipitation and Filtration.*

BAT LIMITATIONS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of other platinum group metals precipitated	
Copper	6.656	3.172
Cyanide (total)	1.040	0.416
Zinc	5.304	2.184
Ammonia (as N)	693.900	304.500

(l) *Spent Solutions from PGC Salt Production.*

BAT LIMITATIONS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of gold contained in PGC product	
Copper	1.152	0.549
Cyanide (total)	0.180	0.072
Zinc	0.918	0.378
Ammonia (as N)	120.100	52.700

(m) *Equipment and Floor Wash.*

BAT LIMITATIONS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of precious metals, including silver, produced in refinery	
Copper	0.000	0.000
Cyanide (total)	0.000	0.000
Zinc	0.000	0.000
Ammonia (as N)	0.000	0.000

§ 421.264 Standards of performance for new sources.

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

(a) *Furnace Wet Air Pollution Control.*

NSPS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of precious metals, including silver, routed through furnace	
Copper	0.000	0.000
Cyanide (total)	0.000	0.000
Zinc	0.000	0.000
Ammonia (as N)	0.000	.000
Total suspended solids	0.000	0.000
pH	(1)	(1)

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

(b) *Raw Material Granulation.*

NSPS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of precious metals, contained in the raw material which is granulated	
Copper	0.000	0.000
Cyanide (total)	0.000	0.000
Zinc	0.000	0.000
Ammonia (as N)	0.000	0.000
Total suspended solids	0.000	0.000
pH	(1)	(1)

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

(c) *Spent Plating Solutions.*

NSPS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/liter of spent plating solution used as a raw material	
Copper	1.280	0.610
Cyanide (total)	0.200	0.080
Zinc	1.020	0.420
Ammonia (as N)	133.300	58.600
Total suspended solids	15.000	12.000
pH	(1)	(1)

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

(d) *Spent Cyanide Stripping Solutions.*

NSPS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of precious metals produced by cyanide stripping	
Copper	1.408	0.671
Cyanide (total)	0.220	0.088
Zinc	1.122	0.462
Ammonia (as N)	146.800	64.420
Total suspended solids	16.500	13.200
pH	(1)	(1)

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

(e) *Refinery Wet Air Pollution Control.*

NSPS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of precious metals, including silver, produced in refinery	
Copper	1.280	0.610
Cyanide (total)	0.200	0.080
Zinc	1.020	0.420
Ammonia (as N)	133.300	58.600
Total suspended solids	15.000	12.000
pH	(1)	(1)

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

(f) *Gold Solvent Extraction Raffinate and Wash Water.*

NSPS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of gold produced by solvent extraction process	
Copper	0.806	0.384
Cyanide (total)	0.126	0.051
Zinc	0.643	0.265
Ammonia (as N)	84.070	36.600
Total suspended solids	9.450	7.560
pH	(1)	(1)

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

(g) *Gold Spent Electrolyte.*

NSPS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of gold produced by electrolytic refining	
Copper	0.011	0.005
Cyanide (total)	0.002	0.001
Zinc	0.009	0.004
Ammonia (as N)	1.160	0.510
Total suspended solids	0.131	0.104
pH	(1)	(1)

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

(h) *Gold Precipitation and Filtration.*

NSPS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of gold precipitated	
Copper	5.632	2.684
Cyanide (total)	0.880	0.352
Zinc	4.488	1.848
Ammonia (as N)	583.800	257.700
Total suspended solids	66.000	52.800
pH	(1)	(1)

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

(i) *Platinum Precipitation and Filtration.*

NSPS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of platinum precipitated	
Copper	6.650	3.172
Cyanide (total)	1.040	0.416
Zinc	5.304	2.184
Ammonia (as N)	693.900	304.500
Total suspended solids	78.000	62.400
pH	(1)	(1)

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

(j) *Palladium Precipitation and Filtration.*

NSPS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of palladium precipitated	
Copper	4.480	2.135
Cyanide (total)	0.700	0.280
Zinc	3.570	1.470
Ammonia (as N)	467.000	205.000
Total suspended solids	52.500	42.000
pH	(¹)	(¹)

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

(k) *Other Platinum Group Metals Precipitation and Filtration.*

NSPS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of other platinum group metals precipitated	
Copper	6.656	3.172
Cyanide (total)	1.040	0.416
Zinc	5.304	2.184
Ammonia (as N)	693.900	304.500
Total suspended solids	78.000	62.400
pH	(¹)	(¹)

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

(l) *Spent Solutions from PCG Salt Production.*

NSPS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of gold contained in PGC product	
Copper	1.152	0.549
Cyanide (total)	0.180	0.072
Zinc	0.918	0.378
Ammonia (as N)	120.100	52.700
Total suspended solids	13.500	10.800
pH	(¹)	(¹)

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

(m) *Equipment and Floor Wash.*

NSPS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of precious metals, including silver, produced in refinery	
Copper	0.000	0.000
Cyanide (total)	0.000	0.000
Zinc	0.000	0.000
Ammonia (as N)	0.000	0.000
Total suspended solids	0.000	0.000
pH	(¹)	(¹)

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

§ 421.265 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 precious metals process wastewater introduced into a POTW must not exceed the following values:

(a) *Furnace Wet Air Pollution Control.*

PSES FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of precious metals, including silver, routed through furnace	
Copper	5.700	2.745
Cyanide (total)	0.600	0.350
Zinc	4.530	1.090
Ammonia (as N)	610.500	263.500

(b) *Raw Material Granulation.*

PSES FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of precious metals contained in the raw material which is granulated	
Copper	0.000	0.000
Cyanide (total)	0.000	0.000
Zinc	0.000	0.000
Ammonia (as N)	0.000	0.000

(c) *Spent Plating Solutions.*

PSES FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/liter of spent plating solution used as a raw material	
Copper	1.200	0.610
Cyanide (total)	0.200	0.080
Zinc	1.000	0.420
Ammonia (as N)	133.000	58.600

(d) *Spent Cyanide Stripping Solutions.*

PSES FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of precious metals produced by cyanide stripping	
Copper	1.453	0.671
Cyanide (total)	0.220	0.033
Zinc	1.122	0.452
Ammonia (as N)	146.800	64.420

(e) *Refinery Wet Air Pollution Control.*

PSES FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of precious metals, including silver, produced in refinery	
Copper	1.220	0.610
Cyanide (total)	0.200	0.080
Zinc	1.020	0.420
Ammonia (as N)	133.300	58.600

(f) *Gold Solvent Extraction Raffinate and Wash Water.*

PSES FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of gold produced by solvent extraction process	
Copper	0.806	0.334
Cyanide (total)	0.126	0.051
Zinc	0.643	0.265
Ammonia (as N)	84.070	36.930

(g) *Gold Spent Electrolyte.*

PSES FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of gold produced by electrolytic refining	
Copper	0.011	0.005
Cyanide (total)	0.002	0.001
Zinc	0.009	0.004
Ammonia (as N)	1.160	0.510

(h) *Gold Precipitation and Filtration.*

PSES FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of gold precipitated	
Copper	5.632	2.684
Cyanide (total)	0.880	0.352
Zinc	4.488	1.848
Ammonia (as N)	583.800	257.700

(i) *Platinum Precipitation and Filtration.*

PSES FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of platinum precipitated	
Copper	6.656	3.172
Cyanide (total)	1.040	0.416
Zinc	5.304	2.184
Ammonia (as N)	693.900	304.500

(j) *Palladium Precipitation and Filtration.*

PSES FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of palladium precipitated	
Copper	4.480	2.135
Cyanide (total)	0.700	0.280
Zinc	3.570	1.470
Ammonia (as N)	467.000	205.000

(k) *Other Platinum Group Metals Precipitation and Filtration.*

PSES FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of other platinum group metals precipitated	
Copper	6.656	3.172
Cyanide (total)	1.040	0.416
Zinc	5.304	2.184
Ammonia (as N)	693.900	304.500

(l) *Spent Solutions from PGC Salt Production.*

PSES FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of gold contained in PGC product	
Copper	1.152	0.549
Cyanide (total)	0.180	0.072
Zinc	0.918	0.378
Ammonia (as N)	120.100	52.700

(m) *Equipment and Floor Wash.*

PSES FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of precious metals, including silver, produced in refinery	
Copper	0.000	0.000
Cyanide (total)	0.000	0.000
Zinc	0.000	0.000
Ammonia (as N)	0.000	0.000

§ 421.266 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 precious metals process wastewater introduced into a POTW shall not exceed the following values:

(a) *Furnace Wet Air Pollution Control.*

PSNS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of precious metals, including silver, routed through furnace	
Copper	0.000	0.000
Cyanide (total)	0.000	0.000
Zinc	0.000	0.000
Ammonia (as N)	0.000	0.000

(b) *Raw Material Granulation.*

PSNS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of precious metals contained in the raw material which is granulated	
Copper	0.000	0.000
Cyanide (total)	0.000	0.000
Zinc	0.000	0.000
Ammonia (as N)	0.000	0.000

(c) *Spent Plating Solutions.*

PSNS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/liter of spent plating solution used as a raw material	
Copper	1.280	0.610
Cyanide (total)	0.200	0.080
Zinc	1.020	0.420
Ammonia (as N)	133.300	58.600

(d) *Spent Cyanide Stripping Solutions.*

PSNS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of precious metals produced by cyanide stripping	
Copper	1.408	0.671
Cyanide (total)	0.220	0.088
Zinc	1.122	0.462
Ammonia (as N)	146.600	64.420

(e) *Refinery Wet Air Pollution Control.*

PSNS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of precious metals, including silver, produced in refinery	
Copper	1.280	0.610
Cyanide (total)	0.200	0.080
Zinc	1.020	0.420
Ammonia (as N)	133.300	58.600

(f) *Gold Solvent Extraction Raffinate and Wash Water.*

PSNS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of gold produced by solvent extraction process	
Copper	0.806	0.384
Cyanide (total)	0.126	0.051
Zinc	0.643	0.265
Ammonia (as N)	84.070	36.890

(g) *Gold Spent Electrolyte.*

PSNS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of gold produced by electrolytic refining	
Copper	0.011	0.005
Cyanide (total)	0.002	0.001
Zinc	0.009	0.004
Ammonia (as N)	1.160	0.510

(h) *Gold Precipitation and Filtration.*

PSNS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of gold precipitated	
Copper	5.632	2.684
Cyanide (total)	0.880	0.352
Zinc	4.488	1.848
Ammonia (as N)	583.800	257.700

(i) *Platinum Precipitation and Filtration.*

PSNS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of platinum precipitated	
Copper	6.656	3.172
Cyanide (total)	1.040	0.416
Zinc	5.304	2.184
Ammonia (as N)	693.900	304.500

(j) *Palladium Precipitation and Filtration.*

PSNS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of palladium precipitated	
Copper	4.480	2.135
Cyanide (total)	0.700	0.280
Zinc	3.570	1.470
Ammonia (as N)	467.000	205.000

(k) *Other Platinum Group Metals Precipitation and Filtration.*

PSNS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of other platinum group metals precipitated	
Copper	6.656	3.172
Cyanide (total)	1.040	0.416
Zinc	5.304	2.184
Ammonia (as N)	693.900	304.500

(l) *Spent Solutions from PGC Salt Production.*

PSNS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of gold contained in PGC product	
Copper	1.152	0.543
Cyanide (total)	0.180	0.072
Zinc	0.918	0.378
Ammonia (as N)	120.100	52.700

(m) *Equipment and Floor Wash.*

PSNS FOR THE SECONDARY PRECIOUS METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/troy ounce of precious metals, including silver, produced in refinery	
Copper	0.000	0.000
Cyanide (total)	0.000	0.000
Zinc	0.000	0.000
Ammonia (as N)	0.000	0.000

§ 421.267 [Reserved]

Subpart AA—Primary Rare Earth Metals Subcategory

§ 421.270 Applicability: Description of the primary rare earth metals subcategory.

The provisions of this subpart are applicable to discharges resulting from the production of rare earth metals and mischmetal by primary rare earth metals facilities processing rare earth metal oxides, chlorides, and fluorides.

§ 421.271 Specialized definitions.

In addition to what is provided below:

(a) The general definitions, abbreviations, and methods of analysis set forth in 40 CFR Part 401 shall apply to this subpart.

(b) The term "rare earth metals" refers to the elements scandium, yttrium, and lanthanum to lutetium, inclusive.

(c) The term "mischmetal" refers to a rare earth metal alloy comprised of the natural mixture of rare earths to about 94–99 percent. The balance of the alloy includes traces of other elements and one to two percent iron.

§ 421.272 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) *Dehydration Furnace Quench and Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE PRIMARY RARE EARTH METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mischmetal produced from wet rare earth chlorides	
Chromium (total)	6.512	2.664
Lead	6.216	2.960
Nickel	28.420	18.800
Total suspended solids	608.800	288.600
pH	(¹)	(¹)

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

(b) *Electrolytic Reduction Cell Quench.*

BPT LIMITATIONS FOR THE PRIMARY RARE EARTH METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mischmetal produced	
Chromium (total)	7.216	2.952
Lead	6.833	3.220
Nickel	31.430	20.830
Total suspended solids	672.400	319.000
pH	(¹)	(¹)

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

(c) *Electrolytic Reduction Cell Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE PRIMARY RARE EARTH METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mischmetal produced	
Chromium (total)	0.000	0.000
Lead	0.000	0.000
Nickel	0.000	0.000
Total suspended solids	0.000	0.000
pH	(¹)	(¹)

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

§ 421.273 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) *Dehydration Furnace Quench and Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE PRIMARY RARE EARTH METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mischmetal produced from wet rare earth chlorides	
Hexachlorobenzene	0.015	0.015
Chromium (total)	0.548	0.222
Lead	0.414	0.192
Nickel	0.814	0.548

(b) *Electrolytic Reduction Cell Quench.*

BAT LIMITATIONS FOR THE PRIMARY RARE EARTH METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mischmetal produced	
Hexachlorobenzene	0.016	0.016
Chromium (total)	0.607	0.246
Lead	0.459	0.213
Nickel	0.902	0.607

(c) *Electrolytic Reduction Cell Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE PRIMARY RARE EARTH METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mischmetal produced	
Hexachlorobenzene	0.000	0.000
Chromium (total)	0.000	0.000
Lead	0.000	0.000
Nickel	0.000	0.000

§ 421.274 Standards of performance for new sources.

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

(a) *Dehydration Furnace Quench and Wet Air Pollution Control.*

NSPS FOR THE PRIMARY RARE EARTH METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mischmetal produced from wet rare earth chlorides	
Hexachlorobenzene	0.015	0.015
Chromium (total)	0.548	0.222
Lead	0.414	0.192
Nickel	0.814	0.548
Total suspended solids	22.200	17.760
pH	(1)	(1)

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

(b) *Electrolytic Reduction Cell Quench.*

NSPS FOR THE PRIMARY RARE EARTH METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mischmetal produced	
Hexachlorobenzene	0.016	0.016
Chromium (total)	0.607	0.246
Lead	0.459	0.213
Nickel	0.902	0.607
Total suspended solids	24.600	19.680
pH	(1)	(1)

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

(c) *Electrolytic Reduction Cell Wet Air Pollution Control.*

NSPS FOR THE PRIMARY RARE EARTH METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mischmetal produced	
Hexachlorobenzene	0.000	0.000
Chromium (total)	0.000	0.000
Lead	0.000	0.000
Nickel	0.000	0.000
Total suspended solids	0.000	0.000
pH	(1)	(1)

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

§ 421.275 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 rare earth metals process wastewater introduced into a POTW must not exceed the following values:

(a) *Dehydration Furnace Quench and Wet Air Pollution Control.*

PSES FOR THE PRIMARY RARE EARTH METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mischmetal produced from wet rare earth chlorides	
Hexachlorobenzene	0.015	0.015
Chromium (total)	0.548	0.222
Lead	0.414	0.192
Nickel	0.814	0.548

(b) *Electrolytic Reduction Cell Quench.*

PSES FOR THE PRIMARY RARE EARTH METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mischmetal produced	
Hexachlorobenzene	0.016	0.016
Chromium (total)	0.607	0.246
Lead	0.459	0.213
Nickel	0.902	0.607

(c) *Electrolytic Reduction Cell Wet Air Pollution Control.*

PSES FOR THE PRIMARY RARE EARTH METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mischmetal produced	
Hexachlorobenzene	0.000	0.000
Chromium (total)	0.000	0.000
Lead	0.000	0.000
Nickel	0.000	0.000

§ 421.276 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 rare earth metals process wastewater introduced into a POTW shall not exceed the following values:

(a) *Dehydration Furnace Quench and Wet Air Pollution Control.*

PSNS FOR THE PRIMARY RARE EARTH METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mischmetal produced from wet rare earth chlorides	
Hexachlorobenzene	0.015	0.015
Chromium (total)	0.548	0.222
Lead	0.414	0.192
Nickel	0.814	0.543

(b) *Electrolytic Reduction Cell Quench.*

PSNS FOR THE PRIMARY RARE EARTH METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mischmetal produced	
Hexachlorobenzene	0.018	0.018
Chromium (total)	0.607	0.246
Lead	0.459	0.213
Nickel	0.902	0.607

(c) *Electrolytic Reduction Cell Wet Air Pollution Control.*

PSNS FOR THE PRIMARY RARE EARTH METALS SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of mischmetal produced	
Hexachlorobenzene	0.000	0.000
Chromium (total)	0.000	0.000
Lead	0.000	0.000
Nickel	0.000	0.000

§ 421.277 [Reserved]

Subpart AB—Secondary Tantalum Subcategory

§ 421.280 Applicability: Description of the secondary tantalum subcategory.

The provisions of this subpart are applicable to discharges resulting from the production of tantalum at secondary tantalum facilities.

§ 421.281 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.

§ 421.282 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) *Tantalum Alloy Leach and Rinse.*

BPT LIMITATIONS FOR THE SECONDARY TANTALUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tantalum powder produced	
Copper	433.200	230.000
Lead	89.850	49.120
Nickel	442.800	292.900
Zinc	338.700	140.700
Total suspended solids	8,455.000	4,407.000
pH	(¹)	(¹)

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

(b) *Capacitor Leach and Rinse.*

BPT LIMITATIONS FOR THE SECONDARY TANTALUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tantalum powder produced from leaching	
Copper	39.330	20.200
Lead	8.484	4.040
Nickel	38.760	25.630
Zinc	29.490	12.330
Total suspended solids	808.200	333.900
pH	(¹)	(¹)

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

(c) *Tantalum Sludge Leach and Rinse.*

BPT LIMITATIONS FOR THE SECONDARY TANTALUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tantalum powder produced	
Copper	390.100	205.300
Lead	89.230	41.080
Nickel	394.200	260.800
Zinc	259.800	125.000
Total suspended solids	8,418.000	4,004.000
pH	(¹)	(¹)

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

(d) *Tantalum Powder Acid Wash and Rinse.*

BPT LIMITATIONS FOR THE SECONDARY TANTALUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tantalum powder produced	
Copper	0.665	0.350
Lead	0.147	0.070
Nickel	0.672	0.445
Zinc	0.511	0.214
Total suspended solids	14.350	6.825
pH	(¹)	(¹)

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

(e) *Leaching Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE SECONDARY TANTALUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of equivalent pure tantalum powder produced	
Copper	9.272	4.880
Lead	2.050	0.976
Nickel	9.370	6.198
Zinc	7.125	2.977
Total suspended solids	200.100	95.160
pH	(¹)	(¹)

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

§ 421.283 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) *Tantalum Alloy Leach and Rinse.*

BAT LIMITATIONS FOR THE SECONDARY TANTALUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tantalum powder produced	
Copper	235.200	140.700
Lead	64.570	29.930
Nickel	126.900	85.320
Zinc	235.200	96.850

(b) *Capacitor Leach and Rinse.*

BAT LIMITATIONS FOR THE SECONDARY TANTALUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tantalum powder produced from leaching	
Copper	25.860	12.320
Lead	5.656	2.628
Nickel	11.110	7.474
Zinc	20.610	8.484

(c) *Tantalum Sludge Leach and Rinse.*

BAT LIMITATIONS FOR THE SECONDARY TANTALUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of equivalent pure tantalum powder produced	
Copper	262.800	125.300
Lead	57.490	26.690
Nickel	112.900	75.960
Zinc	209.400	86.230

(d) *Tantalum Powder Acid Wash and Rinse.*

BAT LIMITATIONS FOR THE SECONDARY TANTALUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tantalum powder produced	
Copper	0.448	0.214
Lead	0.098	0.046
Nickel	0.193	0.130
Zinc	0.357	0.147

(e) *Leaching Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE SECONDARY TANTALUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of equivalent pure tantalum powder produced	
Copper	6.247	2.977
Lead	1.367	0.634
Nickel	2.684	1.806
Zinc	4.978	2.050

§ 421.284 Standards of performance for new sources.

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

(a) *Tantalum Alloy Leach and Rinse.*

NSPS FOR THE SECONDARY TANTALUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tantalum powder produced	
Copper	295.200	140.700
Lead	64.570	29.980
Nickel	126.900	85.320
Zinc	235.200	96.850
Total suspended solids	3,459.000	2,767.000
pH	(1)	(1)

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

(b) *Capacitor Leach and Rinse.*

NSPS FOR THE SECONDARY TANTALUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tantalum powder produced from leaching	
Copper	25.860	12.320
Lead	5.656	2.626
Nickel	11.110	7.474
Zinc	20.610	8.484
Total suspended solids	303.000	242.400
pH	(1)	(1)

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

(c) *Tantalum Sludge Leach and Rinse.*

NSPS FOR THE SECONDARY TANTALUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of equivalent pure tantalum powder produced	
Copper	262.800	125.300
Lead	57.490	26.690
Nickel	112.900	75.960
Zinc	209.400	86.230
Total suspended solids	3,080.000	2,464.000
pH	(1)	(1)

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

(d) *Tantalum Powder Acid Wash and Rinse.*

NSPS FOR THE SECONDARY TANTALUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tantalum powder produced	
Copper	0.448	0.214
Lead	0.098	0.046
Nickel	0.193	0.130
Zinc	0.357	0.147
Total suspended solids	5.250	4.200
pH	(1)	(1)

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

(e) *Leaching Wet Air Pollution Control.*

NSPS FOR THE SECONDARY TANTALUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of equivalent pure tantalum powder produced	
Copper	6.247	2.977
Lead	1.367	0.634
Nickel	2.684	1.806
Zinc	4.978	2.050
Total suspended solids	73.200	58.560
pH	(1)	(1)

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

§ 412.285 [Reserved]

§ 421.286 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 tantalum process wastewater introduced into a POTW shall not exceed the following values:

(a) *Tantalum Alloy Leach and Rinse.*

PSNS FOR THE SECONDARY TANTALUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tantalum powder produced	
Copper	295.200	140.700
Lead	64.570	29.980
Nickel	126.900	85.320
Zinc	235.200	96.850

(b) *Capacitor Leach and Rinse.*

PSNS FOR THE SECONDARY TANTALUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tantalum powder produced from leaching	
Copper	25.860	12.320
Lead	5.656	2.626
Nickel	11.110	7.474
Zinc	20.610	8.484

(c) *Tantalum Sludge Leach and Rinse.*

PSNS FOR THE SECONDARY TANTALUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of equivalent pure tantalum powder produced	
Copper	262.800	125.300
Lead	57.490	26.690
Nickel	112.900	75.960
Zinc	209.400	86.230

(d) *Tantalum Powder Acid Wash and Rinse.*

PSNS FOR THE SECONDARY TANTALUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tantalum powder produced	
Copper	0.448	0.214
Lead	0.098	0.046
Nickel	0.193	0.130
Zinc	0.357	0.147

(e) *Leaching Wet Air Pollution Control.*

PSNS FOR THE SECONDARY TANTALUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of equivalent pure tantalum powder produced	
Copper	6.247	2.977
Lead	1.367	0.634
Nickel	2.684	1.806
Zinc	4.978	2.050

§ 421.287 [Reserved]

Subpart AC—Primary and Secondary Tin Subcategory

§ 421.290 Applicability: Description of the primary and secondary tin subcategory.

The provisions of this subpart are applicable to discharges resulting from the production of tin at primary and secondary tin facilities.

§ 421.291 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.

§ 421.292 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) *Smelter Scrubber.*

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tin metal produced	
Antimony	62.180	27.740
Lead	9.102	4.334
Nickel	41.610	27.520
Cyanide (total)	6.225	2.601
Ammonia (as N)	1,832.000	1,260.00
Fluoride	759.500	433.400
Tin	109.600	43.780
Total suspended solids	803.500	422.600
pH	(¹)	(¹)

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

(b) *Dealuminizing Rinse.*

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of dealuminized scrap produced	
Antimony	0.101	0.045
Lead	0.015	0.007
Nickel	0.097	0.044
Cyanide (total)	0.010	0.004
Ammonia (as N)	4.670	2.059
Fluoride	1.225	0.700
Tin	0.172	0.071
Total suspended solids	1.435	0.683
pH	(¹)	(¹)

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

(c) *Tin Hydroxide Wash.*

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tin hydroxide washed	
Antimony	34.310	15.300
Lead	5.000	2.331
Nickel	22.850	15.180
Cyanide (total)	3.497	1.435
Ammonia (as N)	1,535.000	700.000
Fluoride	418.400	233.100
Tin	53.810	24.150
Total suspended solids	490.100	233.100
pH	(¹)	(¹)

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

(d) *Spent Electrowinning Solution from New Scrap.*

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of electrolytic tin produced	
Antimony	43.220	21.510
Lead	7.056	3.360
Nickel	32.260	21.340
Cyanide (total)	4.872	2.016
Ammonia (as N)	2,242.000	983.800
Fluoride	593.000	336.000
Tin	82.660	33.940
Total suspended solids	633.800	327.600
pH	(¹)	(¹)

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

(e) *Spent Electrowinning Solution from Municipal Solid Waste.*

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of dealuminized MSW scrap processed	
Antimony	0.342	0.152
Lead	0.050	0.024
Nickel	0.223	0.151
Cyanide (total)	0.035	0.014
Ammonia (as N)	15.830	6.970
Fluoride	4.165	2.330
Tin	0.535	0.240
Total suspended solids	4.879	2.321
pH	(¹)	(¹)

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

(f) *Tin Mud Acid Neutralization Filtrate.*

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of neutralized dewatered tin mud produced	
Antimony	14.430	6.490
Lead	2.120	1.010
Nickel	9.630	6.410
Cyanide (total)	1.454	0.606
Ammonia (as N)	673.500	295.600
Fluoride	176.700	101.000
Tin	24.830	10.200
Total suspended solids	206.900	93.420
pH	(¹)	(¹)

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

(g) *Tin Hydroxide Supernatant from Scrap.*

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tin metal produced	
Antimony	159.700	71.220
Lead	23.370	11.130
Nickel	106.800	70.660
Cyanide (total)	16.140	6.677
Ammonia (as N)	7,427.000	3,259.000
Fluoride	1,948.000	1,113.000
Tin	273.800	112.400
Total suspended solids	2,281.000	1,085.000
pH	(1)	(1)

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

(h) *Tin Hydroxide Supernatant from Spent Plating Solutions.*

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tin metal produced	
Antimony	109.000	48.610
Lead	15.950	7.596
Nickel	72.920	48.230
Cyanide (total)	11.020	4.558
Ammonia (as N)	5,067.000	2,223.000
Fluoride	1,329.000	759.600
Tin	186.900	76.720
Total suspended solids	1,557.000	740.600
pH	(1)	(1)

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

(i) *Tin Hydroxide Supernatant from Sludge Solids.*

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tin metal produced	
Antimony	477.500	213.000
Lead	69.870	33.270
Nickel	319.400	211.300
Cyanide (total)	48.250	19.970
Ammonia (as N)	22,200.000	9,743.000
Fluoride	5,823.000	3,327.000
Tin	818.500	336.100
Total suspended solids	6,821.000	3,244.000
pH	(1)	(1)

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

(j) *Tin Hydroxide Filtrate.*

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tin metal produced	
Antimony	71.880	32.060
Lead	10.520	5.009

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Nickel	48.090	31.810
Cyanide (total)	7.263	3.005
Ammonia (as N)	3,342.000	1,467.000
Fluoride	876.600	500.900
Tin	123.200	50.590
Total suspended solids	1,027.000	488.400
pH	(1)	(1)

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

§ 421.293 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) *Smelter Scrubber.*

BAT LIMITATIONS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tin metal produced	
Antimony	41.830	18.640
Lead	6.068	2.817
Nickel	11.920	8.018
Cyanide (total)	4.334	1.734
Ammonia (as N)	2,892.000	1,269.000
Fluoride	758.500	433.400
Tin	71.420	29.330

(b) *Dealuminizing Rinse.*

BAT LIMITATIONS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of dealuminized scrap produced	
Antimony	0.068	0.030
Lead	0.010	0.005
Nickel	0.019	0.013
Cyanide (total)	0.007	0.003
Ammonia (as N)	4.670	2.050
Fluoride	1.225	0.700
Tin	0.120	0.050

(c) *Tin Hydroxide Wash.*

BAT LIMITATIONS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tin hydroxide washed	
Antimony	23.070	10.280
Lead	3.347	1.554
Nickel	6.574	4.423
Cyanide (total)	2.391	0.957
Ammonia (as N)	1,595.000	700.000
Fluoride	418.400	239.100
Tin	39.400	16.180

(d) *Spent Electrowinning Solution from New Scrap.*

BAT LIMITATIONS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of electrolytic tin produced	
Antimony	32.430	14.450
Lead	4.704	2.184
Nickel	9.240	6.210
Cyanide (total)	3.360	1.344
Ammonia (as N)	2,242.000	983.600
Fluoride	588.000	336.000
Tin	55.380	22.740

(e) *Spent Electrowinning Solution from Municipal Solid Waste.*

BAT LIMITATIONS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of dealuminized MSW scrap processed	
Antimony	0.230	0.102
Lead	0.033	0.016
Nickel	0.065	0.044
Cyanide (total)	0.024	0.009
Ammonia (as N)	15.880	6.970
Fluoride	4.165	2.380
Tin	0.390	0.160

(f) *Tin Mud Acid Neutralization Filtrate.*

BAT LIMITATIONS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of neutralized dewatered tin mud produced	
Antimony	9.741	4.341
Lead	1.413	0.656
Nickel	2.776	1.860
Cyanide (total)	1.010	0.404
Ammonia (as N)	673.500	295.600
Fluoride	176.700	101.000
Tin	16.640	6.830

(g) *Tin Hydroxide Supernatant from Scrap.*

BAT LIMITATIONS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tin metal produced	
Antimony	107.400	47.850
Lead	15.580	7.233
Nickel	30.600	20.550
Cyanide (total)	11.130	4.451
Ammonia (as N)	7,427.000	3,259.000
Fluoride	1,948.000	1,113.000
Tin	183.500	75.310

(h) *Tin Hydroxide Supernatant from Spent Plating Solutions.*

BAT LIMITATIONS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tin metal produced	
Antimony	73.300	32.660
Lead	10.640	4.937
Nickel	20.630	14.050
Cyanide (total)	7.600	3.039
Ammonia (as N)	5,067.000	2,223.000
Fluoride	1,329.000	759.600
Tin	125.200	51.400

(i) *Tin Hydroxide Supernatant from Sludge Solids.*

BAT LIMITATIONS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tin metal produced	
Antimony	321.100	143.100
Lead	46.580	21.630
Nickel	91.500	61.560
Cyanide (total)	33.260	13.310
Ammonia (as N)	22,200.000	9,743.000
Fluoride	5,823.000	3,327.000
Tin	548.400	225.190

(j) *Tin Hydroxide Filtrate.*

BAT LIMITATIONS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tin metal produced	
Antimony	48.340	21.540
Lead	7.013	3.256
Nickel	13.780	9.266
Cyanide (total)	5.009	2.003
Ammonia (as N)	3,342.000	1,467.000
Fluoride	876.600	500.900

BAT LIMITATIONS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Tin	82.540	33.900

§ 421.294 Standards of performance for new sources.

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

(a) *Smelter Scrubber.*

NSPS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tin metal produced	
Antimony	41.000	18.040
Lead	6.000	2.617
Nickel	11.920	8.018
Cyanide (total)	4.334	1.734
Ammonia (as N)	2,002.000	1,003.000
Fluoride	758.500	433.400
Tin	71.400	29.390
Total suspended solids	325.100	260.100
pH	(¹)	(¹)

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

(b) *Dealuminizing Rinse.*

NSPS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of dealuminized scrap produced	
Antimony	0.023	0.009
Lead	0.010	0.005
Nickel	0.019	0.013
Cyanide (total)	0.007	0.003
Ammonia (as N)	4.670	2.050
Fluoride	1.225	0.700
Tin	0.120	0.050
Total suspended solids	0.525	0.420
pH	(¹)	(¹)

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

(c) *Tin Hydroxide Wash.*

NSPS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tin hydroxide washed	
Antimony	23.070	10.280
Lead	3.347	1.554
Nickel	6.574	4.423
Cyanide (total)	2.391	0.957
Ammonia (as N)	1,595.000	700.000
Fluoride	418.400	239.100
Tin	39.400	16.160
Total suspended solids	179.300	143.500

NSPS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY—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) *Spent Electrowinning Solution from New Scrap.*

NSPS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of electrolytic tin produced	
Antimony	32.430	14.450
Lead	4.704	2.184
Nickel	9.240	6.216
Cyanide (total)	3.360	1.344
Ammonia (as N)	2,242.000	983.800
Fluoride	588.000	336.000
Tin	55.330	22.740
Total suspended solids	252.000	201.600
pH	(¹)	(¹)

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

(e) *Spent Electrowinning Solution from Municipal Solid Waste.*

NSPS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of dealuminized MSW scrap processed	
Antimony	0.230	0.102
Lead	0.033	0.015
Nickel	0.065	0.044
Cyanide (total)	0.024	0.009
Ammonia (as N)	15.820	6.970
Fluoride	4.165	2.380
Tin	0.390	0.160
Total suspended solids	1.785	1.428
pH	(¹)	(¹)

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

(f) *Tin Mud Acid Neutralization Filtrate.*

NSPS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of neutralized dewatered tin mud produced	
Antimony	9.741	4.341
Lead	1.413	0.656
Nickel	2.776	1.833
Cyanide (total)	1.010	0.404
Ammonia (as N)	673.500	295.600
Fluoride	176.700	101.000
Tin	16.640	6.830
Total suspended solids	75.710	60.570
pH	(¹)	(¹)

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

(g) *Tin Hydroxide Supernatant from Scrap.*

NSPS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tin metal produced	
Antimony	107.400	47.850
Lead	15.580	7.233
Nickel	30.600	20.590
Cyanide (total)	11.130	4.451
Ammonia (as N)	7,427.000	3,259.000
Fluoride	1,948.000	1,113.000
Tin	183.500	75.310
Total suspended solids	834.600	667.700
pH	(1)	(1)

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

(h) *Tin Hydroxide Supernatant from Spent Plating Solutions.*

NSPS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tin metal produced	
Antimony	73.300	32.660
Lead	10.640	4.937
Nickel	20.890	14.050
Cyanide (total)	7.600	3.039
Ammonia (as N)	5,067.000	2,223.000
Fluoride	1,329.000	759.600
Tin	125.200	51.400
Total suspended solids	569.700	455.800
pH	(1)	(1)

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

(i) *Tin Hydroxide Supernatant from Sludge Solids.*

NSPS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tin metal produced	
Antimony	321.100	143.100
Lead	46.580	21.630
Nickel	91.500	61.560
Cyanide (total)	33.280	13.310
Ammonia (as N)	22,200.000	9,743.000
Fluoride	5,823.000	3,327.000
Tin	548.400	225.190
Total suspended solids	2,496.000	1,997.000
pH	(1)	(1)

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

(j) *Tin Hydroxide Filtrate.*

NSPS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tin metal produced	
Antimony	48.340	21.540
Lead	7.013	3.256
Nickel	13.780	9.268
Cyanide (total)	5.009	2.003
Ammonia (as N)	3,342.000	1,467.000
Fluoride	876.600	500.900
Tin	82.540	33.900
Total suspended solids	375.700	300.500
pH	(1)	(1)

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

§ 421.295 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 and secondary tin process wastewater introduced into a POTW must not exceed the following values:

(a) *Smelter Scrubber.*

PSES FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tin metal produced	
Antimony	41.830	178.640
Lead	6.068	2.817
Nickel	11.920	8.018
Cyanide (total)	4.334	1.734
Ammonia (as N)	2,892.000	1,269.000
Fluoride	758.500	433.400
Tin	71.420	29.330

(b) *Dealuminizing Rinse.*

PSES FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of dealuminized scrap produced	
Antimony	0.068	0.030
Lead	0.010	0.005
Nickel	0.019	0.013
Cyanide (total)	0.007	0.003
Ammonia (as N)	4.670	2.050
Fluoride	1.225	0.700
Tin	0.120	0.050

(c) *Tin Hydroxide Wash.*

PSES FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tin hydroxide washed	
Antimony	23.070	10.280
Lead	3.347	1.654
Nickel	6.574	4.423
Cyanide (total)	2.391	0.957
Ammonia (as N)	1,595.000	700.000
Fluoride	418.400	239.100
Tin	39.400	16.180

(d) *Spent Electrowinning Solution from New Scrap.*

PSES FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of electrolytic tin produced	
Antimony	32.430	14.450
Lead	4.704	2.184
Nickel	9.240	6.216
Cyanide (total)	3.360	1.344
Ammonia (as N)	2,242.000	983.800
Fluoride	588.000	336.000
Tin	55.380	22.740

(e) *Spent Electrowinning Solution from Municipal Solid Waste.*

PSES FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of dealuminized MSW scrap processed	
Antimony	0.230	0.102
Lead	0.033	0.015
Nickel	0.065	0.044
Cyanide (total)	0.024	0.009
Ammonia (as N)	15.880	6.970
Fluoride	4.165	2.380
Tin	0.390	0.160

(f) *Tin Mud Acid Neutralization Filtrate*

PSES FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of neutralized dewatered tin mud produced	
Antimony	9.741	4.341
Lead	1.413	0.656
Nickel	2.770	1.868
Cyanide (total)	1.010	0.404
Ammonia (as N)	673.500	295.000
Fluoride	176.700	101.000
Tin	16.640	6.830

(g) *Tin Hydroxide Supernatant from Scrap.*

PSES FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tin metal produced	
Antimony	107.400	47.650
Lead	15.580	7.233
Nickel	30.600	20.590
Cyanide (total)	11.130	4.451
Ammonia (as N)	7,427.000	3,259.000
Fluoride	1,948.000	1,113.000
Tin	183.500	75.310

(h) *Tin Hydroxide Supernatant from Spent Plating Solutions.*

PSES FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tin metal produced	
Antimony	73.300	32.660
Lead	10.640	4.937
Nickel	20.890	14.050
Cyanide (total)	7.600	3.039
Ammonia (as N)	5,067.000	2,223.000
Fluoride	1,329.000	759.600
Tin	125.200	51.400

(i) *Tin Hydroxide Supernatant from Sludge Solids.*

PSES FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tin metal produced	
Antimony	321.100	143.100
Lead	46.580	21.630
Nickel	91.500	61.560
Cyanide (total)	33.280	13.310
Ammonia (as N)	22,200.000	9,743.000
Fluoride	5,823.000	3,327.000
Tin	548.400	225.190

(j) *Tin Hydroxide Filtrate.*

PSES FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tin metal produced	
Antimony	48.340	21.540
Lead	7.013	3.256
Nickel	13.780	9.266
Cyanide (total)	5.009	2.003
Ammonia (as N)	3,342.000	1,467.000
Fluoride	876.600	500.900

PSES FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Tin	82.540	33.930

§ 421.296 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 and secondary tin process wastewater introduced into a POTW shall not exceed the following values:

(a) *Smelter Scrubber.*

PSNS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum of any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tin metal produced	
Antimony	41.930	18.640
Lead	6.068	2.817
Nickel	11.920	8.018
Cyanide (total)	4.334	1.734
Ammonia (as N)	2,892.000	1,269.000
Fluoride	750.500	433.400
Tin	71.420	29.330

(b) *Dealuminizing Rinse.*

PSNS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum of any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of dealuminized scrap produced	
Antimony	0.023	0.009
Lead	0.010	0.005
Nickel	0.019	0.013
Cyanide (total)	0.007	0.003
Ammonia (as N)	4.670	2.050
Fluoride	1.225	0.700
Tin	0.120	0.059

(c) *Tin Hydroxide Wash.*

PSNS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum of any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tin hydroxide washed	
Antimony	23.070	10.280
Lead	3.347	1.554
Nickel	6.574	4.423
Cyanide (total)	2.391	0.957

PSNS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY—Continued

Pollutant or pollutant property	Maximum of any 1 day	Maximum for monthly average
Ammonia (as N)	1,595.000	700.000
Fluoride	418.400	239.100
Tin	33.400	15.180

(d) *Spent Electrowinning Solution From New Scrap.*

PSNS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum of any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of electrolytic tin produced	
Antimony	32.430	14.450
Lead	4.704	2.184
Nickel	9.240	6.216
Cyanide (total)	3.360	1.344
Ammonia (as N)	2,242.000	983.800
Fluoride	588.000	336.000
Tin	55.330	22.740

(e) *Spent Electrowinning Solution From Municipal Solid Waste.*

PSNS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum of any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of dealuminized MSW scrap processed	
Antimony	0.230	0.102
Lead	0.033	0.015
Nickel	0.065	0.044
Cyanide (total)	0.024	0.009
Ammonia (as N)	15.880	6.970
Fluoride	4.165	2.380
Tin	0.390	0.160

(f) *Tin Mud Acid Neutralization Filtrate.*

PSNS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum of any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of neutralized dewatered tin mud produced	
Antimony	9.741	4.341
Lead	1.413	0.656
Nickel	2.776	1.868
Cyanide (total)	1.010	0.404
Ammonia (as N)	673.500	295.600
Fluoride	176.700	101.000
Tin	16.640	6.830

(g) *Tin Hydroxide Supernatant From Scrap.*

PSNS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum of any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tin metal produced	
Antimony	107.400	47.850
Lead	15.580	7.233
Nickel	30.600	20.590
Cyanide (total)	11.130	4.451
Ammonia (as N)	7,427.000	3,259.000
Fluoride	1,948.000	1,113.000
Tin	183.500	75.310

(h) *Tin Hydroxide Supernatant From Spent Plating Solutions.*

PSNS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum of any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tin metal produced	
Antimony	73.300	32.660
Lead	10.640	4.937
Nickel	20.890	14.050
Cyanide (total)	7.600	3.039
Ammonia (as N)	5,067.000	2,223.000
Fluoride	1,329.000	759.600
Tin	125.200	51.400

(i) *Tin Hydroxide Supernatant From Sludge Solids.*

PSNS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum of any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tin metal produced	
Antimony	321.100	143.100
Lead	48.580	21.630
Nickel	91.500	61.560
Cyanide (total)	33.280	13.310
Ammonia (as N)	22,200.000	9,743.000
Fluoride	5,823.000	3,327.000
Tin	548.400	225.190

(j) *Tin Hydroxide Filtrate.*

PSNS FOR THE PRIMARY AND SECONDARY TIN SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tin metal produced	
Antimony	48.340	21.540
Lead	7.013	3.256
Nickel	13.780	9.268
Cyanide (total)	5.009	2.003
Ammonia (as N)	3,342.000	1,467.000
Fluoride	876.600	500.900
Tin	82.540	33.900

§ 421.297 [Reserved]

Subpart AD—Primary and Secondary Titanium Subcategory

§ 421.300 Applicability: description of the primary and secondary titanium subcategory.

(a) The provisions of this subpart are applicable to discharges resulting from the production of titanium at primary and secondary titanium facilities.

(b) There are two levels of BPT, BAT, NSPS, PSES, and PSNS provisions for this subpart. Level A is applicable to facilities which practice vacuum distillation for sponge purification and which do not practice electrolytic recovery of magnesium. Level B is applicable to all other primary and secondary titanium facilities.

§ 421.301 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.

§ 421.302 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) Level A.

(1) *Chlorination Off-Gas Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of $TiCl_4$ produced	
Chromium (total)	0.412	0.169
Lead	0.393	0.187
Nickel	1.797	1.189
Thallium	1.919	0.786
Fluoride	32.760	18.720
Titanium	0.412	0.169
Oil and Grease	18.720	11.230
Total suspended solids	38.380	18.250
pH	(¹)	(¹)

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

(2) *Chlorination Area—Vent Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of $TiCl_4$ produced	
Chromium (total)	0.458	0.187
Lead	0.437	0.208
Nickel	1.997	1.321
Thallium	2.132	0.874
Fluoride	36.400	20.800
Titanium	0.458	0.187
Oil and Grease	20.800	12.480
Total suspended solids	42.640	20.280
pH	(¹)	(¹)

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

(3) *$TiCl_4$ Handling Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of $TiCl_4$ produced	
Chromium (total)	0.082	0.034
Lead	0.079	0.037
Nickel	0.359	0.238
Thallium	0.383	0.157
Fluoride	6.545	3.740
Titanium	0.082	0.034
Oil and Grease	3.740	2.244
Total suspended solids	7.667	3.647
pH	(¹)	(¹)

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

(4) *Sponge Crushing and Screening Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium	2.847	1.165
Lead	2.718	1.294
Nickel	12.420	8.217
Thallium	13.270	5.435
Fluoride	226.500	129.400
Titanium	2.847	1.165
Oil and Grease	129.400	77.640
Total suspended solids	265.300	126.200
pH	(¹)	(¹)

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

(b) Level B.

(1) *Chlorination Off-Gas Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of $TiCl_4$ produced	
Chromium (total)	0.412	0.169
Lead	0.393	0.187

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Nickel	1.797	1.189
Thallium	1.919	0.786
Fluoride	32.760	18.720
Titanium	0.412	0.169
Oil and grease	18.720	11.230
Total suspended solids	38.380	18.250
pH	(1)	(1)

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

(2) *Chlorination Area-Vent Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of $TiCl_4$ produced	
Chromium (total)	0.453	0.187
Lead	0.437	0.203
Nickel	1.997	1.321
Thallium	2.132	0.874
Fluoride	36.400	20.600
Titanium	0.453	0.187
Oil and grease	20.800	12.480
Total suspended solids	42.640	20.280
pH	(1)	(1)

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

(3) *$TiCl_4$ Handling Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of $TiCl_4$ produced	
Chromium (total)	0.082	0.034
Lead	0.079	0.037
Nickel	0.359	0.238
Thallium	0.383	0.157
Fluoride	6.545	3.740
Titanium	0.082	0.034
Oil and grease	3.740	2.244
Total suspended solids	7.667	3.647
pH	(1)	(1)

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

(4) *Reduction Area Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	18.180	7.435
Lead	17.350	8.261
Nickel	79.300	52.460
Thallium	84.670	34.700
Fluoride	1,446.000	826.100
Titanium	18.180	7.435
Oil and grease	826.100	435.700
Total suspended solids	1,694.000	805.400
pH	(1)	(1)

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

(5) *Melt Cell Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	8.352	3.826
Lead	8.927	4.251
Nickel	40.810	29.930
Thallium	8.352	3.826
Fluoride	743.900	425.100
Titanium	87.140	35.920
Oil and grease	425.100	255.100
Total suspended solids	871.400	414.500
pH	(1)	(1)

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

(6) *Cathode Gas Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	2.705	1.107
Lead	2.592	1.230
Nickel	11.800	7.807
Thallium	12.000	5.164
Fluoride	215.200	123.000
Titanium	2.705	1.107
Oil and grease	123.000	73.770
Total suspended solids	252.000	119.900
pH	(1)	(1)

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

(7) *Chlorine Liquefaction Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	130.000	53.500
Lead	125.000	53.510
Nickel	571.300	377.900
Thallium	610.000	250.000
Fluoride	10,400.000	5,951.000
Titanium	130.000	53.550
Oil and Grease	5,351.000	3,571.000
Total suspended solids	12,000.000	5,000.000
pH	(1)	(1)

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

(8) *Sodium Reduction Container Reconditioning Wash.*

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	0.564	0.231
Lead	0.533	0.256
Nickel	2.452	1.623
Thallium	2.623	1.077
Fluoride	44.870	25.640
Titanium	0.564	0.231
Oil and Grease	25.640	15.330
Total suspended solids	52.560	25.000
pH	(1)	(1)

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

(9) *Chip Crushing Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	10.030	4.126
Lead	9.627	4.584
Nickel	44.010	29.110
Thallium	45.980	19.250
Fluoride	802.200	458.400
Titanium	10.030	4.126
Oil and Grease	459.400	275.100
Total suspended solids	939.800	447.000
pH	(1)	(1)

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

(10) *Acid Leachate and Rinse Water.*

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	5.210	2.131
Lead	4.973	2.363
Nickel	22.730	15.040
Thallium	24.270	9.945
Fluoride	414.400	236.800
Titanium	5.210	2.131
Oil and Grease	236.800	142.100
Total suspended solids	485.500	230.900
pH	(1)	(1)

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

(11) *Sponge Crushing and Screening Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	2.847	1.165
Lead	2.718	1.294
Nickel	12.420	8.217
Thallium	13.270	5.435
Fluoride	226.500	129.400
Titanium	2.847	1.165
Oil and Grease	129.400	77.640
Total suspended solids	265.300	126.200
pH	(1)	(1)

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

(12) *Acid Pickle and Wash Water.*

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium pickled	
Chromium (total)	0.027	0.011
Lead	0.026	0.012
Nickel	0.117	0.077
Thallium	0.125	0.051
Fluoride	2.135	1.220
Titanium	0.027	0.011
Oil and Grease	1.220	0.732
Total suspended solids	2.501	1.190
pH	(1)	(1)

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

(13) *Scrap Milling Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of scrap milled	
Chromium (total)	0.995	0.407
Lead	0.950	0.452
Nickel	4.341	2.871
Thallium	4.635	1.899
Fluoride	79.140	45.220
Titanium	0.995	0.407
Oil and Grease	45.220	27.130
Total suspended solids	92.700	44.090
pH	(1)	(1)

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

(14) *Scrap Detergent Wash Water.*

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of scrap washed	
Chromium (total)	7.948	3.252
Lead	7.587	3.613
Nickel	34.680	22.940
Thallium	37.030	15.180
Fluoride	632.300	361.300
Titanium	74.060	32.520

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Oil and Grease	361.300	216.800
Total suspended solids	740.600	352.300
pH	(1)	(1)

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

(15) *Casting Crucible Wash Water.*

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant of pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium cast	
Chromium (total)	0.210	0.086
Lead	0.200	0.095
Nickel	0.916	0.606
Thallium	0.978	0.401
Fluoride	16.700	9.540
Titanium	0.210	0.086
Oil and Grease	9.540	5.724
Total suspended solids	19.560	9.302
pH	(1)	(1)

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

(16) *Casting Contact Cooling Water.*

BPT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant of pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium cast	
Chromium (total)	321.100	131.400
Lead	306.500	146.000
Nickel	1,401.000	926.800
Thallium	1,496.000	613.000
Fluoride	25,540.000	14,600.000
Titanium	321.100	131.400
Oil and Grease	14,600.000	8,757.000
Total suspended solids	29,920.000	14,230.000
pH	(1)	(1)

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

§ 421.303 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) Level A.

(1) *Chlorination Off-Gas Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant of pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of $TiCl_4$ produced	
Chromium (total)	0.412	0.169
Lead	0.393	0.187
Nickel	1.797	1.189
Thallium	1.919	0.786
Fluoride	32.760	18.720
Titanium	0.412	0.169

(2) *Chlorination Area-Vent Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant of pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of $TiCl_4$ produced	
Chromium (total)	0.458	0.187
Lead	0.437	0.208
Nickel	1.997	1.321
Thallium	2.132	0.874
Fluoride	36.400	20.800
Titanium	0.458	0.187

(3) *$TiCl_4$ Handling Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant of pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of $TiCl_4$ produced	
Chromium (total)	0.082	0.034
Lead	0.079	0.037
Nickel	0.359	0.238
Thallium	0.383	0.157
Fluoride	6.545	3.740
Titanium	0.082	0.034

(4) *Sponge Crushing and Screening Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	0.285	0.117
Lead	0.272	0.129
Nickel	1.242	0.822
Thallium	1.327	0.544
Fluoride	22.650	12.940
Titanium	0.285	0.117

(b) Level B.

(1) *Chlorination Off-Gas Wet Air Pollution Control*

BAT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of $TiCl_4$ produced	
Chromium (total)	0.346	0.140
Lead	0.262	0.122
Nickel	0.515	0.346
Thallium	1.311	0.534
Fluoride	32.760	18.720
Titanium	0.346	0.140

(2) *Chlorination Area-Vent Wet Air Pollution Control*

BAT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of $TiCl_4$ produced	
Chromium (total)	0.385	0.156
Lead	0.291	0.135
Nickel	0.572	0.385
Thallium	1.456	0.593
Fluoride	36.400	20.800
Titanium	0.385	0.155

(3) *$TiCl_4$ Handling Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of $TiCl_4$ produced	
Chromium (total)	0.069	0.028
Lead	0.052	0.024
Nickel	0.103	0.069
Thallium	0.262	0.107
Fluoride	6.545	3.740
Titanium	0.069	0.028

(4) *Reduction Area Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	1.528	0.620
Lead	1.157	0.537
Nickel	2.272	1.528
Thallium	5.782	2.354
Fluoride	144.600	82.600
Titanium	1.528	0.620

(5) *Melt Cell Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	0.707	0.310
Lead	0.535	0.270
Nickel	1.170	0.707
Thallium	2.977	1.212
Fluoride	74.410	42.520
Titanium	0.707	0.310

(6) *Cathode Gas Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	0.223	0.092
Lead	0.172	0.080
Nickel	0.333	0.228
Thallium	0.851	0.351
Fluoride	21.530	12.300
Titanium	0.228	0.092

(7) *Chlorine Liquefaction Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	11.010	4.464
Lead	8.332	3.863
Nickel	16.370	11.010
Thallium	41.000	16.690
Fluoride	1,042.000	595.100
Titanium	11.010	4.454

(8) *Sodium Reduction Container Reconditioning Wash.*

BAT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	0.474	0.192
Lead	0.359	0.167
Nickel	0.705	0.474
Thallium	1.795	0.731
Fluoride	44.870	25.640
Titanium	0.474	0.192

(9) *Chip Crushing Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	0.843	0.344
Lead	0.642	0.298
Nickel	1.261	0.843
Thallium	3.209	1.306
Fluoride	80.220	45.840
Titanium	0.843	0.344

(10) *Acid Leachate and Rinse Water.*

BAT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	4.331	1.776
Lead	3.315	1.539
Nickel	6.512	4.331
Thallium	16.590	6.743
Fluoride	414.400	236.800
Titanium	4.331	1.776

(11) *Sponge Crushing and Screening Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	0.239	0.097
Lead	0.181	0.084
Nickel	0.356	0.239
Thallium	0.906	0.369
Fluoride	22.650	12.940
Titanium	0.233	0.097

(12) *Acid Pickle and Wash Water.*

BAT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium pickled	
Chromium (total)	0.023	0.009
Lead	0.017	0.008
Nickel	0.034	0.023
Thallium	0.035	0.035
Fluoride	2.135	1.220
Titanium	0.023	0.009

(13) *Scrap Milling Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of scrap milled	
Chromium (total)	0.084	0.034
Lead	0.064	0.030
Nickel	0.125	0.084
Thallium	0.318	0.129
Fluoride	7.945	4.540
Titanium	0.084	0.034

(14) *Scrap Detergent Wash Water.*

BAT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of scrap washed	
Chromium (total)	6.684	2.710
Lead	5.058	2.349
Nickel	9.935	6.684
Thallium	25.290	10.300
Fluoride	632.300	361.300
Titanium	6.684	2.710

(15) *Casting Crucible Wash Water.*

BAT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium cast	
Chromium (total)	0.177	0.072
Lead	0.134	0.062
Nickel	0.262	0.177
Thallium	0.668	0.272
Fluoride	16.700	9.540
Titanium	0.177	0.072

(16) *Casting Contact Cooling Water.*

BAT LIMITATIONS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium cast	
Chromium (total)	27.000	10.950
Lead	20.430	9.487
Nickel	40.140	27.000
Thallium	102.200	41.600
Fluoride	2,554.000	1,460.000
Titanium	27.000	10.950

§ 421.304 Standards of performance for new sources.

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

(a) **Level A.**

(1) *Chlorination Off-Gas Wet Air Pollution Control.*

NSPS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of $TiCl_4$ produced	
Chromium (total)	0.412	0.169
Lead	0.393	0.187
Nickel	1.797	1.189
Thallium	1.919	0.786
Fluoride	32.760	18.720
Titanium	0.412	0.169
Total suspended solids	38.380	18.250
Oil and Grease	18.720	11.230
pH	(1)	(1)

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

(2) *Chlorination Area-Vent Wet Air Pollution Control.*

NSPS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of $TiCl_4$ produced	
Chromium (total)	0.458	0.187
Lead	0.437	0.208
Nickel	1.997	1.321
Thallium	2.132	0.874
Fluoride	36.400	20.800
Titanium	0.458	0.187
Total suspended solids	42.640	20.280
Oil and Grease	20.800	12.280
pH	(1)	(1)

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

(3) *$TiCl_4$ Handling Wet Air Pollution Control.*

NSPS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of $TiCl_4$ produced	
Chromium (total)	0.082	0.034
Lead	0.079	0.037
Nickel	0.359	0.238
Thallium	0.383	0.157
Fluoride	6.545	3.740
Titanium	0.082	0.034
Total suspended solids	7.667	3.647
Oil and Grease	3.740	2.244
pH	(1)	(1)

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

(4) *Sponge Crushing and Screening Wet Air Pollution Control.*

NSPS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	0.000	0.000
Lead	0.000	0.000
Nickel	0.000	0.000

NSPS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Thallium	0.000	0.000
Fluoride	0.000	0.000
Titanium	0.000	0.000
Total suspended solids	0.000	0.000
Oil and Grease	0.000	0.000
pH	(1)	(1)

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

(b) **Level B.**

(1) *Chlorination Off-Gas Wet Air Pollution Control.*

NSPS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of $TiCl_4$ produced	
Chromium (total)	0.346	0.140
Lead	0.262	0.122
Nickel	0.515	0.346
Thallium	1.311	0.534
Fluoride	32.760	18.720
Titanium	0.346	0.140
Oil and Grease	9.360	9.360
Total suspended solids	14.040	11.230
pH	(1)	(1)

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

(2) *Chlorination Area-Vent Wet Air Pollution Control.*

NSPS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of $TiCl_4$ produced	
Chromium (total)	0.385	0.156
Lead	0.291	0.135
Nickel	0.572	0.385
Thallium	1.456	0.593
Fluoride	36.400	20.800
Titanium	0.385	0.156
Oil and Grease	10.400	10.400
Total suspended solids	15.600	12.480
pH	(1)	(1)

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

(3) *$TiCl_4$ Handling Wet Air Pollution Control.*

NSPS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of $TiCl_4$ produced	
Chromium (total)	0.069	0.028
Lead	0.052	0.024
Nickel	0.103	0.069
Thallium	0.262	0.107
Fluoride	6.545	3.740
Titanium	0.069	0.028
Oil and Grease	1.870	1.870
Total suspended solids	2.805	2.244

NSPS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY—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.

(4) *Reduction Area Wet Air Pollution Control.*

NSPS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	1.528	0.620
Lead	1.157	0.537
Nickel	2.272	1.528
Thallium	5.782	2.354
Fluoride	144.600	82.600
Titanium	1.528	0.620
Oil and Grease	41.300	41.300
Total suspended solids	61.950	49.560
pH	(¹)	(¹)

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

(5) *Melt Cell Wet Air Pollution Control.*

NSPS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	0.787	0.319
Lead	0.595	0.276
Nickel	1.170	0.787
Thallium	2.977	1.212
Fluoride	74.410	42.520
Titanium	0.787	0.319
Oil and Grease	21.260	21.260
Total suspended solids	31.890	25.510
pH	(¹)	(¹)

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

(6) *Cathode Gas Wet Air Pollution Control.*

NSPS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	0.228	0.092
Lead	0.172	0.080
Nickel	0.338	0.228
Thallium	0.861	0.351
Fluoride	21.530	12.300
Titanium	0.228	0.092
Oil and Grease	6.150	6.150
Total suspended solids	9.225	7.380
pH	(¹)	(¹)

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

(7) *Chlorine Liquefaction Wet Air Pollution Control.*

NSPS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	0.000	0.000
Lead	0.000	0.000
Nickel	0.000	0.000
Thallium	0.000	0.000
Fluoride	0.000	0.000
Titanium	0.000	0.000
Oil and grease	0.000	0.000
Total suspended solids	0.000	0.000
pH	(¹)	(¹)

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

(8) *Sodium Reduction Container Reconditioning Wash.*

NSPS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	0.474	0.192
Lead	0.359	0.167
Nickel	0.705	0.474
Thallium	1.795	0.731
Fluoride	44.870	25.640
Titanium	0.474	0.192
Oil and grease	12.820	12.820
Total suspended solids	19.230	15.380
pH	(¹)	(¹)

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

(9) *Chip Crushing Wet Air Pollution Control.*

NSPS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	0.000	0.000
Lead	0.000	0.000
Nickel	0.000	0.000
Thallium	0.000	0.000
Fluoride	0.000	0.000
Titanium	0.000	0.000
Oil and grease	0.000	0.000
Total suspended solids	0.000	0.000
pH	(¹)	(¹)

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

(10) *Acid Leachate and Rinse Water.*

NSPS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	4.331	1.776
Lead	3.315	1.538
Nickel	6.512	4.331
Thallium	16.390	6.743
Fluoride	414.400	236.800
Titanium	4.331	1.776
Oil and grease	118.400	118.400
Total suspended solids	177.600	142.100
pH	(¹)	(¹)

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

(11) *Sponge Crushing and Screening Wet Air Pollution Control.*

NSPS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	0.000	0.000
Lead	0.000	0.000
Nickel	0.000	0.000
Thallium	0.000	0.000
Fluoride	0.000	0.000
Titanium	0.000	0.000
Oil and grease	0.000	0.000
Total suspended solids	0.000	0.000
pH	(¹)	(¹)

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

(12) *Acid Pickle and Wash Water.*

NSPS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium pickled	
Chromium (total)	0.023	0.009
Lead	0.017	0.008
Nickel	0.034	0.023
Thallium	0.035	0.035
Fluoride	2.135	1.220
Titanium	0.023	0.009
Oil and grease	0.610	0.610
Total suspended solids	0.915	0.732
pH	(¹)	(¹)

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

(13) *Scrap Milling Wet Air Pollution Control.*

NSPS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pound per million pounds) of scrap milled	
Chromium (total)	0.000	0.000
Lead	0.000	0.000
Nickel	0.000	0.000
Thallium	0.000	0.000

NSPS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Fluoride	0.000	0.000
Titanium	0.000	0.000
Oil and Grease	0.000	0.000
Total suspended solids	0.000	0.000
pH	(1)	(1)

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

(14) *Scrap Detergent Wash Water.*

NSPS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pound per million pounds) of scrap washed	
Chromium (total)	6.684	2.710
Lead	5.058	2.349
Nickel	9.935	6.684
Thallium	25.290	10.300
Fluoride	632.300	361.300
Titanium	6.684	2.710
Oil and Grease	180.700	180.700
Total suspended solids	271.000	216.800
pH	(1)	(1)

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

(15) *Casting Crucible Wash Water.*

NSPS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pound per million pounds) of titanium cast	
Chromium (total)	0.177	0.072
Lead	0.134	0.082
Nickel	0.262	0.177
Thallium	0.668	0.272
Fluoride	18.700	9.540
Titanium	0.177	0.072
Oil and Grease	4.770	4.770
Total suspended solids	7.155	5.724
pH	(1)	(1)

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

(16) *Casting Contact Cooling Water.*

NSPS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/million (pound per million pounds) of titanium cast	
Chromium (total)	27.000	10.950
Lead	20.430	9.487
Nickel	40.140	27.000
Thallium	102.200	41.600
Fluoride	2,554.000	1,460.000
Titanium	27.000	10.950
Oil and grease	729.800	729.800
Total suspended solids	1,095.000	875.700
pH	(1)	(1)

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

§ 421.305 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 and secondary titanium process wastewater introduced into a POTW must not exceed the following values:

(a) Level A.

(1) *Chlorination Off-Gas Wet Air Pollution Control.*

PSES FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pound per million pounds) of $TiCl_4$ produced	
Chromium (total)	0.412	0.169
Lead	0.393	0.187
Nickel	1.797	1.189
Thallium	1.919	0.786
Fluoride	32.760	18.720
Titanium	0.412	0.169

(2) *Chlorination Area-Vent Wet Air Pollution Control.*

PSES FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of $TiCl_4$ produced	
Chromium (total)	0.458	0.187
Lead	0.437	0.208
Nickel	1.997	1.321
Thallium	2.132	0.874
Fluoride	36.400	20.800
Titanium	0.458	0.187

(3) *$TiCl_4$ Handling Wet Air Pollution Control.*

PSES FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of $TiCl_4$ produced	
Chromium (total)	0.082	0.034
Lead	0.079	0.037
Nickel	0.359	0.238
Thallium	0.383	0.157
Fluoride	6.545	3.740
Titanium	0.082	0.034

(4) *Sponge Crushing and Screening Wet Air Pollution Control.*

PSES FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	0.285	0.117
Lead	0.272	0.129
Nickel	1.242	0.822
Thallium	1.327	0.544
Fluoride	22.650	12.940
Titanium	0.285	0.117

(b) *Level B.*

(1) *Chlorination Off-Gas Wet Air Pollution Control.*

PSES FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of $TiCl_4$ produced	
Chromium (total)	0.346	0.140
Lead	0.262	0.122
Nickel	0.515	0.346
Thallium	1.311	0.534
Fluoride	32.760	18.720
Titanium	0.346	0.140

(2) *Chlorination Area-Vent Wet Air Pollution Control.*

PSES FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of $TiCl_4$ produced	
Chromium (total)	0.385	0.156
Lead	0.291	0.135
Nickel	0.572	0.385
Thallium	1.456	0.593
Fluoride	36.400	20.800
Titanium	0.385	0.156

(3) *$TiCl_4$ Handling Wet Air Pollution Control.*

PSES FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of $TiCl_4$ produced	
Chromium (total)	0.069	0.020
Lead	0.052	0.024
Nickel	0.103	0.069
Thallium	0.262	0.107
Fluoride	6.545	3.740
Titanium	0.069	0.020

(4) *Reduction Area Wet Air Pollution Control.*

PSES FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	1.528	0.620
Lead	1.157	0.537
Nickel	2.272	1.528
Thallium	5.762	2.354
Fluoride	144.600	82.600
Titanium	1.528	0.620

(5) *Melt Cell Wet Air Pollution Control.*

PSES FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	0.787	0.319
Lead	0.595	0.276
Nickel	1.170	0.787
Thallium	2.977	1.212
Fluoride	74.410	42.520
Titanium	0.787	0.319

(6) *Cathode Gas Wet Air Pollution Control.*

PSES FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	0.228	0.092
Lead	0.172	0.080
Nickel	0.338	0.228
Thallium	0.861	0.351
Fluoride	21.530	12.300
Titanium	0.228	0.092

(7) *Chlorine Liquefaction Wet Air Pollution Control.*

PSES FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	11.010	4.464
Lead	8.332	3.868
Nickel	16.370	11.010
Thallium	41.660	16.960
Fluoride	1,042.000	595.100
Titanium	11.010	4.464

(8) *Sodium Reduction Container Reconditioning Wash.*

PSES FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	0.474	[illegible]
Lead	0.359	0.167
Nickel	0.705	0.474
Thallium	1.785	0.731
Fluoride	44.970	25.640
Titanium	0.474	0.192

(9) *Chip Crushing Wet Air Pollution Control.*

PSES FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	0.843	0.344
Lead	0.642	[illegible]
Nickel	1.261	[illegible]
Thallium	3.203	[illegible]
Fluoride	80.220	45.840
Titanium	0.843	0.344

(10) *Acid Leachate and Rinse Water.*

PSES FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	4.331	1.776
Lead	3.315	[illegible]
Nickel	6.512	4.331
Thallium	16.590	6.743
Fluoride	414.450	[illegible]
Titanium	4.331	1.776

(11) *Sponge Crushing and Screening Wet Air Pollution Control.*

PSES FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	0.233	0.097
Lead	0.181	[illegible]
Nickel	0.395	[illegible]
Thallium	0.936	[illegible]
Fluoride	22.650	12.940
Titanium	0.233	0.097

(12) *Acid Pickle and Wash Water.*

PSES FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium pickled	
Chromium (total)	0.023	[illegible]
Lead	0.017	[illegible]
Nickel	0.034	0.023
Thallium	0.035	0.035
Fluoride	2.135	1.220
Titanium	0.023	[illegible]

(13) *Scrap Milling Wet Air Pollution Control.*

PSES FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of scrap milled	
Chromium (total)	0.034	0.034
Lead	0.064	0.030
Nickel	0.125	[illegible]
Thallium	0.318	0.123
Fluoride	7.945	4.540
Titanium	0.034	0.034

(14) *Scrap Detergent Wash Water.*

PSES FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of scrap washed	
Chromium (total)	6.624	2.710
Lead	5.058	2.343
Nickel	9.935	6.624
Thallium	25.230	10.300
Fluoride	632.300	351.300
Titanium	6.624	2.710

(15) *Casting Crucible Wash Water.*

PSES FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium cast	
Chromium (total)	0.177	0.072
Lead	0.134	0.082
Nickel	0.262	0.177
Thallium	0.663	0.272
Fluoride	16.700	9.540
Titanium	0.177	0.072

(16) *Casting Contact Cooling Water.*

PSES FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium cast	
Chromium (total)	27.000	10.950
Lead	20.430	9.487
Nickel	40.140	27.000
Thallium	102.200	41.600
Fluoride	2,554.000	1,460.000
Titanium	27.000	10.950

§ 421.306 Pretreatment standards for new sources.

Except as provided in 40 CFR Part 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 and secondary titanium process wastewater introduced into a POTW shall not exceed the following values:

(a) **Level A.**

(1) *Chlorination Off-Gas Wet Air Pollution Control.*

PSNS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of $TiCl_4$ produced	
Chromium (total)	0.412	0.169
Lead	0.393	0.187
Nickel	1.797	1.189
Thallium	1.919	0.786
Fluoride	32.760	18.720
Titanium	0.412	0.169

(2) *Chlorination Area-Vent Wet Air Pollution Control.*

PSNS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of $TiCl_4$ produced	
Chromium (total)	0.458	0.187
Lead	0.437	0.208
Nickel	1.997	1.321
Thallium	2.132	0.874
Fluoride	36.400	20.800
Titanium	0.458	0.187

(3) *$TiCl_4$ Handling Wet Air Pollution Control.*

PSNS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of $TiCl_4$ produced	
Chromium (total)	0.082	0.034
Lead	0.079	0.037
Nickel	0.359	0.238
Thallium	0.383	0.157
Fluoride	6.545	3.740
Titanium	0.082	0.034

(4) *Sponge Crushing and Screening Wet Air Pollution Control.*

PSNS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	0.000	0.000
Lead	0.000	0.000
Nickel	0.000	0.000
Thallium	0.000	0.000
Fluoride	0.000	0.000
Titanium	0.000	0.000

(b) **Level B.**

(1) *Chlorination Off-Gas Wet Air Pollution Control.*

PSNS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of $TiCl_4$ produced	
Chromium (total)	0.346	0.140
Lead	0.262	0.122
Nickel	0.515	0.346
Thallium	1.311	0.534
Fluoride	32.760	18.720
Titanium	0.346	0.140

(2) *Chlorination Area-Vent Wet Air Pollution Control.*

PSNS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of $TiCl_4$ produced	
Chromium (total)	0.385	0.156
Lead	0.291	0.135
Nickel	0.572	0.385
Thallium	1.456	0.593
Fluoride	36.400	20.800
Titanium	0.385	0.156

(3) *$TiCl_4$ Handling Wet Air Pollution Control.*

PSNS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of $TiCl_4$ produced	
Chromium (total)	0.069	0.028
Lead	0.052	0.024
Nickel	0.103	0.069
Thallium	0.262	0.107
Fluoride	6.545	3.740
Titanium	0.069	0.028

(4) *Reduction Area Wet Air Pollution Control.*

PSNS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	1.528	0.620
Lead	1.157	0.537
Nickel	2.272	1.528
Thallium	5.782	2.354
Fluoride	144.600	82.600
Titanium	1.528	0.620

(5) *Melt Cell Wet Air Pollution Control.*

PSNS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	0.787	0.319
Lead	0.595	0.278
Nickel	1.170	0.787
Thallium	2.977	1.212
Fluoride	74.410	42.520
Titanium	0.787	0.319

(6) *Cathode Gas Wet Air Pollution Control.*

PSNS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	0.228	0.092
Lead	0.172	0.080
Nickel	0.338	0.228
Thallium	0.861	0.351
Fluoride	21.530	12.300
Titanium	0.228	0.092

(7) *Chlorine Liquefaction Wet Air Pollution Control.*

PSNS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	0.000	0.000
Lead	0.000	0.000
Nickel	0.000	0.000
Thallium	0.000	0.000
Fluoride	0.000	0.000
Titanium	0.000	0.000

(8) *Sodium Reduction Container Reconditioning Wash.*

PSNS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	0.474	0.192
Lead	0.359	0.167
Nickel	0.705	0.474
Thallium	1.795	0.731
Fluoride	44.870	25.640
Titanium	0.474	0.192

(9) *Chip Crushing Wet Air Pollution Control.*

PSNS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	0.000	0.000
Lead	0.000	0.000
Nickel	0.000	0.000
Thallium	0.000	0.000
Fluoride	0.000	0.000
Titanium	0.000	0.000

(10) *Acid Leachate and Rinse Water.*

PSNS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	4.381	1.776
Lead	3.315	1.539
Nickel	6.512	4.381
Thallium	16.580	6.749
Fluoride	414.400	236.800
Titanium	4.381	1.776

(11) *Sponge Crushing and Screening Wet Air Pollution Control.*

PSNS FOR THE PRIMARY AND SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium produced	
Chromium (total)	0.000	0.000
Lead	0.000	0.000
Nickel	0.000	0.000
Thallium	0.000	0.000
Fluoride	0.000	0.000
Titanium	0.000	0.000

(12) *Acid Pickle and Wash Water.*

PSNS FOR THE PRIMARY SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium pickled	
Chromium (total)	0.023	0.009
Lead	0.017	0.008
Nickel	0.034	0.023
Thallium	0.085	0.035
Fluoride	2.135	1.220
Titanium	0.023	0.009

(13) *Scrap Milling Wet Air Pollution Control.*

PSNS FOR THE PRIMARY SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of scrap milled	
Chromium (total)	0.000	0.000
Lead	0.000	0.000
Nickel	0.000	0.000
Thallium	0.000	0.000
Fluoride	0.000	0.000
Titanium	0.000	0.000

(14) *Scrap Detergent Wash Water.*

PSNS FOR THE PRIMARY SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of scrap washed	
Chromium (total)	6.634	2.710
Lead	5.059	2.343
Nickel	9.935	6.634
Thallium	25.230	10.030
Fluoride	632.300	351.300
Titanium	6.634	2.710

(15) *Casting Crucible Wash Water.*

PSNS FOR THE PRIMARY SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium cast	
Chromium (total)	0.177	0.072
Lead	0.134	0.062
Nickel	0.262	0.177
Thallium	0.663	0.272
Fluoride	16.700	9.540
Titanium	0.177	0.072

(16) *Casting Contact Cooling Water.*

PSNS FOR THE PRIMARY SECONDARY TITANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of titanium cast	
Chromium (total)	27.000	10.950
Lead	20.430	9.457
Nickel	40.140	27.000
Thallium	102.200	41.600
Fluoride	2,554.000	1,459.000
Titanium	27.000	10.950

§ 421.307 [Reserved]

Subpart AE—Secondary Tungsten and Cobalt Subcategory

§ 421.310 Applicability: Description of the secondary tungsten and cobalt subcategory.

The provisions of this subpart are applicable to discharges resulting from the production of tungsten or cobalt at secondary tungsten and cobalt facilities processing tungsten or tungsten carbide scrap raw materials.

§ 421.311 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.

§ 421.312 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:

(1) *Tungsten Detergent Wash and Rinse.*

BPT LIMITATIONS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tungsten scrap washed	
Copper	0.371	0.195
Nickel	0.374	0.248
Ammonia (as N)	26.020	11.420
Cobalt	0.041	0.018
Oil and Grease	3.900	2.340
Total suspended solids	7.995	3.803
pH	(1)	(1)

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

(2) *Tungsten Leaching Acid.*

BPT LIMITATIONS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tungsten produced	
Copper	4.885	2.571
Nickel	4.937	3.265
Ammonia (as N)	343.100	150.600
Cobalt	0.540	0.231
Oil and Grease	51.420	30.850
Total suspended solids	105.400	50.140
pH	(1)	(1)

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

(3) *Tungsten Post-Leaching Wash and Rinse.*

BPT LIMITATIONS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tungsten produced	
Copper	9.772	5.143
Nickel	9.875	6.532
Ammonia (as N)	686.400	301.200
Cobalt	1.080	0.463
Oil and Grease	102.900	61.720
Total suspended solids	210.800	100.300
pH	(1)	(1)

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

(4) *Synthetic Scheelite Filtrate.*

BPT LIMITATIONS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of synthetic scheelite produced	
Copper	31.660	16.660
Nickel	31.990	21.160
Ammonia (as N)	2,223.000	975.800
Cobalt	3.499	1.500
Oil and Grease	333.200	200.000
Total suspended solids	683.100	324.900
pH	(1)	(1)

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

(5) *Tungsten Carbide Leaching Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tungsten carbide scrap leached	
Copper	3.327	1.751
Nickel	3.362	2.224
Ammonia (as N)	233.700	102.500
Cobalt	0.368	0.158
Oil and Grease	35.020	21.010
Total suspended solids	71.790	34.150
pH	(1)	(1)

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

(6) *Tungsten Carbide Wash Water.*

BPT LIMITATIONS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tungsten carbide produced	
Copper	15.830	8.333
Nickel	16.000	10.580
Ammonia (as N)	1,112.000	488.100
Cobalt	1.750	0.750
Oil and Grease	166.700	100.000
Total suspended solids	341.700	162.500
pH	(1)	(1)

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

(7) *Cobalt Sudge Leaching Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of cobalt produced from cobalt sludge	
Copper	67.990	35.780
Nickel	68.700	45.440
Ammonia (as N)	4,775.000	2,095.000
Cobalt	7.514	3.220
Oil and Grease	715.600	429.400
Total suspended solids	1,467.000	697.700
pH	(1)	(1)

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

(8) *Crystallization Decant.*

BPT LIMITATIONS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of cobalt produced	
Copper	79.140	41.650
Nickel	79.970	52.900
Ammonia (as N)	5,559.000	2,439.000
Cobalt	8.747	3.749
Oil and Grease	833.000	499.800
Total suspended solids	1,708 000	812 200
pH	(1)	(1)

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

(9) *Acid Wash Decant.*

BPT LIMITATIONS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of cobalt produced	
Copper	36.220	19.060
Nickel	36.600	24.210
Ammonia (as N)	2,544 000	1,116 000
Cobalt	4.003	1.710
Oil and Grease	381.300	228 800
Total suspended solids	781.600	371.700
pH	(1)	(1)

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

(10) *Cobalt Hydroxide Filtrate.*

BPT LIMITATIONS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of cobalt produced	
Copper	107.600	56.650
Nickel	108.800	71.940
Ammonia (as N)	7,560.000	3,318.000
Cobalt	11.900	5 098
Oil and Grease	1,133.00	679.800
Total suspended solids	2,323.000	1,105.000
pH	(1)	(1)

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

(11) *Cobalt Hydroxide Filter Cake Wash.*

BPT LIMITATIONS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of cobalt produced	
Copper	207.200	109 100
Nickel	209.400	138 500
Ammonia (as N)	14,550.000	6,385.000
Cobalt	22.900	9.813
Oil and Grease	2,181.000	1,309 000
Total suspended solids	4,471.000	2,126.000
pH	(1)	(1)

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

§ 421.313 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) *Tungsten Detergent Wash and Rinse.*

BAT LIMITATIONS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tungsten scrap washed	
Copper	0.250	0.119
Nickel	0.107	0.072
Ammonia (as N)	26.020	11.420
Cobalt	0.027	0.014

(b) *Tungsten Leaching Acid.*

BAT LIMITATIONS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tungsten produced	
Copper	3.291	1.569
Nickel	1.414	0.951
Ammonia (as N)	343.100	150.600
Cobalt	0.360	0.180

(c) *Tungsten Post-Leaching Wash and Rinse.*

BAT LIMITATIONS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tungsten produced	
Copper	6.583	3.137
Nickel	2.829	1.903
Ammonia (as N)	686.400	301.200
Cobalt	0.720	0.360

(d) *Synthetic Scheelite Filtrate.*

BAT LIMITATIONS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of synthetic scheelite produced	
Copper	21.330	10.170
Nickel	9.164	6.165
Ammonia (as N)	2,223.000	975.800
Cobalt	2.333	1.169

(e) *Tungsten Carbide Leaching Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tungsten carbide scrap leached	
Copper	0.224	0.107
Nickel	0.096	0.065
Ammonia (as N)	23.370	10.250
Cobalt	0.025	0.012

(f) *Tungsten Carbide Wash Water.*

BAT LIMITATIONS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tungsten carbide produced	
Copper	10.070	5.003
Nickel	4.593	3.093
Ammonia (as N)	1,112.000	488.100
Cobalt	1.107	0.553

(g) *Cobalt Sludge Leaching Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of cobalt produced from cobalt sludge	
Copper	4.500	2.103
Nickel	1.993	1.324
Ammonia (as N)	477.500	209.500
Cobalt	0.501	0.251

(h) *Crystallization Decant.*

BAT LIMITATIONS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of cobalt produced	
Copper	53.310	25.410
Nickel	22.910	15.410
Ammonia (as N)	5,559.000	2,433.000
Cobalt	5.831	2.916

(i) *Acid Wash Decant.*

BAT LIMITATIONS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of cobalt produced	
Copper	24.400	11.630
Nickel	10.430	7.053
Ammonia (as N)	2,544.000	1,116.000
Cobalt	2.693	1.335

(j) *Cobalt Hydroxide Filtrate.*

BAT LIMITATIONS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of cobalt produced	
Copper	72.510	34.550
Nickel	31.180	20.980
Ammonia (as N)	7,580.000	3,318.000
Cobalt	7.931	3.965

(k) *Cobalt Hydroxide Filter Cake Wash.*

BAT LIMITATIONS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of cobalt produced	
Copper	139.800	66.510
Nickel	59.970	40.340
Ammonia (as N)	14,550.000	6,385.000
Cobalt	15.270	7.633

§ 421.314 Standards of performance for new sources.

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

(a) *Tungsten Detergent Wash and Rinse.*

NSPS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tungsten scrap washed	
Copper	0.250	0.119
Nickel	0.107	0.072
Ammonia (as N)	26.020	11.420
Cobalt	0.027	0.014
Oil and Grease	1.950	1.950
Total suspended solids	2.925	2.340
pH	(1)	(1)

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

(b) *Tungsten Leaching Acid.*

NSPS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tungsten produced	
Copper	3.291	1.569
Nickel	1.414	0.951
Ammonia (as N)	343.100	150.600
Cobalt	0.360	0.180
Oil and Grease	25.710	25.710
Total suspended solids	38.570	30.850
pH	(1)	(1)

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

(c) *Tungsten Post-Leaching Wash and Rinse.*

NSPS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tungsten produced	
Copper	6.583	3.137
Nickel	2.829	1.903
Ammonia (as N)	686.400	301.200
Cobalt	0.720	0.360
Oil and Grease	51.430	51.430
Total suspended solids	77.150	61.720
pH	(1)	(1)

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

(d) *Synthetic Scheelite Filtrate.*

NSPS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of synthetic scheelite produced	
Copper	21.330	10.170
Nickel	9.164	6.165
Ammonia (as N)	2,223.000	975.800
Cobalt	2.333	1.166
Oil and Grease	166.600	166.600
Total suspended solids	249.900	200.000
pH	(1)	(1)

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

(e) *Tungsten Carbide Leaching Wet Air Pollution Control.*

NSPS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tungsten carbide scrap leached	
Copper	0.224	0.107
Nickel	0.096	0.065
Ammonia (as N)	23.370	10.250
Cobalt	0.025	0.012
Oil and Grease	1.750	1.750
Total suspended solids	2.625	2.100
pH	(1)	(1)

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

(f) *Tungsten Carbide Wash Water.*

NSPS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tungsten carbide produced	
Copper	10.670	5.083
Nickel	4.583	3.083
Ammonia (as N)	1,112.000	488.100
Cobalt	1.167	0.583
Oil and Grease	83.330	83.330
Total suspended solids	125.000	100.000
pH	(1)	(1)

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

(g) *Cobalt Sludge Leaching Wet Air Pollution Control.*

NSPS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of cobalt produced from cobalt sludge	
Copper	4.580	2.183
Nickel	1.968	1.324
Ammonia (as N)	477.500	209.500
Cobalt	0.501	0.251
Oil and Grease	35.780	35.780
Total suspended solids	53.670	42.940
pH	(1)	(1)

Within the range of 7.5 to 10.0 at all times.

(h) *Crystallization Decant.*

NSPS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of cobalt produced	
Copper	53.310	25.410
Nickel	22.910	15.410
Ammonia (as N)	5,559.000	2,439.000
Cobalt	5.831	2.916
Oil and Grease	416.500	416.500
Total suspended solids	624.800	499.800
pH	(1)	(1)

Within the range of 7.5 to 10.0 at all times

(i) *Acid Wash Decant.*

NSPS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of cobalt produced	
Copper	24.400	11.630
Nickel	10.490	7.053
Ammonia (as N)	2,544.000	1,116.000
Cobalt	2.669	1.335
Oil and Grease	190.600	190.600
Total suspended solids	286.000	228.800
pH	(1)	(1)

Within the range of 7.5 to 10.0 at all times.

(j) *Cobalt Hydroxide Filtrate.*

NSPS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of cobalt produced	
Copper	72.510	34.560
Nickel	31.160	20.960
Ammonia (as N)	7,560.000	3,318.000
Cobalt	7.931	3.965
Oil and Grease	566.500	566.500
Total suspended solids	849.700	679.800
pH	(1)	(1)

Within the range of 7.5 to 10.0 at all times

(k) *Cobalt Hydroxide Filter Cake Wash.*

NSPS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of cobalt produced	
Copper	139.600	66.510
Nickel	59.970	40.340
Ammonia (as N)	14,550.000	6,385.000
Cobalt	15.270	7.633
Oil and Grease	1,091.000	1,091.000
Total suspended solids	1,636.000	1,309.000
pH	(1)	(1)

Within the range of 7.5 to 10.0 at all times.

§ 421.315 [Reserved]

§ 421.316 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 tungsten and cobalt process wastewater introduced into a POTW shall not exceed the following values:

(a) *Tungsten Detergent Wash and Rinse:*

PSNS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tungsten scrap washed	
Copper	0.250	0.119
Nickel	0.107	0.072
Ammonia (as N)	26.020	11.420
Cobalt	0.027	0.014

(b) *Tungsten Leaching Acid.*

PSNS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tungsten produced	
Copper	3.291	1.569
Nickel	1.414	0.951
Ammonia (as N)	343.100	150.600
Cobalt	0.360	0.180

(c) *Tungsten Post-Leaching Wash and Rinse.*

PSNS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tungsten produced	
Copper	6.583	3.137
Nickel	2.829	1.903
Ammonia (as N)	686.400	301.200
Cobalt	0.720	0.360

(d) *Synthetic Scheelite Filtrate.*

PSNS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of synthetic scheelite produced	
Copper	21.390	10.170
Nickel	9.164	6.165
Ammonia (as N)	2,223.000	975.000
Cobalt	2.333	1.165

(e) *Tungsten Carbide Leaching Wet Air Pollution Control.*

PSNS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tungsten carbide scrap leached	
Copper	0.224	0.107
Nickel	0.096	0.065
Ammonia (as N)	23.370	10.250
Cobalt	0.025	0.012

(f) *Tungsten Carbide Wash Water.*

PSNS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of tungsten carbide produced	
Copper	10.070	5.033
Nickel	4.533	3.033
Ammonia (as N)	1,112.000	488.100
Cobalt	1.107	0.553

(g) *Cobalt Sludge Leaching Wet Air Pollution Control.*

PSNS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of cobalt produced from cobalt sludge	
Copper	4.580	2.183
Nickel	1.853	1.324
Ammonia (as N)	477.500	209.500
Cobalt	0.501	0.251

(h) *Crystallization Decant.*

PSNS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of cobalt produced	
Copper	53.310	25.410
Nickel	22.910	15.410
Ammonia (as N)	5,553.000	2,439.000
Cobalt	5.631	2.916

(i) *Acid Wash Decant.*

PSNS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of cobalt produced	
Copper	24.400	11.630
Nickel	10.430	7.053
Ammonia (as N)	2,544.000	1,116.000
Cobalt	2.669	1.335

(j) *Cobalt Hydroxide Filtrate.*

PSNS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of cobalt produced	
Copper	72.510	34.560
Nickel	31.160	20.960
Ammonia (as N)	7,560.000	3,318.000
Cobalt	7.931	3.965

(k) *Cobalt Hydroxide Filter Cake Wash.*

PSNS FOR THE SECONDARY TUNGSTEN AND COBALT SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of cobalt produced	
Copper	133.600	65.510
Nickel	53.970	43.340
Ammonia (as N)	14,550.000	6,335.000
Cobalt	15.270	7.633

§ 421.317 [Reserved]

Subpart AF—Secondary Uranium Subcategory

§ 421.320 Applicability: Description of the secondary uranium subcategory.

The provisions of this subpart are applicable to discharges resulting from the production of uranium by secondary uranium facilities.

§ 421.321 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.

§ 421.322 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) *Refinery Filtrate.*

BPT LIMITATIONS FOR THE SECONDARY URANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of uranium trioxide produced	
Chromium (total)	15.310	6.264
Copper	66.120	34.800
Nickel	66.820	44.200
Ammonia (as N)	4,645.000	2,039.000
Fluoride	1,218.000	696.000
Uranium	69.600	28.540
Total suspended solids	1,427.000	678.600
pH	(¹)	(¹)

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

(b) *Slag Leach Slurry.*

BPT LIMITATIONS FOR THE SECONDARY URANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of uranium trioxide produced	
Chromium (total)	1.672	0.684
Copper	7.220	3.800
Nickel	7.296	4.826
Ammonia (as N)	507.100	222.500
Fluoride	133.000	76.000
Uranium	7.600	3.116
Total suspended solids	155.800	74.100
pH	(¹)	(¹)

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

(c) *Solvent Extraction Raffinate.*

BPT LIMITATIONS FOR THE SECONDARY URANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of uranium trioxide produced	
Chromium (total)	2.332	0.954
Copper	10.070	5.300
Nickel	10.180	6.731
Ammonia (as N)	707.200	310.400
Fluoride	185.500	106.000
Uranium	10.600	4.346
Total suspended solids	217.300	103.400
pH	(¹)	(¹)

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

(d) *Digestion Operation Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE SECONDARY URANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of uranium trioxide produced	
Chromium (total)	0.013	0.005
Copper	0.057	0.030
Nickel	0.058	0.038
Ammonia (as N)	4.000	1.760
Fluoride	1.050	0.600
Uranium	0.060	0.025
Total suspended solids	1.230	0.585
pH	(¹)	(¹)

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

(e) *Evaporation and Calcination Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE SECONDARY URANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of uranium trioxide produced	
Chromium (total)	0.000	0.000
Copper	0.000	0.000
Nickel	0.000	0.000
Ammonia (as N)	0.000	0.000
Fluoride	0.000	0.000
Uranium	0.000	0.000
Total suspended solids	0.000	0.000
pH	(¹)	(¹)

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

(f) *Hydrogen Reduction and Hydrofluorination KOH Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE SECONDARY URANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of uranium tetrafluoride produced	
Chromium (total)	0.009	0.004
Copper	0.038	0.020
Nickel	0.038	0.025
Ammonia (as N)	2.670	1.170
Fluoride	0.700	0.400
Uranium	0.040	0.016
Total suspended solids	0.820	0.390
pH	(¹)	(¹)

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

(g) *Hydrofluorination Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE SECONDARY URANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of uranium tetrafluoride produced	
Chromium (total)	0.000	0.000
Copper	0.000	0.000
Nickel	0.000	0.000
Ammonia (as N)	0.000	0.000
Fluoride	0.000	0.000
Uranium	0.000	0.000
Total suspended solids	0.000	0.000
pH	(¹)	(¹)

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

§ 421.323 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) *Refinery Filtrate.*

BAT LIMITATIONS FOR THE SECONDARY URANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of uranium trioxide produced	
Chromium (total)	12 880	5 220
Copper	44.550	21 230
Nickel	19.140	12 880
Ammonia (as N)	4,645.000	2,039.000
Fluoride	1,218 000	696.000
Uranium	46.290	19 140

(b) *Slag Leach Slurry.*

BAT LIMITATIONS FOR THE SECONDARY URANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of uranium trioxide produced	
Chromium (total)	1.406	0 570

BAT LIMITATIONS FOR THE SECONDARY URANIUM SUBCATEGORY—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Copper	4.864	2.318
Nickel	2.090	1.406
Ammonia (as N)	507.100	222.500
Fluoride	133.000	76.000
Uranium	5.054	2.030

(c) *Solvent Extraction Raffinate.*

BAT LIMITATIONS FOR THE SECONDARY URANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of uranium trioxide produced	
Chromium (total)	1.961	0.795
Copper	6.784	3.233
Nickel	2.915	1.961
Ammonia (as N)	707.200	310.400
Fluoride	185.500	106.000
Uranium	7.049	2.915

(d) *Digestion Operation Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE SECONDARY URANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of uranium trioxide produced	
Chromium (total)	0.011	0.005
Copper	0.038	0.018
Nickel	0.017	0.011
Ammonia (as N)	4.000	1.760
Fluoride	1.050	0.600
Uranium	0.040	0.017

(e) *Evaporation and Calcination Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE SECONDARY URANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of uranium trioxide produced	
Chromium (total)	0.000	0.000
Copper	0.000	0.000
Nickel	0.000	0.000
Ammonia (as N)	0.000	0.000
Fluoride	0.000	0.000
Uranium	0.000	0.000

(f) *Hydrogen Reduction and Hydrofluorination KOH Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE SECONDARY URANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of uranium tetrafluoride produced	
Chromium (total)	0.007	0.003
Copper	0.026	0.012
Nickel	0.011	0.007
Ammonia (as N)	2.670	1.170
Fluoride	0.700	0.490
Uranium	0.027	0.011

(g) *Hydrofluorination Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE SECONDARY URANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of uranium tetrafluoride produced	
Chromium (total)	0.000	0.000
Copper	0.000	0.000
Nickel	0.000	0.000
Ammonia (as N)	0.000	0.000
Fluoride	0.000	0.000
Uranium	0.000	0.000

§ 421.324 Standards of performance for new sources.

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

(a) *Refinery Filtrate.*

NSPS FOR THE SECONDARY URANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of uranium trioxide produced	
Chromium (total)	12.800	5.220
Copper	44.550	21.230
Nickel	19.140	12.880
Ammonia (as N)	4,645.000	2,033.000
Fluoride	1,218.000	600.000
Uranium	48.200	19.140
Total suspended solids	522.000	417.600
pH	(¹)	(¹)

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

(b) *Slag Leach Slurry.*

NSPS FOR THE SECONDARY URANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of uranium trioxide produced	
Chromium (total)	1.406	0.570
Copper	4.864	2.318
Nickel	2.090	1.406
Ammonia (as N)	507.100	222.500
Fluoride	133.000	76.000
Uranium	5.054	2.030
Total suspended solids	57.000	45.600
pH	(¹)	(¹)

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

(c) *Solvent Extraction Raffinate.*

NSPS FOR THE SECONDARY URANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of uranium trioxide produced	
Chromium (total)	1.961	0.795
Copper	6.784	3.233
Nickel	2.915	1.961
Ammonia (as N)	707.200	310.400
Fluoride	185.500	106.000
Uranium	7.043	2.915
Total suspended solids	73.500	63.600
pH	(¹)	(¹)

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

(d) *Digestion Operation Wet Air Pollution Control.*

NSPS FOR THE SECONDARY URANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of uranium trioxide produced	
Chromium (total)	0.011	0.005
Copper	0.033	0.018
Nickel	0.017	0.011
Ammonia (as N)	4.000	1.760
Fluoride	1.050	0.600
Uranium	0.040	0.017
Total suspended solids	0.450	0.360
pH	(¹)	(¹)

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

(e) *Evaporation and Calcination Wet Air Pollution Control.*

NSPS FOR THE SECONDARY URANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of uranium trioxide produced	
Chromium (total)	0.000	0.000
Copper	0.000	0.000
Nickel	0.000	0.000
Ammonia (as N)	0.000	0.000
Fluoride	0.000	0.000
Uranium	0.000	0.000
Total suspended solids	0.000	0.000
pH	(¹)	(¹)

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

(f) *Hydrogen Reduction and Hydrofluorination KOH Wet Air Pollution Control.*

NSPS FOR THE SECONDARY URANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of uranium tetrafluoride produced	
Chromium (total)	0.007	0.003
Copper	0.026	0.012
Nickel	0.011	0.007
Ammonia (as N)	2.670	1.170
Fluoride	0.700	0.400
Uranium	0.027	0.011
Total suspended solids	0.300	0.240
pH	(¹)	(¹)

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

(g) *Hydrofluorination Wet Air Pollution Control.*

NSPS FOR THE SECONDARY URANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of uranium tetrafluoride produced	
Chromium (total)	0.000	0.000
Copper	0.000	0.000
Nickel	0.000	0.000
Ammonia (as N)	0.000	0.000
Fluoride	0.000	0.000
Uranium	0.000	0.000
Total suspended solids	0.000	0.000
pH	(¹)	(¹)

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

§ 421.325 [Reserved].

§ 421.326 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 uranium process wastewater introduced into a POTW shall not exceed the following values:

(a) *Refinery Filtrate.*

PSNS FOR THE SECONDARY URANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of uranium trioxide produced	
Chromium (total)	12.880	5.220
Copper	44.550	21.230
Nickel	19.140	12.880
Ammonia (as N)	4,645.000	2,039.000
Fluoride	1,218.000	696.000

PSNS FOR THE SECONDARY URANIUM SUBCATEGORY—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Uranium	46.290	19.140

(b) *Slag Leach Slurry.*

PSNS FOR THE SECONDARY URANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of uranium trioxide produced	
Chromium (total)	1.406	0.570
Copper	4.864	2.318
Nickel	2.090	1.406
Ammonia (as N)	507.100	222.500
Fluoride	133.000	76.000
Uranium	5.054	2.090

(c) *Solvent Extraction Raffinate.*

PSNS FOR THE SECONDARY URANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of uranium trioxide produced	
Chromium (total)	1.961	0.795
Copper	6.784	3.233
Nickel	2.915	1.961
Ammonia (as N)	707.200	310.400
Fluoride	185.500	106.000
Uranium	7.049	2.915

(d) *Digestion Operation Wet Air Pollution Control.*

PSNS FOR THE SECONDARY URANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of uranium trioxide produced	
Chromium (total)	0.011	0.005
Copper	0.038	0.018
Nickel	0.017	0.011
Ammonia (as N)	4.000	1.760
Fluoride	1.050	0.600
Uranium	0.040	0.017

(e) *Evaporation and Calcination Wet Air Pollution Control.*

PSNS FOR THE SECONDARY URANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of uranium trioxide produced	
Chromium (total)	0.000	0.000
Copper	0.000	0.000
Nickel	0.000	0.000
Ammonia (as N)	0.000	0.000
Fluoride	0.000	0.000
Uranium	0.000	0.000

(f) *Hydrogen Reduction and Hydrofluorination KOH Wet Air Pollution Control.*

PSNS FOR THE SECONDARY URANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of uranium tetrafluoride produced	
Chromium (total)	0.007	0.003
Copper	0.026	0.012
Nickel	0.011	0.007
Ammonia (as N)	2.670	1.170
Fluoride	0.700	0.400
Uranium	0.027	0.011

(g) *Hydrofluorination Wet Air Pollution Control.*

PSNS FOR THE SECONDARY URANIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of uranium tetrafluoride produced	
Chromium (total)	0.000	0.000
Copper	0.000	0.000
Nickel	0.000	0.000
Ammonia (as N)	0.000	0.000
Fluoride	0.000	0.000
Uranium	0.000	0.000

§ 421.327 [Reserved]

Subpart AG—Primary Zirconium and Hafnium Subcategory

§ 421.330 Applicability: Description of the primary zirconium and hafnium subcategory.

The provisions of this subpart are applicable to discharges resulting from the production of zirconium or hafnium at primary zirconium and hafnium facilities.

There are two levels of BPT, BAT, NSPS, PSES and PSNS provisions for this subpart. Level A is applicable to facilities which only produce zirconium or zirconium/nickel alloys by magnesium reduction of zirconium dioxide. Level B is applicable to all other facilities.

§ 421.331 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.

§ 421.332 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) Level A.

(1) *Acid Leachate (Zirconium Metal Production).*

BPT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of pure zirconium produced	
Chromium (total)	12.970	5.304
Cyanide (total)	8.545	3.536
Lead	12.380	5.893
Nickel	56.570	37.420
Ammonia (as N)	3,932.000	1,726.000
Radium 226 [1]	884.000	363.600
Total suspended solids	1,208.000	574.600
pH	(2)	(2)

[1] Values in picocuries per kilogram (pc/kg).
[2] Within the range of 7.5 to 10.0, at all times.

(2) *Acid Leachate (Zirconium Alloy Production).*

BPT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium contained in alloys	
Chromium (total)	6.939	2.839
Cyanide (total)	4.574	1.893
Lead	6.624	3.154
Nickel	30.280	20.030
Ammonia (as N)	2,105.000	923.600
Radium 226 [1]	473.200	194.600
Total suspended solids	646.600	307.600
pH	(2)	(2)

[1] Values in picocuries per kilogram (pc/kg).
[2] Within the range of 7.5 to 10.0 at all times.

(3) *Leaching Rinse Water (Zirconium Metal Production).*

BPT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of pure zirconium produced	
Chromium (total)	25.000	10.610
Cyanide (total)	17.090	7.072
Lead	24.750	11.780
Nickel	113.200	74.840
Ammonia (as N)	7,865.000	3,451.000
Radium 226 [1]	1,769.000	727.200
Total suspended solids	2,416.000	1,140.000
pH	(2)	(2)

[1] Values in picocuries per kilogram (pc/kg).
[2] Within the range of 7.5 to 10.0 at all times.

(4) *Leaching Rinse Water (Zirconium Alloy Production).*

BPT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium contained in alloys	
Chromium (total)	0.347	0.142
Cyanide (total)	0.229	0.095
Lead	0.331	0.158
Nickel	1.515	1.002
Ammonia (as N)	105.300	46.210
Radium 226 [1]	23.670	9.730
Total suspended solids	32.359	15.390
pH	(2)	(2)

[1] Values in picocuries per kilogram (pc/kg).
[2] Within the range of 7.5 to 10.0 at all times.

(b) Level B.

(1) *Sand Drying Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zircon sand	
Chromium (total)	0.167	0.068
Cyanide (total)	0.110	0.045
Lead	0.159	0.076
Nickel	0.728	0.431
Ammonia (as N)	50.590	22.200
Radium 226 [1]	11.370	4.677
Total suspended solids	15.540	7.391
pH	(2)	(2)

[1] Values in picocuries per kilogram (pc/kg).
[2] Within the range of 7.5 to 10.0 at all times.

(2) *Sand Chlorination Off-Gas Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of crude $ZrCl_4$ produced	
Chromium (total)	6.473	2.648
Cyanide (total)	4.267	1.766
Lead	6.179	2.943
Nickel	28.250	18.690
Ammonia (as N)	1,963.000	861.600
Radium 226 [1]	441.400	181.600
Total suspended solids	603.200	286.900
pH	(2)	(2)

[1] Values in picocuries per kilogram (pc/kg).
[2] Within the range to 7.5 to 10.0 at all time.

(3) *Sand Chlorination Area Vent Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of crude $ZrCl_4$ produced	
Chromium (total)	8.631	3.531
Cyanide (total)	5.689	2.354
Lead	8.239	3.923
Nickel	37.680	24.910
Ammonia (as N)	2,618.000	1,143.000
Radium 226 [1]	583.500	242.100
Total suspended solids	804.300	382.500
pH	(2)	(2)

[1] Values in picocuries per kilogram (pc/kg).
[2] Within the range to 7.5 to 10.0 at all time.

(4) *$SiCl_4$ Purification Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of $SiCl_4$ purified	
Chromium (total)	3.806	1.557
Cyanide (total)	2.509	1.038
Lead	3.633	1.730
Nickel	16.610	10.990
Ammonia (as N)	1,154.000	506.500
Radium 226 [1]	259.500	106.800
Total suspended solids	354.700	168.700
pH	(2)	(2)

[1] Values in picocuries per kilogram (pc/kg).
[2] Within the range to 7.5 to 10.0 at all time.

(5) *$SiCl_4$ Purification Waste Acid.*

BPT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of $SiCl_4$ purified	
Chromium (total)	1.903	0.779
Cyanide (total)	1.254	0.519
Lead	1.817	0.865
Nickel	8.304	5.433

BPT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Ammonia (as N)	577.100	253.300
Radium 226 [1]	129.800	53.370
Total suspended solids	177.300	840.340
pH	([2])	([2])

[1] Values in picocunes per kilogram (pc/kg).
[2] Within the range fo 7.5 to 10.0 at all time.

(6) *Feed Makeup Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of crude $ZrCl_4$ produced	
Chromium (total)	2.787	1.140
Cyanide (total)	1.837	0.760
Lead	2.660	1.267
Nickel	12.160	8.044
Ammonia (as N)	845.300	370.900
Radium 226 [1]	190.000	78.160
Total suspended solids	259.700	123.500
pH	([2])	([2])

[1] Values in picocunes per kilogram (pc/kg).
[2] Within the range fo 7.5 to 10.0 at all time.

(7) *Iron Extraction (MIBK) Steam Stripper Bottoms.*

BPT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) zirconium, and hafnium produced	
Chromium (total)	0.914	0.374
Cyanide (total)	0.602	0.249
Lead	0.872	0.415
Nickel	3.988	2.638
Ammonia (as N)	277.200	121.600
Radium 228 [1]	62.310	25.630
Total suspended solids	85.160	40.500
pH	([2])	([2])

[1] Values in picocuries per kilogram (pc/kg).
[2] Within the range fo 7.5 to 10.0 at all time.

(8) *Zirconium Filtrate.*

BPT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium produced	
Chromium (total)	31.330	12.820
Cyanide (total)	20.650	8.543
Lead	29.900	14.240
Nickel	136.700	90.410
Ammonia (as N)	9,499.000	4,169.000
Radium 226[1]	2,136.000	878.500
Total suspended solids	2,919.000	1,388.000
pH	([2])	([2])

[1] Values in picocunes per kilogram (pc/kg).
[2] Within the range of 7.5 to 10.0 at all times.

(9) *Hafnium Filtrate.*

BPT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of hafnium produced	
Chromium (total)	0.000	0.000
Cyanide (total)	0.000	0.000
Lead	0.000	0.000
Nickel	0.000	0.000
Ammonia (as N)	0.000	0.000
Radium 226[1]	0.000	0.000
Total suspended solids	0.000	0.000
pH	([2])	([2])

[1] Values in picocunes per kilogram (pc/kg).
[2] Within the range of 7.5 to 10.0 at all times.

(10) *Calcining Caustic Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium and hafnium produced	
Chromium (total)	7.857	3.214
Cyanide (total)	5.178	2.143
Lead	7.500	3.571
Nickel	34.290	22.680
Ammonia (as N)	2,283.000	1,046.000
Radium 226[1]	535.700	220.400
Total suspended solids	732.100	348.200
pH	([2])	([2])

[1] Values in picocunes per kilogram (pc/kg).
[2] Within the range of 7.5 to 10.0 at all times.

(11) *Pure Chlorination Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium and hafnium produced	
Chromium (total)	11.580	4.738
Cyanide (total)	7.634	3.159
Lead	11.060	5.265
Nickel	50.540	33.430
Ammonia (as N)	3,512.000	1,541.000
Radium 226[1]	789.700	324.800
Total suspended solids	1,079.000	513.300
pH	([2])	([2])

[1] Values in picocunes per kilogram (pc/kg).
[2] Within the range of 7.5 to 10.0 at all times.

(12) *Reduction Area-Vent Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium and hafnium produced	
Chromium (total)	0.290	0.119
Cyanide (total)	0.191	0.079
Lead	0.276	0.132
Nickel	1.264	0.836
Ammonia (as N)	87.820	38.540
Radium 226[1]	19.740	8.120
Total suspended solids	26.980	12.830
pH	([2])	([2])

[1] Values in picocuries per kilogram (pc/kg).
[2] Within the range of 7.5 to 10.0 at all times.

(13) *Magnesium Recovery Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium and hafnium produced	
Chromium (total)	5.791	2.369
Cyanide (total)	3.817	1.580
Lead	5.528	2.632
Nickel	25.270	16.720
Ammonia (as N)	1,756.000	770.800
Radium 226[1]	394.900	162.400
Total suspended solids	539.600	258.700
pH	([2])	([2])

[1] Values in picocunes per kilogram (pc/kg).
[2] Within the range of 7.5 to 10.0 at all times.

(14) *Zirconium Chip Crushing Wet Air Pollution Control.*

BPT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium produced	
Chromium (total)	0.000	0.000
Cyanide (total)	0.000	0.000
Lead	0.000	0.000
Nickel	0.000	0.000
Ammonia (as N)	0.000	0.000
Radium 226 [1]	0.000	0.000
Total suspended solids	0.000	0.000
pH	([2])	([2])

[1] Values in picocunes per kilogram (pc/kg).
[2] Within the range of 7.5 to 10.0 at all times.

(15) *Acid Leachate (Zirconium Metal Production).*

BPT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of pure zirconium produced	
Chromium (total)	12.970	5.304

BPT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Cyanide (total)	8.545	3.536
Lead	12.380	5.893
Nickel	56.570	37.420
Ammonia (as N)	3,932.000	1,726.000
Radium 226 [1]	884.000	383.600
Total suspended solids	1,208.000	574.600
pH	(2)	(2)

[1] Values in picocuries per kilogram (pc/kg).
[2] Within the range of 7.5 to 10.0 at all times.

(16) *Acid Leachate (Zirconium Alloy Production).*

BPT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium contained in alloys	
Chromium (total)	6.939	2.833
Cyanide (total)	4.574	1.893
Lead	6.624	3.154
Nickel	30.280	20.030
Ammonia (as N)	2,105.000	923.600
Radium 226 [1]	473.200	194.600
Total suspended solids	646.600	307.600
pH	(2)	(2)

[1] Values in picocuries per kilogram (pc/kg).
[2] Within the range of 7.5 to 10.0 at all times.

(17) *Leaching Rinse water (Zirconium Metal Production).*

BPT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of pure zirconium produced	
Chromium (total)	25.930	10.610
Cyanide (total)	17.090	7.072
Lead	24.750	11.790
Nickel	113.200	74.840
Ammonia (as N)	7,865.000	3,451.000
Radium 226 [1]	1,768.000	727.200
Total suspended solids	2,416.000	1,149.000
pH	(2)	(2)

[1] Values in picocuries per kilogram (pc/kg).
[2] Within the range of 7.5 to 10.0 at all times.

(18) *Leaching Rinse Water (Zirconium Alloy Production).*

BPT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium contained in alloys	
Chromium (total)	0.347	0.142
Cyanide (total)	0.229	0.095
Lead	0.331	0.153
Nickel	1.515	1.002
Ammonia (as N)	105.300	46.210
Radium 226 [1]	23.670	9.736

BPT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Total suspended solids	32.350	15.390
pH	(2)	(2)

[1] Values in picocuries per kilogram (pc/kg).
[2] Within the range of 7.5 to 10.0 at all times.

§ 421.333 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) Level A.

(1) *Acid Leachate (Zirconium Metal Production).*

BAT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of pure zirconium produced	
Chromium (total)	12.970	6.024
Cyanide (total)	0.545	3.503
Lead	12.380	5.893
Nickel	56.570	37.420
Ammonia (as N)	3,932.000	1,726.000
Radium 226 [1]	884.000	383.600

[1] Values in picocuries per kilogram (pc/kg).

(2) *Acid Leachate (Zirconium Alloy Production).*

BAT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium contained in alloys	
Chromium (total)	6.939	2.833
Cyanide (total)	4.574	1.893
Lead	6.624	3.154
Nickel	30.280	20.030
Ammonia (as N)	2,105.000	923.600
Radium 226 [1]	473.200	194.600

[1] Values in picocuries per kilogram (pc/kg).

(3) *Leaching Rinse Water (Zirconium Metal Production).*

BAT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of pure zirconium produced	
Chromium (total)	25.930	10.610
Cyanide (total)	17.090	7.072
Lead	24.750	11.730
Nickel	113.200	74.840
Ammonia (as N)	7,865.000	3,451.000
Radium 226 [1]	1,763.000	727.000

[1] Values in picocuries per kilogram (pc/kg).

(4) *Leaching Rinse Water (Zirconium Alloy Production).*

BAT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium contained in alloys	
Chromium (total)	0.347	0.142
Cyanide (total)	0.229	0.095
Lead	0.331	0.153
Nickel	1.515	1.002
Ammonia (as N)	105.300	46.210
Radium 226 [1]	23.670	9.736

[1] Values in picocuries per kilogram (pc/kg).

(b) Level B.

(1) *Sand Drying Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zircon sand	
Chromium (total)	0.140	0.057
Cyanide (total)	0.076	0.030
Lead	0.108	0.043
Nickel	0.203	0.140
Ammonia (as N)	50.580	22.200
Radium 226 [1]	7.551	3.100

[1] Values in picocuries per kilogram (pc/kg).

(2) *Sand Chlorination Off-Gas Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of crude $ZrCl_4$ produced	
Chromium (total)	0.554	0.221
Cyanide (total)	0.234	0.118
Lead	0.412	0.191
Nickel	0.809	0.544
Ammonia (as N)	196.300	86.160
Radium 226 [1]	29.350	12.030

[1] Values in picocuries per kilogram (pc/kg).

(3) *Sand Chlorination Area Vent Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of crude $ZrCl_4$ produced	
Chromium (total)	0.726	0.294
Cyanide (total)	0.392	0.157
Lead	0.549	0.255
Nickel	1.079	0.726
Ammonia (as N)	261.800	114.900
Radium 226[1]	39.140	16.050

[1]Values in picocuries per kilogram (pc/kg).

(4) *$SiCl_4$ Purification Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of $SiCl_4$ purified	
Chromium (total)	0.320	0.130
Cyanide (total)	0.173	0.069
Lead	0.242	0.113
Nickel	0.476	0.320
Ammonia (as N)	115.400	50.650
Radium 226[1]	17.260	7.076

[1]Values in picocuries per kilogram (pc/kg).

(5) *$SiCl_4$ Purification Waste Acid.*

BAT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of $SiCl_4$ purified	
Chromium (total)	1.600	0.649
Cyanide (total)	0.865	0.346
Lead	1.211	0.562
Nickel	2.379	1.600
Ammonia (as N)	577.100	253.300
Radium 226[1]	86.280	35.380

[1]Values in picocuries per kilogram (pc/kg).

(6) *Feed Makeup Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of crude $ZrCl_4$ produced	
Chromium (total)	0.235	0.095
Cyanide (total)	0.127	0.051
Lead	0.178	0.082
Nickel	0.349	0.235
Ammonia (as N)	84.530	37.090
Radium 226[1]	12.650	5.186

[1]Values in picocuries per kilogram (pc/kg).

(7) *Iron Extraction (MIBK) Steam Stripper Bottoms.*

BAT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium and hafnium produced	
Chromium (total)	0.769	0.312
Cyanide (total)	0.415	0.166
Lead	0.582	0.270
Nickel	1.143	0.769
Ammonia (as N)	277.200	121.600
Radium 226[1]	41.440	16.990

[1]Values in picocuries per kilogram (pc/kg).

(8) *Zirconium Filtrate.*

BAT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium produced	
Chromium (total)	26.340	10.680
Cyanide (total)	14.240	5.695
Lead	19.940	9.255
Nickel	39.160	26.340
Ammonia (as N)	9,499.000	4,169.000
Radium 226[1]	1,420.000	582.400

[1]Values in picocuries per kilogram (pc/kg).

(9) *Hafnium Filtrate.*

BAT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of hafnium produced	
Chromium (total)	0.000	0.000
Cyanide (total)	0.000	0.000
Lead	0.000	0.000
Nickel	0.000	0.000
Ammonia (as N)	0.000	0.000
Radium 226[1]	0.000	0.000

[1]Values in picocuries per kilogram (pc/kg).

(10) *Calcining Caustic Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium and hafnium produced	
Chromium (total)	0.661	0.268
Cyanide (total)	0.357	0.143
Lead	0.500	0.232
Nickel	0.982	0.661
Ammonia (as N)	238.300	104.600
Radium 226[1]	35.630	14.610

[1]Values in picocuries per kilogram (pc/kg).

(11) *Pure Chlorination Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium and hafnium produced	
Chromium (total)	0.974	0.395
Cyanide (total)	0.526	0.211
Lead	0.737	0.342
Nickel	1.448	0.074
Ammonia (as N)	351.200	154.100
Radium 226[1]	52.510	21.530

[1]Values in picocuries per kilogram (pc/kg)

(12) *Reduction Area-Vent Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium produced	
Chromium (total)	0.244	0.099
Cyanide (total)	0.132	0.053
Lead	0.184	0.086
Nickel	0.362	0.244
Ammonia (as N)	87.820	38.540
Radium 226[1]	13.130	5.383

[1]Values in picocuries per kilogram (pc/kg).

(13) *Magnesium Recovery Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium and hafnium produced	
Chromium (total)	0.487	0.197
Cyanide (total)	0.263	0.105
Lead	0.369	0.171
Nickel	0.724	0.487
Ammonia (as N)	175.600	77.080
Radium 226[1]	26.260	10.770

[1]Values in picocuries per kilogram (pc/kg).

(14) *Zirconium Chip Crushing Wet Air Pollution Control.*

BAT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium produced	
Chromium (total)	0.000	0.000
Cyanide (total)	0.000	0.000
Lead	0.000	0.000
Nickel	0.000	0.000
Ammonia (as N)	0.000	0.000

BAT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Radium 226[1]	0.000	0.000

[1] Values in picocuries per kilogram (pc/kg).

(15) *Acid Leachate (Zirconium Metal Production).*

BAT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of pure zirconium produced	
Chromium (total)	10.900	4.420
Cyanide (total)	5.693	2.357
Lead	8.250	3.831
Nickel	16.210	10.900
Ammonia (as N)	3,932.000	1,726.000
Radium 226[1]	587.800	241.000

[1] Values in picocuries per kilogram (pc/kg).

(16) *Acid Leachate (Zirconium Alloy Production).*

BAT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium contained in alloys	
Chromium (total)	5.835	2.366
Cyanide (total)	3.154	1.262
Lead	4.416	2.050
Nickel	8.674	5.835
Ammonia (as N)	2,105.000	923.600
Radium 226[1]	314.700	129.000

[1] Values in picocuries per kilogram (pc/kg).

(17) *Leaching Rinse Water (Zirconium Metal Production).*

BAT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of pure zirconium produced	
Chromium (total)	21.810	8.840
Cyanide (total)	11.790	4.715
Lead	16.500	7.661
Nickel	32.410	21.810
Ammonia (as N)	7,865.000	3,451.000
Radium 226[1]	1,176.000	482.000

[1] Values in picocuries per kilogram (pc/kg).

(18) *Leaching Rinse Water (Zirconium Alloy Production).*

BAT LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium contained in alloys	
Chromium (total)	0.222	0.118
Cyanide (total)	0.150	0.063
Lead	0.221	0.103
Nickel	0.434	0.232
Ammonia (as N)	105.300	43.210
Radium 226[1]	15.740	6.454

[1] Values in picocuries per kilogram (pc/kg).

§ 421.334 Standards of performance for new sources.

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

(a) Level A.

(1) *Acid Leachate from Zirconium Metal Production.*

NSPS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium and hafnium produced	
Chromium (total)	12.970	5.304
Cyanide (total)	8.545	3.539
Lead	12.380	5.893
Nickel	59.570	37.420
Ammonia (as N)	3,932.000	1,726.000
Radium 226[1]	894.000	393.600
Total suspended solids	1,203.000	574.000
pH	(²)	(²)

[1] Values in picocuries per kilogram (pc/kg).
[2] Within the range of 7.5 to 10.0 at all times.

(2) *Acid Leachate from Zirconium Alloy Production.*

NSPS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium produced	
Chromium (total)	6.063	2.603
Cyanide (total)	4.524	1.893
Lead	6.024	3.154
Nickel	30.280	20.030
Ammonia (as N)	2,105.000	923.000
Radium 226[1]	473.200	104.000
Total suspended solids	640.600	307.600
pH	(²)	(²)

[1] Values in picocuries per kilogram (pc/kg).
[2] Within the range of 7.5 to 10.0 at all times.

(3) *Leaching Rinse Water from Zirconium Metal Production.*

NSPS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of pure zirconium produced	
Chromium (total)	25.930	10.610
Cyanide (total)	17.090	7.072
Lead	24.750	11.790
Nickel	113.200	74.840
Ammonia (as N)	7,865.000	8,451.000
Radium 226[1]	1,763.000	727.200
Total suspended solids	2,416.000	1,143.000
pH	(²)	(²)

[1] Values in picocuries per kilogram (pc/kg).
[2] Within the range of 7.5 to 10.0 at all times.

(4) *Leaching Rinse Water from Zirconium Alloy Production.*

NSPS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium contained in alloys	
Chromium (total)	0.347	0.142
Cyanide (total)	0.229	0.095
Lead	0.331	0.153
Nickel	1.515	1.002
Ammonia (as N)	105.300	46.210
Radium 226[1]	23.670	9.736
Total suspended solids	32.350	15.330
pH	(²)	(²)

[1] Values in picocuries per kilogram (pc/kg).
[2] Within the range of 7.5 to 10.0 at all times.

(b) Level B.

(1) *Sand Drying Wet Air Pollution Control.*

NSPS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zircon sand	
Chromium (total)	0.140	0.057
Cyanide (total)	0.076	0.030
Lead	0.106	0.043
Nickel	0.293	0.140
Ammonia (as N)	50.530	22.200
Radium 226[1]	7.561	3.100
Total suspended solids	5.635	4.543
pH	(²)	(²)

[1] Values in picocuries per kilogram (pc/kg).
[2] Within the range of 7.5 to 10.0 at all times.

(2) *Sand Chlorination Off-Gas Wet Air Pollution Control.*

NSPS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of crude $ZrCl_4$ produced	
Chromium (total)	0.544	0.221
Cyanide (total)	0.294	0.118
Lead	0.412	0.191
Nickel	0.809	0.544
Ammonia (as N)	196.300	86.160
Radium 226 [1]	29.350	12.030
Total suspended solids	22.070	17.650
pH	(2)	(2)

[1] Values in picocuries per kilogram (pc/kg).
[2] Within the range of 7.5 to 10.0 at all times.

(3) *Sand Chlorination Area Vent Wet Air Pollution Control.*

NSPS FOR THE PRIMARY ZIRONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of crude $ZrCl_4$ produced	
Chromium (total)	0.726	0.294
Cyanide (total)	0.392	0.157
Lead	0.549	0.255
Nickel	1.079	0.726
Ammonia (as N)	261.800	114.900
Radium 226 [1]	39.140	16.050
Total suspended solids	29.430	23.550
pH	(2)	(2)

[1] Values in picocuries per kilogram (pc/kg).
[2] Within the range of 7.5 to 10.0 at all times.

(4) *$SiCl_4$ Purification Wet Air Pollution Control.*

NSPS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of $SiCl_4$ purified	
Chromium (total)	0.320	0.130
Cyanide (total)	0.173	0.069
Lead	0.242	0.113
Nickel	0.476	0.320
Ammonia (as N)	115.400	50.650
Radium 226 [1]	17.260	7.076
Total suspended solids	12.980	10.380
pH	(2)	(2)

[1] Values in picocuries per kilogram (pc/kg).
[2] Within the range of 7.5 to 10.0 at all times.

(5) *$SiCl_4$ Purification Waste Acid.*

NSPS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of $SiCl_4$ purified	
Chromium (total)	1.600	0.649
Cyanide (total)	0.865	0.346
Lead	1.211	0.562
Nickel	2.379	1.600

NSPS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Ammonia (as N)	577.100	253.300
Radium 226 [1]	86.280	35.380
Total suspended solids	64.830	51.900
pH	(2)	(2)

[1] Values in picocuries per kilogram (pc/kg).
[2] Within the range of 7.5 to 10.0 at all times.

(6) *Feed Makeup Wet Air Pollution Control.*

NSPS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average.
	mg/kg (pounds per million pounds) of crude $ZrCl_4$ produced	
Chromium (total)	0.235	0.095
Cyanide (total)	0.127	0.051
Lead	0.178	0.082
Nickel	0.349	0.235
Ammonia (as N)	84.530	37.090
Radium 226 [1]	12.650	5.186
Total suspended solids	9.510	7.608
pH	(2)	(2)

[1] Values in picocuries per kilogram (pc/kg).
[2] Within the range of 7.5 to 10.0 at all times.

(7) *Iron Extraction (MIBK) Steam Stripper Bottoms.*

NSPS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium and hafnium produced	
Chromium (total)	0.769	0.312
Cyanide (total)	0.415	0.166
Lead	0.582	0.270
Nickel	1.143	0.769
Ammonia (as N)	277.200	121.600
Radium 226 [1]	41.440	16.990
Total suspended solids	31.160	24.930
pH	(2)	(2)

[1] Values in picocuries per kilogram (pc/kg).
[2] Within the range of 7.5 to 10.0 at all times.

(8) *Zirconium Filtrate.*

NSPS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium produced	
Chromium (total)	26.340	10.680
Cyanide (total)	14.240	5.695
Lead	19.940	9.255
Nickel	39.160	26.340
Ammonia (as N)	9,499.000	4,169.000
Radium 226 [1]	1,420.000	582.400
Total suspended solids	1,068.000	854.300
pH	(2)	(2)

[1] Values in picocuries per kilogram (pc/kg).
[2] Within the range of 7.5 to 10.0 at all times.

(9) *Hafnium Filtrate.*

NSPS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of hafnium produced	
Chromium (total)	0.000	0.000
Cyanide (total)	0.000	0.000
Lead	0.000	0.000
Nickel	0.000	0.000
Ammonia (as N)	0.000	0.000
Radium 226 [1]	0.000	0.000
Total suspended solids	0.000	0.000
pH	(2)	(2)

[1] Values in picocuries per kilogram (pc/kg).
[2] Within the range of 7.5 to 10.0 at all times.

(10) *Calcining Caustic Wet Air Pollution Control.*

NSPS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium and hafnium produced	
Chromium (total)	0.661	0.269
Cyanide (total)	0.357	0.143
Lead	0.500	0.232
Nickel	0.982	0.661
Ammonia (as N)	238.300	104.600
Radium 226 [1]	35.630	14.610
Total suspended solids	26.790	21.430
pH	(2)	(2)

[1] Values in picocuries per kilogram (pc/kg).
[2] Within the range of 7.5 to 10.0 at all times.

(11) *Pure Chlorination Wet Air Pollution Control.*

NSPS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium and hafnium produced	
Chromium (total)	0.974	0.395
Cyanide (total)	0.526	0.211
Lead	0.737	0.342
Nickel	1.448	0.974
Ammonia (as N)	351.200	154.100
Radium 226 [1]	52.510	21.530
Total suspended solids	39.480	31.590
pH	(2)	(2)

[1] Values in picocuries per kilogram (pc/kg).
[2] Within the range of 7.5 to 10.0 at all times.

(12) *Reduction Area-Vent Wet Air Pollution Control.*

NSPS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium and hafnium produced	
Chromium (total)	0.244	0.099
Cyanide (total)	0.132	0.053
Lead	0.184	0.086
Nickel	0.362	0.244
Ammonia (as N)	87.820	33.540
Radium 226 [1]	13.130	5.393
Total suspended solids	9.870	7.896
pH	(2)	(2)

[1] Values in picocuries per kilogram (pc/kg).
[2] Within the range of 7.5 to 10.0 at all times.

(13) *Magnesium Recovery Wet Air Pollution Control.*

NSPS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium and hafnium produced	
Chromium (total)	0.487	0.197
Cyanide (total)	0.263	0.105
Lead	0.369	0.171
Nickel	0.724	0.487
Ammonia (as N)	175.600	77.090
Radium 226 [1]	26.260	10.770
Total suspended solids	19.740	15.790
pH	(2)	(2)

[1] Values in picocuries per kilogram (pc/kg).
[2] Within the range of 7.5 to 10.0 at all times.

(14) *Zirconium Chip Crushing Wet Air Pollution Cntrol.*

NSPS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium produced	
Chromium (total)	0.000	0.000
Cyanide (total)	0.000	0.000
Lead	0.000	0.000
Nickel	0.000	0.000
Ammonia (as N)	0.000	0.000
Radium 226 [1]	0.000	0.000
Total suspended solids	0.000	0.000
pH	(2)	(2)

[1] Values in picocuries per kilogram (pc/kg).
[2] Within the range of 7.5 to 10.0 at all times.

(15) *Acid Leachate from Zirconium Metal Production.*

NSPS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of pure zirconium produced	
Chromium (total)	10.900	4.420
Cyanide (total)	5.833	2.357
Lead	8.250	3.831
Nickel	16.210	10.900
Ammonia (as N)	3,932.000	1,726.000
Radium 226 [1]	587.000	241.000
Total suspended solids	441.900	353.500
pH	(2)	(2)

[1] Values in picocuries per kilogram (pc/kg).
[2] Within the range of 7.5 to 10.0 at all times.

(16) *Acid Leachate from Zirconium Alloy Production.*

NSPS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium contained in alloys	
Chromium (total)	5.835	2.366
Cyanide (total)	3.154	1.262
Lead	4.416	2.050
Nickel	8.674	5.835
Ammonia (as N)	2,105.000	923.600
Radium 226 [1]	314.700	129.000
Total suspended solids	220.800	180.200
pH	(2)	(2)

[1] Values in picocuries per kilogram (pc/kg).
[2] Within the range of 7.5 to 10.0 at all times.

(17) *Leaching Rinse Water from Zirconium Metal Production.*

NSPS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of pure zirconium produced	
Chromium (total)	21.810	8.840
Cyanide (total)	11.780	4.715
Lead	16.500	7.661
Nickel	32.410	21.810
Ammonia (as N)	7,865.000	3,451.000
Radium 226 [1]	1,178.000	482.000
Total suspended solids	884.000	707.200
pH	(2)	(2)

[1] Values in picocuries per kilogram (pc/kg).
[2] Within the range of 7.5 to 10.0 at all times.

(18) *Leaching Rinse Water from Zirconium Alloy Production.*

NSPS LIMITATIONS FOR THE PRIMARY ZIRCONIUM AND HAFNUIM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium contained in alloys	
Chromium (total)	0.232	0.118
Cyanide (total)	0.159	0.063
Lead	0.221	0.103
Nickel	0.434	0.232
Ammonia (as N)	105.300	46.210
Radium 226 [1]	15.740	6.454
Total suspended solids	11.840	9.483
pH	(2)	(2)

[1] Values in picocuries per kilogram (pc/kg).
[2] Within the range of 7.5 to 10.0 at all times.

§ 421.335 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 zirconium and hafnium process wastewater introduced into a POTW must not exceed the following values.

(a) Level A.

(1) *Acid Leachate from Zirconium Metal Production.*

PSES FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of -putnzircon- ium produced	
Chromium (total)	12.970	5.304
Cyanide (total)	8.545	3.536
Lead	12.330	5.833
Nickel	56.570	37.420
Ammonia (as N)	3,932.000	1,726.000
Radium 226 [1]	834.000	363.600

[1] Values in picocuries per kilogram (pc/kg).

(2) *Acid Leachate from Zirconium Alloy Production.*

PSES FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium contained in alloys	
Chromium (total)	6.933	2.839
Cyanide (total)	4.574	1.893
Lead	6.624	3.154
Nickel	30.280	20.030
Ammonia (as N)	2,105.000	923.600
Radium 226 [1]	473.200	194.600

[1] Values in picocuries per kilogram (pc/kg).

(3) *Leaching Rinse Water from Zirconium Metal Production.*

PSES FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of pure zirconium produced	
Chromium (total)	25.930	10.610
Cyanide (total)	17.090	7.072
Lead	24.750	11.790
Nickel	113.200	74.840
Ammonia (as N)	7,865.000	3,451.000
Radium 226 [1]	1,768.000	727.200

[1] Values in picocuries per kilogram (pc/kg).

(4) *Leaching Rinse Water from Zirconium Alloy Production.*

PSES FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium contained in alloys	
Chromium (total)	0.347	0.142
Cyanide (total)	0.229	0.095
Lead	0.331	0.158
Nickel	1.515	1.002
Ammonia (as N)	105.300	46.210
Radium 226 [1]	23.670	9.736

[1] Values in picocuries per kilogram (pc/kg).

(b) **Level B.**

(1) *Sand Drying Wet Air Pollution Control.*

PSES FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zircon sand	
Chromium (total)	0.140	0.057
Cyanide (total)	0.076	0.030
Lead	0.106	0.049
Nickel	0.209	0.140
Ammonia (as N)	50.580	22.200
Radium 226 [1]	7.561	3.100

[1] Values in picocuries per kilogram (pc/kg).

(2) *Sand Chlorination Off-Gas Wet Air Pollution Control.*

PSES FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of crude $ZrCl_4$ produced	
Chromium (total)	0.544	0.221
Cyanide (total)	0.294	0.118
Lead	0.412	0.191
Nickel	0.809	0.554
Ammonia (as N)	196.300	86.160
Radium 226 [1]	29.350	12.030

[1] Values in picocuries per kilogram (pc/kg).

(3) *Sand Chlorination Area Vent Wet Air Pollution Control.*

PSES FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of crude $ZrCl_4$ produced	
Chromium (total)	0.726	0.294
Cyanide (total)	0.392	0.157
Lead	0.549	0.255
Nickel	1.079	0.726
Ammonia (as N)	261.800	114.900
Radium 226 [1]	39.140	16.050

[1] Values in picocuries per kilogram (pc/kg).

(4) *$SiCl_4$ Purification Wet Air Pollution Control.*

PSES FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of $SiCl_4$ purified	
Chromium (total)	0.320	0.130
Cyanide (total)	0.173	0.069
Lead	0.242	0.113
Nickel	0.476	0.320
Ammonia (as N)	115.400	50.650
Radium 226 [1]	17.260	7.076

[1] Values in picocuries per kilogram (pc/kg).

(5) *$SiCl_4$ Purification Waste Acid.*

PSES FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of $SiCl_4$ purified	
Chromium (total)	1.600	0.649
Cyanide (total)	0.865	0.346
Lead	1.211	0.562
Nickel	2.379	1.600
Ammonia (as N)	577.100	253.300
Radium 226 [1]	86.280	35.380

[1] Values in picocuries per kilogram (pc/kg).

(6) *Feed Makeup Wet Air Pollution Control.*

PSES FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of crude $ZrCl_4$ produced	
Chromium (total)	0.235	0.095
Cyanide (total)	0.127	0.051
Lead	0.178	0.082
Nickel	0.349	0.235
Ammonia (as N)	84.530	37.090
Radium 226 [1]	12.650	5.186

[1] Values in picocuries per kilogram (pc/kg).

(7) *Iron Extraction (MIBK) Steam Stripper Bottoms.*

PSES FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium and hafnium produced	
Chromium (total)	0.769	0.312
Cyanide (total)	0.415	0.166
Lead	0.582	0.270
Nickel	1.143	0.769
Ammonia (as N)	277.200	121.600
Radium 226 [1]	41.440	16.990

[1] Values in picocuries per kilogram (pc/kg).

(8) *Zirconium Filtrate.*

PSES FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium produced	
Chromium (total)	26.340	10.680
Cyanide (total)	14.240	5.695
Lead	19.940	9.255
Nickel	39.160	26.340
Ammonia (as N)	8,499.000	4,169.000
Radium 226 [1]	1,420.000	582.400

[1] Values in picocuries per kilogram (pc/kg).

(9) *Hafnium Filtrate.*

PSES FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of hafnium produced	
Chromium (total)	0.000	0.000
Cyanide (total)	0.000	0.000
Lead	0.000	0.000
Nickel	0.000	0.000
Ammonia (as N)	0.000	0.000
Radium 226 [1]	0.000	0.000

[1] Values in picocuries per kilogram (pc/kg)

(10) *Calcining Caustic Wet Air Pollution Control.*

PSES FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium and hafnium produced	
Chromium (total)	0.661	0.268
Cyanide (total)	0.357	0.143
Lead	0.500	0.232
Nickel	0.982	0.661
Ammonia (as N)	238.300	104.600
Radium 226 [1]	35.630	14.610

[1] Values in picocuries per kilogram (pc/kg).

(11) *Pure Chlorination Wet Air Pollution Control.*

PSES FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium and hafnium produced	
Chromium (total)	0.974	0.395
Cyanide (total)	0.526	0.211
Lead	0.737	0.342
Nickel	1.448	0.974
Ammonia (as N)	351.200	154.100
Radium 226 [1]	52.510	21.530

[1] Values in picocuries per kilogram (pc/kg).

(12) *Reduction Area-Vent Wet Air Pollution Control.*

PSES FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium and hafnium produced	
Chromium (total)	0.244	0.099
Cyanide (total)	0.132	0.053
Lead	0.184	0.086
Nickel	0.362	0.244
Ammonia (as N)	87.820	38.540
Radium 226 [1]	13.130	5.383

[1] Values in picocuries per kilogram (pc/kg).

(13) *Magnesium Recovery Wet Air Pollution Control.*

PSES FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium and hafnium produced	
Chromium (total)	0.487	0.197
Cyanide (total)	0.263	0.105
Lead	0.369	0.171
Nickel	0.724	0.487
Ammonia (as N)	175.600	77.030
Radium 226 [1]	26.260	10.770

[1] Values in picocuries per kilogram (pc/kg).

(14) *Zirconium Chip Crushing Wet Air Pollution Control.*

PSES FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium produced	
Chromium (total)	0.000	0.000
Cyanide (total)	0.000	0.000
Lead	0.000	0.000
Nickel	0.000	0.000
Ammonia (as N)	0.000	0.000
Radium 226 [1]	0.000	0.000

[1] Values in picocuries per kilogram (pc/kg).

(15) *Acid Leachate from Zirconium Metal Production.*

PSES FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of pure zirconium produced	
Chromium (total)	10.990	4.420
Cyanide (total)	6.003	2.357
Lead	8.250	3.031
Nickel	16.210	10.990
Ammonia (as N)	3,932.000	1,726.000
Radium 226 [1]	597.800	241.000

[1] Values in picocuries per kilogram (pc/kg).

(16) *Acid Leachate from Zirconium Alloy Production.*

PSES FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium contained in alloys	
Chromium (total)	5.635	2.000
Cyanide (total)	3.154	1.262
Lead	4.410	2.050
Nickel	8.074	5.635
Ammonia (as N)	2,105.000	923.000
Radium 226 [1]	314.700	129.000

[1] Values in picocuries per kilogram (pc/kg).

(17) *Leaching Rinse Water from Zirconium Metal Production.*

PSES FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of pure zirconium produced	
Chromium (total)	21.810	8.940
Cyanide (total)	11.700	4.715
Lead	16.590	7.661
Nickel	32.410	21.810
Ammonia (as N)	7,895.000	3,451.000
Radium 226 [1]	1,170.000	482.000

[1] Values in picocuries per kilogram (pc/kg).

(18) *Leaching Rinse Water from Zirconium Alloy Production.*

PSES FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per/million pounds) of zirconium contained in alloys	
Chromium (total)	0.292	0.118
Cyanide (total)	0.158	0.063
Lead	0.221	0.103
Nickel	0.434	0.292
Ammonia (as N)	105.000	43.210
Radium 226 [1]	15.740	6.454

[1] Values in picocuries per kilogram (pc/kg).

§ 421.336 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 zirconium and hafnium process wastewater introduced into a POTW shall not exceed the following values:

(a) Level A.

(1) *Acid Leachate from Zirconium Metal Production.*

PSNS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of pure zirconium produced	
Chromium (total)	12.970	5.304
Cyanide (total)	8.545	3.538
Lead	12.330	5.833
Nickel	56.570	37.420
Ammonia (as N)	3,932.000	1,726.000
Radium 226 [1]	834.000	383.600

[1] Values in picocuries per kilogram (pc/kg).

(2) *Acid Leachate from Zirconium Alloy Production.*

PSNS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium contained in alloys	
Chromium (total)	6.939	2.839
Cyanide (total)	4.574	1.893
Lead	6.624	3.154
Nickel	30.220	20.030
Ammonia (as N)	2,105.000	923.600
Radium 226 [1]	473.200	194.600

[1] Values in picocuries per kilogram (pc/kg).

(3) *Leaching Rinse Water from Zirconium Metal Production.*

PSNS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of pure zirconium produced	
Chromium (total)	25.930	10.610
Cyanide (total)	17.090	7.072
Lead	24.750	11.790
Nickel	113.200	74.840
Ammonia (as N)	7,865.000	3,451.000
Radium 226[1]	1,768.000	727.200

[1] Values in picocuries per kilogram (pc/kg).

(4) *Leaching Rinse Water from Zirconium Alloy Production.*

PSNS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium contained in alloys	
Chromium (total)	0.347	0.142
Cyanide (total)	0.229	0.095
Lead	0.331	0.158
Nickel	1.515	1.002
Ammonia (as N)	105.300	46.210
Radium 226[1]	23.670	9.736

[1] Values in picocuries per kilogram (pc/kg).

(b) **Level B.**

(1) *Sand Drying Wet Air Pollution Control.*

PSNS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zircon sand	
Chromium (total)	0.140	0.057
Cyanide (total)	0.076	0.030
Lead	0.106	0.049
Nickel	0.209	0.140
Ammonia (as N)	50.580	22.200
Radium 226[1]	7.561	3.100

[1] Values in picocuries per kilogram (pc/kg).

(2) *Sand Chlorination Off-Gas Wet Air Pollution Control.*

PSNS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of crude $ZrCl_4$ produced	
Chromium (total)	0.544	0.221
Cyanide (total)	0.294	0.118
Lead	0.412	0.191
Nickel	0.809	0.544
Ammonia (as N)	196.300	86.160
Radium 226[1]	29.350	12.030

[1] Values in picocuries per kilogram (pc/kg).

(3) *Sand Chlorination Area Vent Wet Air Pollution Control.*

PSNS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of crude $ZrCl_4$ produced	
Chromium (total)	0.726	0.294
Cyanide (total)	0.392	0.157
Lead	0.549	0.255
Nickel	1.079	0.726
Ammonia (as N)	261.800	114.900
Radium 226[1]	39.140	16.050

[1] Values in picocuries per kilogram (pc/kg).

(4) *$SiCl_4$ Purification Wet Air Pollution Control.*

PSNS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of crude $SiCl_4$ purified	
Chromium (total)	0.320	0.130
Cyanide (total)	0.173	0.069
Lead	0.242	0.113
Nickel	0.476	0.320
Ammonia (as N)	115.400	50.650
Radium 226[1]	17.260	7.078

[1] Values in picocuries per kilogram (pc/kg).

(5) *$SiCl_4$ Purification Waste Acid.*

PSNS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of $SiCl_4$ purified	
Chromium (total)	1.600	0.649
Cyanide (total)	0.865	0.346
Lead	1.211	0.562
Nickel	2.379	1.600
Ammonia (as N)	577.100	253.300
Radium 226[1]	86.280	35.380

[1] Values in picocuries per kilogram (pc/kg).

(6) *Feed Makeup Wet Air Pollution Control.*

PSNS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of crude $ZrCl_4$ produced	
Chromium (total)	0.235	0.095
Cyanide (total)	0.127	0.051
Lead	0.178	0.082
Nickel	0.349	0.235
Ammonia (as N)	84.530	37.090
Radium 226[1]	12.650	5.186

[1] Values in picocuries per kilogram (pc/kg).

(7) *Iron Extraction (MIBK) Steam Stripper Bottoms.*

PSNS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or Pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium and hafnium	
Chromium (total)	0.769	0.312
Cyanide (total)	0.415	0.168
Lead	0.582	0.270
Nickel	1.143	0.769
Ammonia (as N)	277.200	121.600
Radium 226[1]	41.440	16.990

[1] Value in picocuries per kilogram (pc/kg).

(8) *Zirconium Filtrate.*

PSNS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or Pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium produced	
Chromium (total)	26.340	10.680
Cyanide (total)	14.240	5.895
Lead	19.940	9.255
Nickel	39.160	26.340
Ammonia (as N)	9,499.000	4,169.000
Radium 226[1]	1,420.000	582.400

[1] Value in picocuries per kilogram (pc/kg).

(9) *Hafnium Filtrate.*

PSNS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or Pollutant property	Maximum for any 1 day	Maximum for monthly average
	.g/kg (pounds per million pounds) of hafnium produced	
Chromium (total)	0.000	0.000
Cyanide (total)	0.000	0.000
Lead	0.000	0.000
Nickel	0.000	0.000
Ammonia (as N)	0.000	0.000
Radium 226[1]	0.000	0.000

[1] Value in picocuries per kilogram (pc/kg).

(10) *Calcining Caustic Wet Air Pollution Control.*

PSNS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or Pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium and hafnium produced	
Chromium (total)	0.661	0.268
Cyanide (total)	0.357	0.143
Lead	0.500	0.232
Nickel	0.982	0.661
Ammonia (as N)	238.300	104.600
Radium 226[1]	35.630	14.010

[1] Value in picocuries per kilogram (pc/kg).

(11) *Pure Chlorination Wet Air Pollution Control.*

PSNS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or Pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium and hafnium produced	
Chromium (total)	0.974	0.395
Cyanide (total)	0.526	0.211
Lead	0.737	0.342
Nickel	1.448	0.974
Ammonia (as N)	351.200	154.100
Radium 226 [1]	52.510	21.530

[1] Value in picocuries per kilogram (pc/kg).

(12) *Reduction Area-Vent Wet Air Pollution Control.*

PSNS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or Pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium and hafnium produced	
Chromium (total)	0.244	0.099
Cyanide (total)	0.132	0.053
Lead	0.184	0.086
Nickel	0.362	0.244
Ammonia (as N)	87.820	38.540
Radium 226 [1]	13.130	5.383

[1] Value in picocuries per kilogram (pc/kg).

(13) *Magnesium Recovery Wet Air Pollution Control.*

PSNS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium and hafnium produced	
Chromium (total)	0.487	0.197
Cyanide (total)	0.263	0.105
Lead	0.369	0.171
Nickel	0.724	0.487
Ammonia (as N)	175.600	77.080
Radium 226 [1]	26.260	10.770

[1] Values in picocuries per kilogram (pc/kg).

(14) *Zirconium Chip Crushing Wet Air Pollution Control.*

PSNS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium produced	
Chromium (total)	0.000	0.000
Cyanide (total)	0.000	0.000
Lead	0.000	0.000
Nickel	0.000	0.000
Ammonia (as N)	0.000	0.000
Radium 226 [1]	0.000	0.000

[1] Values in picocuries per kilogram (pc/kg).

(15) *Acid Leachate from Zirconium Metal Production.*

PSNS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of pure zirconium produced.	
Chromium (total)	10.000	4.400
Cyanide (total)	5.803	2.397
Lead	8.250	3.631
Nickel	16.210	10.000
Ammonia (as N)	3,932.000	1,726.000
Radium 226 [1]	537.800	241.000

[1] Values in picocuries per kilogram (pc/kg).

(16) *Acid Leachate from Zirconium Alloy Production.*

PSNS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium contained in alloys	
Chromium (total)	5.635	2.303
Cyanide (total)	3.154	1.222
Lead	4.410	2.050
Nickel	8.674	5.035
Ammonia (as N)	2,105.000	923.000
Radium 226 [1]	314.700	129.000

[1] Values in picocuries per kilogram (pc/kg).

(17) *Leaching Rinse Water from Zirconium Metal Production.*

PSNS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of pure zirconium produced	
Chromium (total)	21.810	8.840
Cyanide (total)	11.730	4.715
Lead	16.500	7.661
Nickel	32.410	21.810
Ammonia (as N)	7,895.000	3,451.000
Radium 226 [1]	1,176.000	432.000

[1] Values in picocuries per kilogram (pc/kg).

(18) *Leaching Rinse Water (Zirconium Alloy Production).*

PSNS FOR THE PRIMARY ZIRCONIUM AND HAFNIUM SUBCATEGORY

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of zirconium contained in alloys	
Chromium (total)	0.232	0.118
Cyanide (total)	0.153	0.063
Lead	0.221	0.103
Nickel	0.424	0.292
Ammonia (as N)	165.300	46.210
Radium 226 [1]	15.740	6.454

[1] Values in picocuries per kilogram (pc/kg).

§ 421.337 [Reserved]

[FR Doc. 84-1072 Filed 6-26-84; 8:45 am]

BILLING CODE 6560-50-M