ENVIRONMENTAL PROTECTION AGENCY

40 CFR PART 461

[OW-FRL 2195-8]

Battery Manufacturing Point Source Category; Proposed Effluent Limitations Guidelines, Pretreatment Standards, and New Source Performance Standards

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed Regulation.

SUMMARY: EPA is proposing this regulation to limit effluent discharges to waters of the United States and introductions of pollutants into publicly owned treatment works from plants engaged in battery manufacturing. The purpose of this proposal is to provide effluent limitations guidelines based on "best practicable technology" and "best available technology," and to establish new source performance standards and pretreatment standards under the Clean Water Act. After considering comments received in response to this proposal, EPA will promulgate a final rule.

DATES: Comments on this proposal must be submitted by January 10, 1982. The Agency is proposing a compliance date for pretreatment standards for existing sources to be three years from the date of promulgation.

ADDRESSES: Send comments to: Mary L. Belefski, Effluent Guidelines Division (WH-552), Environmental Protection Agency, 401 M St., SW., Washington, D.C. 20460, Attention: EGD Docket Clerk, Proposed Battery Manufacturing Rules (WH-552). The supporting information and all comments received on this proposal will be available for inspection and copying at the EPA Public Information Reference Unit, Room 2404 (EPA Library Rear) PM-213. The EPA information regulation (40 CFR Part 2) provides that a reasonable fee may be charged for copying. Copies of technical documents may be obtained from the Distribution Officer at the above address or call (202) 382-7115. The economic analysis may be obtained from Dr. Ellen Warhit, Economic Analysis Staff (WH-586), Environmental Protection Agency, 401 M St. SW., Washington, D.C. 20460, or call (202) 382-5381.

FOR FURTHER INFORMATION CONTACT: Technical information may be obtained from Mr. Ernst P. Hall, at the address listed above, or call (202) 382-7126.

SUPPLEMENTARY INFORMATION: The Supplementary Information section describes the legal authority and background, the technical and economic bases, and other aspects of the proposed regulations. That section also summarizes comments on a draft technical document circulated in September 1980, and solicits comments on specific areas of interest. The abbreviations, acronyms, and other terms used in the Supplementary Information section are defined in Appendix A to this notice.

This proposed regulation is supported by three major documents available from EPA. Chemical analysis methods are discussed in *Sampling and Analysis Procedures for Screening of Industrial Effluents for Priority Pollutants*. EPA's technical conclusions are detailed in the *Development Document for Proposed Effluent Limitations Guidelines, New Source Performance Standards and Pretreatment Standards for the Battery Manufacturing Point Source Category* (Development Document). The Agency's economic analysis is found in *Economic Impact Analysis of Proposed Effluent Standards and Limitations for the Battery Manufacturing Industry* (Economic Impact Analysis).

Organization of This Notice

I. Legal Authority

The regulation described in this notice is proposed under 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 USC 1251 *et seq.*, as amended by the Clean Water Act of 1977, Pub. L. 95-217) (the "Act"). This regulation is also proposed in response to the Settlement Agreement in *Natural Resources Defense Council, Inc.*, v. *Train*, 8 ERC 2120 (D.D.C. 1976), modified March 9, 1979, 12 ERC 1833.

II. Background

A. The Clean Water Act

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); and by July 1, 1983, these dischargers were required to achieve "effluent limitations requiring the application 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," 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 sections 307 (b) and (c) of the Act. While 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 EPA Administrator. 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 specified 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 Court. This Agreement required EPA to develop a program and adhere to a schedule for promulgating regulations for 21 major industries, including 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 March 9, 1979.

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" ("BMPs") to prevent the release of toxic and hazardous pollutants from plant site runoff, spillage or leaks, sludge or waste disposal, and drainage from raw material storage associated with, or ancillary to, the manufacturing or treatment process.

In keeping with its emphasis on toxic pollutants, the Clean Water Act of 1977 also revises the control program for non-toxic pollutants. Instead of BAT for "conventional" pollutants identified under section 304(a)(4) (including biochemical oxygen demand, suspended solids, fecal coliform, oil and grease and pH), the new section 301(b)(2)(E) requires achievement by July 1, 1984, of "effluent limitations requiring the application of the best conventional pollutant control technology" (BCT). The factors considered in assessing BCT for an industry include the costs of attaining a reduction in effluents and the effluent reduction benefits derived, compared with the costs and effluent reduction benefits from the discharge from POTW. (section 304(b)(4)(B)). For non-toxic, nonconventional pollutants, sections 301(b)(2)(A) and (b)(2)(F) require achievement of BAT effluent limitations within 3 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 Sections 301, 304, 306, 307, and 501 of the Clean Water Act.

B. Prior EPA Regulations

EPA has not previously promulgated regulations for the battery manufacturing point source category.

C. Overview of the Industry

The battery manufacturing industry is included within the U.S. Department of Commerce Census Standard Industrial Classifications (SIC) 3691, Storage Batteries, and 3692, Primary Batteries, Dry and Wet.

Battery manufacturing encompasses the production of modular electric power sources where part or all of the fuel is contained within the unit and electric power is generated directly from a chemical reaction rather than indirectly through a heat cycle engine. There are three major components of a cell—anode, cathode, and electrolyte—plus mechanical and conducting parts such as case, separator, or contacts. In the strictest sense, a cell contains only one anode-cathode pair whereas a battery is an assemblage of cells connected to combine their electrical output. Common usage has blurred the distinction between these terms. For the purpose of this regulation, the term battery includes both single cells and an assemblage of cells. Production includes electrode manufacture of anodes and cathodes, and associated ancillary operations necessary to produce a battery.

The subcategories within battery manufacturing are primarily based on anode material. Eight subcategories are addressed in this regulation: cadmium, calcium, lead, Leclanche (zinc anode with an acid electrolyte), lithium, magnesium, zinc (with alkaline electrolyte), and nuclear. Manufacturing operations differ widely, both within and among subcategories. Subcategory manufacturing process elements are selected so that manufacturing operations within a subcategory are similar and are amenable to a common regulation.

Water is used throughout battery manufacturing to clean battery components and to transport wastes. Water is used in the chemical systems to make most electrodes and special electrode chemicals; water is also a major component of most electrolytes and formation baths.

The most important pollutants or pollutant parameters generated in battery manufacturing wastewaters are (1) toxic metals—arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc; (2) nonconventional pollutants—aluminum, cobalt, iron, manganese, and COD; and (3) conventional pollutants—oil and grease, TSS, and pH. Toxic organic pollutants generally were not found in large quantities although some cyanide was found in a few subcategories. Because of the amount of toxic metals present, the sludges generated during wastewater treatment generally contain substantial amounts of toxic metals.

In this preamble, the following terminology is used. A battery manufacturing site is one physical location (i.e., a particular street address) where battery manufacturing processes occur. A battery plant is the location where subcategory-specific battery manufacturing process elements occur. Two or more battery plants may be located at a particular site. Finally a battery facility is a location where final battery type products or their components are produced. One battery plant can produce more than one battery type product. For example, at one site with the address of 100 Main Street, there are two battery plants that perform manufacturing processes: one plant in the lead subcategory and the other plant in the zinc subcategory. One plant includes a facility producing lead-acid batteries, and the other plant includes two facilities: one producing alkaline manganese batteries and the other producing silver-zinc batteries.

EPA estimates that there are about 230 battery manufacturing sites in the United States. A substantial majority of these are located in California, Pennsylvania, North Carolina, and Texas. The remaining sites are scattered geographically throughout the United States.

Battery manufacturing began slowly after Galvani's invention of the galvanic cell in 1786 and developed into significance only after Leclanche in 1868 developed the forerunner of the modern dry cell. Rapid technological development and changing requirements over the last 50 or so years have caused and continue to cause new cell types to appear as commercial items while some established cell types decline or become obsolete and out of production. With the established level of change within the industry and high level of research aimed at developing economic automotive power and load leveling batteries, there is a high probability of building new or enlarging existing plants and continuing change of battery production methods and battery types.

III. Scope of This Rulemaking and Summary of Methodology

This proposed regulation is a part of a new chapter in water pollution control requirements. For most industries, the 1973–1976 round of rulemaking emphasized the achievement of best practicable technology (BPT) by July 1, 1977. In general, that technology level represented the average of the best existing performance of well known technologies for control of familiar (i.e., "classical") pollutants. However, for this category, BPT was not proposed or promulgated.

In this round of rulemaking EPA is emphasizing the achievement by July 1, 1984, of the best available technology economically achievable (BAT), which will result in reasonable further progress toward the 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 its 1977 legislation, Congress recognized that it was dealing with areas of scientific uncertainty when it declared the 65 "priority" pollutants and classes of pollutants "toxic" under section 307(a) of the Act. Many of the "priority" pollutants were relatively unknown outside of the scientific community, and those engaged in wastewater sampling and control have had little experience in dealing with these pollutants. Additionally, these pollutants often appear (and have toxic effects) at concentrations that severely tax current analytical techniques. Even though Congress was aware of the state-of-the-art difficulties and expense of "toxics" control and detection, it directed EPA to act quickly and decisively to detect, measure and regulate these substances.

In developing this regulation, EPA studied the battery manufacturing industry to determine whether differences in raw materials, final products, manufacturing processes, equipment, age and size of plants, water use, wastewater constituents, or other factors required the development or separate effluent limitations and standards for different segments (or subcategories) of the industry. This study included the identification of raw waste and treated effluent characteristics, including the sources and volume of water used, the processes employed, and the sources of pollutants and wastewaters. Sampling and analysis of specific waste streams enabled EPA to determine the presence and concentration of priority 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 terchnology using a computer program based on standard engineering cost analysis. EPA derived unit process costs by applying plant data and characteristics (production and flow) to each treatment process (i.e., metals precipitation, sedimentation, mixed-media filtration, etc.). The program also considers what treatment equipment exists at each plant. These unit process costs were added for each plant to yield total cost at each treatment level. In cases where there is more than one plant at one site, costs were calculated separately for each plant and probably overstate the actual amount which would be spent at the site where one combined treatment system could be used for all plants. The Agency then evaluated the economic impacts of these costs.

On the basis of these factors, EPA identified and classified various control and treatment technologies as BPT, BAT, NSPS, PSES, and PSNS. The proposed regulation, however, does not require the installation of any particular terchnology. Rather, it requires achievement of effluent limitations equivalent to those achieved by the proper operation of these or equivalent technologies.

Except for pH requirements, the effluent limitations for BPT, BAT, and NSPS are expressed as mass limitations—a mass of pollutant per unit of production (mg/kg). They were calculated by combining three figures: (1) treated effluent concentrations determined by analyzing control technology performance data; (2) production-weighted wastewater flow for each manufacturing process element of each subcategory; and (3) any relevant process of treatment variability factor (e.g., mean versus maximum day). This basic calculation was performed for each regulated pollutant or pollutant parameter and for each wastwater-generating process element of each subcategory.

Pretreatment standards—PSES and PSNS—are also expressed as mass limitations rather than concentration limits to ensure a reduction in the total quantity of pollutant discharges.

IV. Data Gathering Efforts

The data gathering program is described briefly in Section III and in substantial detail in Section V of the Development Document. At the start of the study, a data collection portfolio (dcp) was developed to collect information about the industry and was mailed, under the authority of Section 308 of the Clean Water Act, to each company known or believed to manufacture batteries in the United States. The list of companies was developed from Dunn & Bradstreet listings, a previous unpublished study done for the Agency, and discussions with battery industry associations.

Data were received from 133 companies representing about 230 manufacturing sites. In addition to previous studies and the data collection effort for this study, supplemental data were obtained from NPDES permit files and engineering studies on treatment technologies used in this and other categories with similar wastewater characteristics. The data gathering effort solicited all known sources of data and all available pertinent data were used in developing these limitations.

V. Sampling and Analytical Program

As Congress recognized in enacting the Clean Water Act of 1977, the state-of-the-art ability to monitor and detect toxic pollutants is limited. Most of the toxic pollutants were relatively unknown until a few years ago, and only on rare occasions had these pollutants been regulated. Also, industry had not monitored or developed methods to monitor most of these pollutants.

Faced with these problems, EPA developed a sampling and analytical protocol. This protocol is set forth in *Sampling and Analysis Procedures for Screening of Industrial Effluents for Priority Pollutants* revised in April 1977. Methods promulgated under Section 304(h) (40 CFR Part 136) were available and were used to analyze most toxic metals, pesticides, cyanides, and phenols. At the outset of the study, EPA expected that the pollutants of greatest concern in battery manufacturing would be toxic metals rather than organics. This has been borne out by the findings of the study.

The sampling and analysis program was carried out in two stages. First, screen sampling was performed at one plant in each subcategory, and this sample was analyzed (screened) for the presence and magnitude of each of the 129 specific toxic pollutants plus conventional and selected nonconventional pollutants. Second, additional (or verification) samples at the same and other plants were analyzed to determine more precisely the magnitude, presence, and process source of pollutants determined to be present or believed to be present on the basis of screening analysis and engineering evaluations. Because the method of subcategorizing this category was changed during the study, more than one screening analysis was made in some of the present subcategories. A total of 48 plants were visited for engineering analysis of which eight were sampled for screening and 15 were sampled for verification analysis. Full details of the engineering analysis, sampling and analysis program, and the water and wastewater data derived from sampling are presented in Section V of the Development Document.

Analysis for the toxic pollutants is both expensive and time consuming, costing between $650 and $1,000 per sample for a complete analysis. The cost in dollars and time limited the amount of sampling and chemical analysis performed. Although EPA fully believes that the available data support the limitations proposed, the Agency would have preferred a larger data base and continues to seek additional data as part of this rulemaking. In addition, EPA will periodically review these limitations as required by the Act and make any revisions supported by new data.

VI. Industry Subcategorization

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

EPA has subcategorized battery manufacturing primarily on the active anode material used. The eight subcategories are: cadmium, calcium, lead, Leclanche (zinc anode with acid electrolyte), lithium, magnesium, zinc (with alkaline electrolyte), and nuclear. At one time the Agency considered subcategorization on the basis of battery type and manufacturing process used; however close examination of the category clearly indicated this approach to be impractical (over 200 variations existed). The anode material approach was adopted because it considers most of the variations and avoids unnecessary complexity.

VII. Available Wastewater Control and Treatment Technology

A. Status of In-Place Technology

Current wastewater treatment systems in the battery manufacturing category range from no treatment to a sophisticated physical chemical treatment (although generally not operated properly) combined with water conservation practices. Of the 253 plants in the data base, 25 percent of the plants have no treatment and do not discharge, 16 percent have no treatment and discharge, 21 percent have only pH adjust systems, 3 percent have only sedimentation or clarification devices, 24 percent have equipment for chemical precipitation and settling, 7 percent have equipment for chemical precipitation, settling and filtration, and 4 percent have other treatment systems. Even though treatment systems are in-place at many plants, however, the category is uniformly inadequate in wastewater treatment practices. The systems in-place are generally inadequately sized, poorly maintained, or improperly operated (systems overloaded, solids not removed, pH not controlled, etc.). For the category as a whole, in general, there is no significant difference between direct or indirect dischargers in the nature or degree of treatment employed. Section V of the Development Document evaluates the treatment systems in-place and the effluent data received.

B. Control Technologies Considered

The control and treatment technologies available for this category include both in-process and end-of-pipe treatments. These technologies are described in Section VII of the Development Document. In-process treatment includes a variety of water flow reduction steps and major process changes such as: cascade and countercurrent rinsing (to reduce the amount of water used to remove unwanted materials from electrodes); consumption of cleansed wastewater in product mixes; and substitution of non-wastewater-generating forming (charging) systems. End-of-pipe treatment includes: hexavalent chromium reduction; chemical precipitation of metals using hydroxides, carbonates, or sulfides; and removal of precipitated metals and other materials using settling or sedimentation; filtration; distillation; ion exchange; reverse osmosis; and combinations of these technologies. Because of its high energy costs and low product recovery values, distillation has been recommended as an end-of-pipe treatment in only one subcategory.

The effectiveness of these treatment technologies has been evaluated and established by examining their performance on battery manufacturing and other similar wastewaters. The data base for hydroxide precipitation-sedimentation technology is a composite of data drawn from EPA sampling and analysis of copper and aluminum forming, battery manufacturing, porcelain enameling, and coil coating effluents. A detailed statistical analysis done on the data base showed substantial homogeneity in the treatment effectiveness data from these five categories. This supports EPA's technical judgment that these wastewaters are similar in all material respects for treatment because they contain a range of dissolved metals which can be removed by precipitation and solids removal. Electroplating data were originally used in the data set, but were excluded after further statistical analyses were performed. The statistical analysis and assumptions underlying the methodology are discussed in more detail in Section VII of the Development Document. Similarily, precipitation-sedimentation and filtration technology performance is based on the performance of full-scale commercial systems treating multi-category wastewaters which also are essentially similar to battery manufacturing wastewaters.

The treatment performance data is used to obtain maximum daily and monthly average pollutant concentrations. These concentrations (mg/l) along with the battery manufacturing production normalized flows (1/kg of production normalizing parameters) are used to obtain the maximum daily and monthly average values (mg/kg) for effluent limitations and standards. The monthly average values are based on the average of ten consecutive sampling days. The ten 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 requirement of direct discharge permits. The monthly average numbers shown in the regulation are to be used by plants with combined wastestreams that use the "combined wastestream formula" set forth at 40 CFR 403.6(e) and by permit writers in writing direct discharge permits.

VIII. 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 process 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, excpet where such are common industry practice.

The cost-benefit inquiry for BPT is a limited balancing, conducted at EPA's discretion, which does not require the Agency to quantify benefits in monetary terms. (See, for example, *American Iron and Steel Institute* v. *EPA*, 526 F. 2d 1027, 3rd Cir. 1975.) In balancing costs with effluent reduction benefits, EPA considers the volume and nature of existing discharges, the volume and nature of discharges expected after application of BPT, the general environmental effects of the pollutants, and the cost and economic impacts of the required pollution control level. The Act does not require or permit consideration of water quality problems attributable to particular point soures or industries, or water quality improvements in particular water bodies. Therefore, EPA has not considered these factors (See *Weyerhaeuser Company* v. *Costle*, 11 ERC 2149, D.C. Cir. 1978.)

The Agency is proposing BPT limitations for the cadmium, lead, and zinc subcategories. The remaining five subcategories are excluded from BPT and BAT limitations for the reasons discussed in Section XV of this notice.

In developing the proposed BPT limitations, the Agency first considered the amount of water used per unit of production in each subcategory process element by each plant which was sampled or which supplied usable dcp data. These data were used to determine the average water use for each subcategory process element. Next, the end-of-pipe treatment technology that seemed appropriate for BPT level treatment and was practiced is some plants throughout the category was selected. This treatment consists of: hexavalent chromium reduction when required; oil skimming when required; hydroxide (or lime) precipitation, if not accomplished by pH adjustment; and sedimentation to remove the resultant precipitate and other suspended solids. Sludge from the settling tank is concentrated to facilitate metals recovery or landfill disposal. The effluent that would be expected to result from the application of these technologies was evaluated against the known performance of some of the best plants in the category and other categories treating similar wastewaters with these technologies. Sections VII and IX of the Development Document explain the derivation of treatment effectiveness data and the calculation of BPT limitations.

To comply with BPT limitations, EPA estimates (1982 $) that total capital investment would be $0.9 million and that annual costs would be $0.4 million, including interest and depreciation. EPA expects no plant closures, unemployment, or changes in industry production capacity as a result of the BPT effluent limitations. These BPT limitations will result in the removal of 73,600 kg/yr (162,260 lb/yr) of toxic pollutants and 931,000 kg/yr (2,052,500 lb/yr) of other pollutants from the estimated current discharges. The Agency has determined the effluent reduction benefits associated with compliance with BPT limitations justify these costs.

IX. 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)). 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 existing performance is uniformly inadequate, BAT may be transferred from a different subcategory or category. BAT may include feasible process changes or internal controls, even when not common industry practice.

The required assessment of BAT "considers" costs, but does not require a balancing of costs against effluent reduction benefits (see *Weyerhaeuser* v. *Costle, supra*). In developing the proposed BAT, however, EPA has carefully considered the cost of the BAT treatment. The Agency has considered the volume and nature of the estimated present discharges, the volume and nature of discharges expected after application of BAT, the general enviromental effects of the pollutants, and the costs and economic impacts of the required pollution control levels on the industry.

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

The Agency has considered three to five major sets of technology options for each subcategory that might be applied at the BAT level. These options were set forth in a draft Development Document and presented to the technically interested public for preliminary comment. The options are described in detail in Section X of the Development Document and are outlined below. The Agency is proposing BAT limitations for the cadmium, lead, and zinc subcategories. The remaining five subcategories are excluded from regulation at BAT and are discussed in Section XV of this notice.

For plants to directly comply with BAT limitations, EPA estimates that total capital investment would be $2.8 million and that annual costs would be $0.8 million, including interest and depreciation. EPA expects no plant closures, unemployment, or changes in industry production capacity as a result of the proposed BAT effluent limitations.

The cost estimates for the various treatment options are detailed in Section VIII of the Development Document, control and treatment effectiveness is detailed in Section VII, and effluent reduction benefits are detailed and tabulated in Section X of the Development Document. The Economic Impact Analysis Contains a full analysis of potential economic impacts for all regulatory options considered.

As noted below, technology options both more and less stringent than those adopted as a basis for these proposals are available. In order to make a final decision, EPA solicits the submission of all information available on the costs of these technologies and the results they will produce. EPA will decide which technologies to select and which limitations to promulgate after consideration of all information available, including the information received in comments submitted on this proposal, its current information, and the results of any additional studies it sponsors. The final regulation may well be based upon a technology other than that which forms the basis for the current proposal.

A. Cadmium Subcategory

Option 1. BAT option 1 uses hydroxide precipitation and sedimentation, which is the same end-of-pipe treatment technology required for BPT; however, the discharge of toxic pollutants to the environment is reduced through in-process technology to reduce wastewater discharge.

Option 2. BAT option 2 builds on the end-of-pipe treatment technology for option 1 by adding a polishing filter to improve the removal of suspended solids and metals. Wastewater flow is the same as option 1.

Option 3. BAT option 3 builds on the reduced wastewater flows of option 1, adds reverse osmosis to allow reuse of much of the wastewater in the process, and requires further treatment (lime precipitation and filtration) of the reverse osmosis brine before discharge.

Option 4. BAT option 4 results in zero discharge of wastewater pollutants by using ion exchange with the ion exchange regenerate water reclaimed by distillation and returned to the process.

The pollutant removals and costs of the BAT options are summarized below. Removals and compliance costs are above current estimates of discharge and treatment in-place.

Pollutant removal (kilograms per year)		Costs (dollars in thousands)	
Toxics (pounds per year)	Other (pounds per year)	Capital	Annual
BPT 69,598 (153,437)	101,255 (223,230)	$82	$31
BAT-1 70,096 (154,535)	109,614 (241,656)	166	51
BAT-2 70,135 (154,622)	110,307 (243,185)	198	66
BAT-3 70,181 (154,722)	111,100 (244,934)	244	89
BAT-4 70,189 (154,741)	111,238 (245,238)	843	180

Cadmium Subcategory BAT Selection

EPA is proposing BAT effluent limitations based on technology option 1, but as indicated below, will give equivalent consideration to other options in promulgating final limitations. None of the options would cause significant adverse economic impacts. Option 1, requiring the reduction of flows prior to the lime and settle system required by BPT, is achievable using technologies and practices that are currently in use at some plants in the category. This option results in the significant reduction of toxic and other pollutant discharges. While EPA rejected the more stringent technology options 2–4 for purposes of formulating this proposal, it will give full consideration to basing the final regulations on one of these options. Therefore, EPA solicits comments on each of the options. In particular, EPA invites comment on the considerations discussed below.

EPA had found filtration to be exceptionally expensive in previous studies of other industrial categories. However, considering the extreme toxicity of the pollutants, and the amount of pollutants in this subcategory, EPA is continuing to consider the possibility of basing its BAT limitations for this subcategory on the addition of filtration.

EPA will give equal consideration to option 2 (along with option 1) in determining a basis for the final regulation. Section VII of the Development Document contains a discussion and tables concerning the effluent concentrations that can be achieved in systems using lime, settle and filtration (LS&F). Section II of the Development Document contains effluent limitation tables based on LS&F technology. If option 2 is selected, EPA will use that information, as well as any additional information submitted during the comment period, to develop final effluent limitations.

EPA is also continuing to consider the possibility of setting limitations based upon option 3 or 4. Both of these options require significant flow reduction, advanced wastewater treatment and reuse of wastewater in the manufacturing process. Option 3 requires the flow reduction of the BAT-1 discharge level by 85 percent. Option 4 requires the complete elimination of discharges. To enable such reductions or eliminations to be made, either the generation of process wastewater must be substantialy reduced or else most or all of the process wastewater must be reused in the process, leaving a low-volume, concentrated wastewater to undergo advanced treatment (such as reverse osmosis or ion exchange).

The methods used to reduce wastewater flows are varied, and different plants may use different methods to achieve flow reduction for their various production processes. However, in all cases, either process modifications, wastewater reuse, or both would be required to effect the flow reduction required by options 3 and 4.

Modifying production processes and rerouting wastewater streams often requires substantial retrofitting (reconstruction) of both production and wastewater treatment processes. Depending on the present configuration of the plant, including existing structures, piping and equipment, as well as available land area, such retrofitting may become extremely expensive. (This expense is in addition to the cost of installing the advanced wastewater treatment units, such as reverse osmosis and ion exchange.)

To date, EPA has not calculated all of the retrofit costs for existing plants to comply with options 3 and 4; rather, we have estimated the costs for installing (and operating and maintaining) the necessary equipment that would be incurred at a plant which would incur no additional costs for modifying existing production processes and rerouting existing wastewater flows. EPA expects that these costs would be high in many cases. Given this expectation as to cost and the fact that options 3 and 4 would result in relatively low incremental removal of toxic pollutants, EPA did not adopt these options as a basis for proposed BAT limitations. (However, as discussed below, EPA has selected Option 4 for new source performance standards; new sources do not icur retrofitting costs.) EPA solicits information on retrofitting costs at existing plants and on the appropriateness of selecting option 3 or 4.

B. Lead Subcategory

Option 1. BAT option 1 continues the lime-carbonate and settle end-of-pipe treatment set forth as BPT and uses in process controls and process changes to substantially reduce wastewater discharge.

Option 2. BAT option 2 builds on option 1 by adding a polishing filter to improve the removal of suspended solids and metals.

Option 3. BAT option 3 substitutes sulfide precipitation and membrane filtration for the lime-carbonate precipitation and polishing filtration in option 2. Sulfide precipitation technology is a mechanism for improved metals precipitation and removal.

Option 4. BAT option 4 adds reverse osmosis to the wastewater discharge from the polishing filter of option 2. The reverse osmosis permeate is recycled to the process while the brine is treated using sulfide precipitation and membrane filtration technology before discharge.

The pollutant removals and costs of the BAT options are summarized below. Removals and compliance costs are above current estimates of discharge and treatment in-place.

Pollutant removal (kilograms per year)		Costs (dollars in thousands)	
Toxics (pounds per year)	Other (pounds per year)	Capital	Annual
BPT 2,909(6,412)	828,950(1,827,522)	$744	$345
BAT-1 3,344(7,372)	836,346(1,843,828)	2,494	737
BAT-2 3,375(7,440)	836,746(1,844,710)	3,040	905
BAT-3 3,412(7,521)	836,746(1,844,710)	3,040	905
BAT-4 3,422(7,543)	837,205(1,845,722)	4,807	1,363

Lead Subcategory BAT Selection

EPA is proposing BAT effluent limitations based on technology option 1, but as discussed in the Cadmium subcategory, will give equivalent consideration to other options in promulgating final limitations. Only option 4 might cause one potential plant closure; none of the other options would cause significant adverse economic impact. Option 1 was selected because it results in substantial reductions of toxic pollutant discharges through the use of proven in-process controls and end-of-pipe treatment.

As discussed above with respect to option 2 in the Cadmium subcategory, EPA is continuing to consider the possible requirements of filtration. Section VII of the Development Document contains a discussion and tables concerning the effluent concentrations that can be achieved using LS&F. Section II of the Development Document contains effluent limitation tables based on LS&F technology. If option 2 is selected EPA will use that information, as well as any additional information submitted during the comment period to develop final effluent limitations.

EPA is requesting comments on the scope of retrofitting problems associated with options 3 and 4. Based on this review EPA will give equal consideration to options 2–4 in determining a basis for the final regulation.

Options 3 and 4 were rejected because of the retrofitting problems associated with flow reduction to implement those options, as was discussed above with respect to options 3 and 4 of the Cadmium subcategory. An additional retrofitting problem is caused by the use of sulfide precipitation for options 3 and 4, and is discussed below.

Special systems are needed to ensure safe operation of the sulfide system and the cost of handling of the treatment sludges, which may be toxic and reactive hazardous wastes. Sulfide precipitation treatment systems require special ventilation and construction features to eliminate workplace hazards. These features may be difficult and costly to install in existing plants, but can be installed at minimal cost when a plant is being constructed. Plants already having sulfide treatment systems in-place have not reported any problems. However, sulfide precipitation technology has not been selected for BPT, PSES, or BAT because of the difficulties and hazards associated with retrofitting and implementing the systems at existing plants that do not presently have them. (For new plants special ventilation equipment and special construction features can be initially installed at a nominal cost so that the systems can be properly operated and health hazards avoided.)

EPA also will consider establishing BAT for the final rule based on technologies that may impose lower costs than the proposed option, if it appears that the costs of the proposed of the option 1 are too high. The Agency is also soliciting comments and supporting cost and economic data for any recommendations.

C. Zinc Subcategory

Option 1. BAT option 1 uses the same end-of-pipe treatment provided at BPT but, by applying in-process controls substantially reduces the volume of wastewater and the amount of process wastewater pollutants discharged.

Option 2. BAT option 2 builds on BAT option by adding a polishing filter to improve the removal of suspended solids and metals.

Option 3. BAT option 3 adds on additional in-process wastewater control characteristic to option 2 but substitutes sulfide precipitation and membrane filtration for the hydroxide precipitation and polishing filtration in option 2. Sulfide precipitation technology is a mechanism for improved metals precipitation and removal.

Option 4. BAT option 4 adds one additional in-process wastewater control characteristic to option 3 and follows the option 2 end-of-pipe treatment adding reverse osmosis technology which allows recycle and reuse of a substantial part of the permeate. The brine is treated using sulfide precipitation and membrane filtration technology before discharge.

Pollutant removals and costs of the BAT options are summarized below. Removals and compliance costs are above current estimates of discharge and treatment in-place.

Pollutant removal (kilograms per year)		Costs (dollars in thousand)	
Toxics (pounds per year)	Other (pounds per year)	Capital	Annual
BPT 1,093 (2,410)	789 (1,740)	$68	$25
BAT-1 1,114 (2,456)	1,058 (2,332)	122	32
BAT-2 1,115 (2,459)	1,076 (2,372)	138	52
BAT-3 1,117 (2,463)	1,078 (2,376)	138	52
BAT-4 1,118 (2,465)	1,098 (2,421)	147	75

Zinc Subcategrory BAT Selection

EPA is proposing BAT effluent limitations based on technology option 1, but as discussed in the Cadmium subcategory, will give equivalent consideration to other options in promulgating final limitations. None of the options would cause significant adverse economic impacts. Option 1 was selected because it results in substantial reduction of toxic pollutant discharges through the use of proven in-process controls and end-of-pipe treatment, and does not result in significant economic impacts.

Option 2, 3, and 4 were rejected for the Zinc subcategory for the same reasons as discussed above in the cases of the Cadmium and Lead subcategories. As discussed above, EPA will give equal consideration to options 2–4 in determining a basis for the final regulation. EPA is especially continuing to consider the possible requirements of filtration. Section VII of the Development Document contains a discussion and tables concerning the effluent concentrations that can be achieved using LS&F. Section II of the Development Document contains effluent limitation tables based on LS&F technology. If option 2 is selected EPA will use that information as well as any additional information submitted during the comment period to develop final effluent limitations.

X. 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 (BDT). New plants can incorporate the best and most efficient battery manufacturing processes and wastewater treatment technologies, and, therefore, Congress directed EPA to consider the best demonstrated process changes, inplant controls, and end-of-pipe treatment technologies to reduce pollution to the maximum extent feasible.

EPA considered a number of options for selection of NSPS technology. Options included those discussed under BAT. Each of these options are set forth in the proposed Development Document in Sections X and XI, and the costs are discussed in Section VIII. The options selected for proposal are outlined below. As discussed in the Economic Impact Analysis, none of the options would present barriers to entry by new plants in the industry.

Cadmium Subcategory NSPS Selection

EPA has selected the equivalent of BAT option 4 as the basis for proposed NSPS effluent standards. This option was selected because it achieves zero discharge of toxic pollutants and has been adequately demonstrated in the industry. As was discussed under BAT, implementation of the technology at new plants will not result in retrofit cost problems.

Three of 10 active plants in this subcategory achieve zero discharge of wastewater pollutants. Two plants achieve zero discharge through manufacturing process selection using essentially dry manufacturing processes. The third plant achieves zero discharge by the effective use of water conservation practices within the process and by sophisticated (ion exchange and distillation) wastewater treatment that totally recycles the treated wastewater to the manufacturing processes. This plant recently converted from being one of the most water-consumptive and wastewater-discharging plants, on a production normalized basis, to achieving zero discharge. Clearly zero-discharge technology has been demonstrated in this subcategory.

The Agency recognizes that the selected NSPS may impose high costs and that there may be other technologies that will achieve nearly equivalent pollutant removals at lower costs. The Agency will consider, and invites comments on, alternate technologies that may achieve substantial removals of pollutants at a lower cost.

Calcium Subcategory NSPS Selection

EPA has selected reuse of wastewaters from heat paper production after settling, and reuse following lime, settle and filtration technology for cell testing wastewaters as the basis for proposed NSPS. This option was selected because it achieves zero discharge of toxic pollutants, and a cost savings results from the recycling of process materials that result from the closed loop in heat paper production. Holding tanks are used instead of implementing a complete treatment system. One of the three plants active in this subcategory already achieves zero discharge.

Lead Subcategory NSPS Selection

EPA has selected the equivalent of BAT option 4 as the basis for proposed NSPS. This option includes flow reduction for the processes that cannot achieve zero discharge, lime and carbonate precipitation, filtration, reverse osmosis, and sulfide precipitation and filtration. The option was selected because it achieves maximum pollutant reduction for the subcategory. Also, the difficulties encountered with the sulfide system can be adequately and economically dealt with at new plants. As an alternative to flow reduction and treatment new plants can select dry manufacturing processes and water conservation practices and can achieve zero discharge.

The Agency recognizes that the selected NSPS may impose high costs and that there may be other technologies that will achieve nearly equivalent pollutant removals at lower costs. The Agency will consider, and invites comments on, alternate technologies that may achieve substantial removals of pollutants at a lower cost.

Leclanche Subcategory NSPS Selection

EPA has selected in-process controls, treatment, and recycle to achieve zero discharge of toxic pollutants as the basis for proposed NSPS. Twelve of the 19 plants active in this subcategory already achieve zero discharge by practicing water conservation and recycle, and using dry manufacturing processes.

Lithium Subcategory NSPS Selection

EPA has selected reusing wastewater from heat paper production after settling; aeration and lime and settle technology for air scrubber wastewaters; and lime, settle and filtration technology for other wastewaters, as the basis for proposed NSPS. This option was selected because, for heat paper production, it achieves zero discharge of toxic pollutants and also provides maximum pollutant reduction for cathode preparation and other process wastewaters. A cost savings results from the recycling of process materials that result from the closed loop in heat paper production. Holding tanks are used instead of implementing a complete treatment system. Two of the seven active plants in the subcategory achieve zero discharge by choice of manufacturing processes. Many alternatives can be considered when constructing a new plant.

Magnesium Subcategory NSPS Selection

EPA has selected reusing wastewaters for heat paper production after settling; aeration and lime and settle technology for air scrubber wastewaters; lime, settle and filtration technology for other wastewaters; and permanganate oxidation pretreatment for silver chloride cathodes as the basis for proposed NSPS. This option was selected because, for heat paper production, it achieves zero discharge of toxic pollutants, and also provides maximum pollutant reduction for cathode preparation and other process wastewaters. The closed loop in heat paper production also results in a cost savings due to the recycling of process materials. Also, holding tanks are used instead of implementating a complete treatment system. Four of the eight active plants in this subcategory achieve zero discharge by choice of manufacturing processes. Many alternatives can be considered when constructing a new plant.

Zinc Subcategory NSPS Selection

EPA has selected the equivalent of BAT option 4 as the basis for proposed NSPS. This option, which includes flow reduction, lime precipitation, filtration, and reverse osmosis with sulfide precipitation and filtration of the reverse osmosis brine, achieves maximum pollutant reduction for the subcategory. The difficulties encountered with the sulfide system can be dealt with adequately and economically at new plants.

The Agency recognizes that the selected NSPS may impose high costs and that there may be other technologies that will achieve nearly equivalent pollutant removals at lower costs. The Agency will consider, and invites comments on, alternate technologies that may achieve substantial removals of pollutants at a lower cost.

XI. Pretreatment Standards for Existing Sources (PSES)

Section 307(b) of the Act requires EPA to promulgate pretreatment standards for existing sources (PSES), which must be achieved within three years of promulgation. PSES are designed to prevent the discharge of pollutants which pass through, interfere with, or are otherwise incompatible with the operation of Publicly Owned Treatment Works (POTW). The legislative history of the 1977 Act indicates that pretreatment standards are to be technology-based and analogous to the best available technology for removal of toxic pollutants. The general pretreatment regulations can be found at 40 CFR Part 403. (See 43 FR 27736 June 26, 1978; 46 FR 9404 Jan. 28, 1981.)

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 a POTW, the Agency compares the percentage of a pollutant removed by POTW with the percentage removed by direct dischargers applying BAT. A pollutant is deemed to pass through the POTW when the average percentage removed nationwide by well-operated POTW meeting secondary treatment requirements is less then the percentage removed by direct dischargers complying with BAT effluent limitations guidelines for that pollutant.

This approach to the definition of pass through satisfies two competing objectives set by Congress: That standards for indirect dischargers be equivalent to standards for direct dischargers, while, at the same time, that the treatment capability and performance of the POTW be recognized and taken into account in regulating the discharge of pollutants from indirect dischargers. Rather than compare the mass or concentration of pollutants discharged by the POTW with the mass or concentration discharged by a direct discharger, the Agency compares the percentage of the pollutants removed by the plant with the POTW removal. The Agency takes this approach because a comparison of mass or concentration of pollutants in a POTW effluent with pollutants in a direct discharger's effluent would not take into account the mass of pollutants discharged to the POTW from nonindustrial sources nor the dilution of the pollutants in the POTW effluent to lower concentrations from the addition of large amounts of nonindustrial wastewater.

In the battery manufacturing category, the Agency has concluded that the pollutants that would be regulated (primarily toxic metals) under these proposed standards pass through the POTW. The average percentage of these pollutants removed by POTW nationwide ranges from 30 to 80 percent, whereas the percentage that can be removed by a battery manufacturing direct discharger applying BAT is expected to be over 99 percent. Accordingly, these pollutants pass through POTW.

In addition, toxic metals are not degraded in the POTW; they either pass through or are removed in the sludge. The presence of highly toxic metals discharged from a battery plant in the POTW sludge may limit a POTW's chosen sludge disposal method. For example, a major pollutant discharged by battery plants is cadmium. Under EPA's Criteria for Classification of Solid Waste Disposal Facilities and Practices, the application of POTW sludge to land used for production of food-chain crops is restricted when the sludge contains significant levels of cadmium.

The pretreatment options considered are parallel to BPT and the BAT options described in Sections IX and X of the Development Document, and previously described under BAT for the Cadmium, Lead, and Zinc subcategories. PSES-0 is the equivalent of BPT technology and PSES 1–4 are the equivalent of BAT *technology options 1–4. These* subcategories and the Leclanche and magnesium subcategories are discussed below. No PSES are proposed for the Calcium and Lithium subcategories because the amount and toxicity of the discharges from these subcategories do not justify developing national standards.

The mass limitations set forth as PSES are presented here as the only method of designating pretreatment standards. Regulation on the basis of concentration only is not appropriate because concentration-based standards do not restrict the total quantity of pollutants discharged. Flow reduction is a significant part of the model technology for pretreatment because it reduces the amount of toxic pollutants introduced into a POTW. Therefore, the Agency is not proposing concentration-based pretreatment standards.

To comply with PSES, EPA estimates that total capital investment would be $25.0 million and that annual costs would be $6.2 million, including interest and depreciation. Section VIII of the Development Document explains the basis for these costs. EPA predicts no plant closures resulting from this regulation. The Economic Impact Analysis assesses the economic impacts. No changes in industry production capacity are expected as a result of these pretreatment standards.

EPA is proposing that the deadline for compliance with PSES in this regulation be three years after promulgation. EPA believes this time for compliance is reasonable because most of the plants do not now have all of the required equipment in-place and this amount of time generally will be needed for proper engineering, installation and start-up of the treatment facilities. The Agency invites comments with support documentation and rationale on the need for this or any shorter compliance time.

Cadmium Subcategory PSES Selection

EPA has selected the equivalent of BAT option 1 for PSES for reasons discussed under BAT. In addition, the equivalent of BAT option 4 (zero discharge of pollutants) was rejected because potential product line closures were projected in the Economic Impact Analysis.

As discussed with respect to BAT however, EPA is continuing to give serious consideration to promulgating an option other than option 1 as a final regulation. In particular, the Agency is continuing to evaluate the requirements of filtration. Section VII of the Development Document contains a discussion and tables concerning the effluent concentrations that can be achieved using LS&F. Section II of the Development Document contains effluent standard tables based on LS&F technology.

Pollutant removals and costs of the PSES options are summarized below. Removals and compliance costs are above current estimates of discharge and treatment in place

Pollutant removal (kilograms per year)		Costs (dollars in thousands)	
Toxics (pounds per year)	Other (pounds per year)	Capital	Annual
PSES-0 27,131 (59,813)	39,472 (87,020)	$446	$102
PSES-1 27,325 (60,241)	42,730 (94,203)	430	147
PSES-2 27,340 (60,275)	43,000 (94,799)	562	189
PSES-3 27,538 (60,314)	43,309 (95,481)	840	248
PSES-4 27,361 (60,322)	43,363 (95,599)	2,027	663

Lead Subcategory PSES Selection

EPA has selected the equivalent of BAT option 1 for PSES for reasons discussed under BAT. As discussed with respect to BAT however, EPA is continuing to give serious consideration to promulgating an option other than option 1 as a final regulation. In particular, the Agency is continuing to evaluate the requirements of filtration. Section VII of the Development Document contains a discussion and tables concerning the effluent concentrations that can be achieved using LS&F. Section II of the Development Document contains effluent standard tables based on LS&F technology.

Pollutant removals and costs of the PSES options summarized below. Removals and compliance costs are above current estimates of discharge and treatment in-place.

Pollutant removal (kilograms per year)		Costs (dollars in thousand)	
Toxics (pounds per year)	Other (pounds per year)	Capital	Annual
PSES-0 21,330 (47,024)	6,078,968 (13,401,839)	$9,363	$3,097
PSES-1 24,522 (54,061)	6,133,206 (13,521,406)	20,394	5,814
PSES-2 24,748 (54,560)	6,136,140 (13,527,873)	27,320	6,912
PSES-3 25,019 (55,157)	6,136,140 (13,527,873)	27,320	6,912
PSES-4 25,092 (55,319)	6,139,506 (13,535,294)	35,864	10,182

EPA also will consider establishing PSES for the final rule based on technologies that may impose lower costs than the proposed option, if it appears that the proposed option 1 is too high. The Agency is also soliciting comment and supporting cost and economic data for any recommendations.

Leclanche Subcategory PSES Selection

EPA has selected the use of in-process controls or treatment and recycle to achieve zero discharge of toxic pollutants as the basis for proposed PSES. No other options are proposed because zero discharge is common practice within this subcategory. Twelve of the 19 plants active in this subcategory already achieve zero discharge by practicing water conservation, recycle, and using dry manufacturing processes. Wastewater discharge is reduced by 17 million 1/yr (5 million of the proposed option 1 are too high. The Agency is also soliciting comments and supporting cost and economic data for any recommendations.

C. Zinc Subcategory

Option 1. BAT Option 1 uses the same end-of-pipe treatment provided at BPT but, by applying in-process controls substantially reduces the volume of wastewater and the amount of process wastewater pollutants discharged.

Option 2. BAT option 2 builds on BAT option by adding a polishing filter to improve the removal of suspended solids and metals.

Option 3. BAT option 3 adds one additional in-process wastewater control characteristic to option 2 but substitutes sulfide precipitation and membrane filtration for the hydroxide precipitation and polishing filtration in option 2. Sulfide precipitation technology is a mechanism for improved metals precipitation and removal.

Option 4. BAT option 4 adds one additional in-process wastewater control characteristic to option 3 and follows the option 2 end-of-pipe treatment adding reverse osmosis technology which allows recycle and reuse of a substantial part of the permeate. The brine is treated using sulfide precipitation and membrane filtration technology before discharge.

Pollutant removals and costs of the BAT options are summarized below. Removals and compliance costs are above current estimates of discharge and treatment in-place.

Pollutant removal (kilograms per year)		Costs (dollars in thousand)	
Toxics (pounds per year)	Other (pounds per year)	Capital	Annual
BPT 1,093 (2,410)	789 (1,740)	$68	$25
BAT-1 1,114 (2,456)	1,058 (2,332)	122	32
BAT-2 1,115 (2,459)	1,076 (2,372)	138	52
BAT-3 1,117 (2,463)	1,078 (2,376)	138	52
BAT-4 1,118 (2,456)	1,098 (2,421)	147	75

Zinc Subcategory BAT Selection

EPA is proposing BAT effluent limitations based on technology option 1, but as discussed in the Cadmium subcategory, will give equivalent consideration to other options in promulgating final limitations. None of the options would cause significant adverse economic impacts. Option 1 was selected because it results in substantial reduction of toxic pollutant discharges through the use of proven in-process controls and end-of-pipe treatment, and does not result in significant economic impacts.

Options 2, 3, and 4 were rejected for the Zinc subcategory for the same reasons as discussed above in the cases of the Cadmium and Lead subcategories. As discussed above, EPA will give equal consideration to options 2–4 in determining a basis for the final regulation. EPA is especially continuing to consider the possible requirements of filtration. Section VII of the Development Document contains a discussion and tables concerning the effluent concentration that can be achieved using LS&F. Section II of the Development Document contains effluent limitation tables based on LS&F technology. If option 2 is selected EPA will use that information as well as any additional information submitted during the comment period to develop final effluent limitations.

X. 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 (BDT). New plants can incorporate the best and most efficient battery manufacturing processes and wastewater treatment technologies, and, therefore, Congress directed EPA to consider the best demonstrated process changes, inplant controls, and end-of-pipe treatment technologies to reduce pollution to the maximum extent feasible.

EPA considered a number of options for selection of NSPS technology. Options included those discussed under BAT. Each of these options are set forth in the proposed Development Document in Sections X and XI, and the costs are discussed in Section VIII. The options selected for proposal are outlined below. As discussed in the Economic Impact Analysis, none of the options would present barriers to entry by new plants in the industry.

Cadmium Subcategory NSPS Selection

EPA has selected the equivalent of BAT option 4 as the basis for proposed NSPS effluent standards. This option was selected because it achieves zero discharge of toxic pollutants and has been adequately demonstrated in the industry. As was discussed under BAT, implementation of the technology at new plants will not result in retrofit cost problems.

Three of 10 active plants in this subcategory achieve zero discharge of wastewater pollutants. Two plants achieve zero discharge through manufacturing process selection using essentially dry manufacturing processes. The third plant achieves zero discharge by the effective use of water conservation practices within the process and by sophisticated (ion exchange and distillation) wastewater treatment that totally recycles the treated wastewater to the manufacturing processes. This plant recently converted from being one of the most water-consumptive and wastewater-discharging plants, on a production normalized basis, to achieving zero discharge. Clearly zero-discharge technology has been demonstrated in this subcategory.

The Agency recognizes that the selected NSPS may impose high costs and that there may be other technologies that will achieve nearly equivalent pollutant removals at lower costs. The Agency will consider, and invites comments on, alternate technologies that may achieve substantial removals of pollutants at a lower cost.

Calcium Subcategory NSPS Selection

EPA has selected reuse of wastewaters from heat paper production after settling, and reuse following lime, settle and filtration technology for cell testing wastewaters as the basis for proposed NSPS. This option was selected because it achieves zero discharge of toxic pollutants, and a cost savings results from the recycling of process materials that result from the closed loop in heat paper production. Holding tanks are used instead of implementing a complete treatment system. One of the three plants active in this subcategory already achieves zero discharge.

Lead Subcategory NSPS Selection

EPA has selected the equivalent of BAT option 4 as the basis for proposed NSPS. This option includes flow reduction for the processes that cannot achieve zero discharge, lime and carbonate precipitation, filtration, reverse osmosis, and sulfide precipitation and filtration. The option was selected because it achieves maximum pollutant reduction for the subcategory. Also, the difficulties encountered with the sulfide system can be adequately and economically dealt with at new plants. As an alternative to flow reduction and treatment new plants can select dry manufacturing processes and water conservation practices and can achieve zero discharge.

The Agency recognizes that the selected NSPS may impose high costs and that there may be other technologies that will achieve nearly equivalent pollutant removals at lower costs. The Agency will consider, and invites comments on, alternate technologies that may achieve substantial removals of pollutants at a lower cost.

Leclanche Subcategory NSPS Selection

EPA has selected in-process controls, treatment, and recycle to achieve zero discharge of toxic pollutants as the basis for proposed NSPS. Twelve of the 19 plants active in the subcategory already achieve zero discharge by practicing water conservation and recycle, and using dry manufacturing processes.

Lithium Subcategory NSPS Selection

EPA has selected reusing wastewater from heat paper production after settling; aeration and lime and settle technology for air scrubber wastewaters; and lime, settle and filtration technology for other wastewaters, as the basis for proposed NSPS. This option was selected because, for heat paper production, it achieves zero discharge of toxic pollutants and also provides maximum pollutant reduction for cathode preparation and other process wastewaters. A cost savings results from the recycling of process materials that result from the closed loop in heat paper production. Holding tanks are used instead of implementing a complete treatment system. Two of the seven active plants in the subcategory achieve zero discharge by choice of manufacturing processes. Many alternatives can be considered when constructing a new plant.

Magnesium Subcategory NSPS Selection

EPA has selected reusing wastewaters for heat paper production after settling; aeration and lime and settle technology for air scrubber wastewaters; lime, settle and filtration technology for other wastewaters; and permanganate oxidation pretreatment for silver chloride cathodes as the basis for proposed NSPS. This option was selected because, for heat paper production, it achieves zero discharge of toxic pollutants, and also provides maximum pollutant reduction for cathode preparation and other process wastewaters. The closed loop in heat paper production also results in a cost savings due to the recycling of process materials. Also, holding tanks are used instead of implementating a complete treatment system. Four of the eight active plants in this subcategory achieve zero discharge by choice of manufacturing processes. Many alternatives can be considered when constructing a new plant.

Zinc Subcategory NSPS Selection

EPA has selected the equivalent of BAT option 4 as the basis for proposed NSPS. This option, which includes flow reduction, lime precipitation, filtration, and reverse osmosis with sulfide precipitation and filtration of the reverse osmosis brine, achieves maximum pollutant reduction for the subcategory. The difficulties encountered with the sulfide system can be dealt with adequately and economically at new plants.

The Agency recognizes that the selected NSPS may impose high costs and that there may be other technologies that will achieve nearly equivalent pollutant removals at lower costs. The Agency will consider, and invites comments on, alternate technologies that may achieve substantial removals of pollutants at a lower cost.

XI. Pretreatment Standards for Existing Sources (PSES)

Section 307(b) of the Act requires EPA to promulgate pretreatment standards for existing sources (PSES), which must be achieved within three years of promulgation. PSES are designed to prevent the discharge of pollutants which pass through, interfere with, or are otherwise incompatible with the operation of Publicly Owned Treatment Works (POTW). The legislative history of the 1977 Act indicates that pretreatment standards are to be technology-based and analogous to the best available technology for removal of toxic pollutants. The general pretreatment regulations can be found at 40 CFR Part 403. (See, 43 FR 27736, June 26, 1978 and 46 FR 9404, January 28, 1981.)

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 a POTW, the Agency compares the percentage of a pollutant removed by POTW with the percentage removed by direct dischargers applying BAT. A pollutant is deemed to pass through the POTW when the average percentage removed nationwide by well-operated POTW meeting secondary treatment requirements is less than the percentage removed by direct dischargers complying with BAT effluent limitations guidelines for that pollutant.

This approach to the definition of pass through satisfies two competing objectives set by Congress: That standards for indirect dischargers be equivalent to standards for direct dischargers, while, at the same time, that the treatment capability and performance of the POTW be recognized and taken into account in regulating the discharge of pollutants from indirect dischargers. Rather than compare the mass or concentration of pollutants discharged by the POTW with the mass or concentration discharged by a direct discharger, the Agency compares the percentage of the pollutants removed by the plant with the POTW removal. The Agency takes this approach because a comparison of mass or concentration of pollutants in a POTW effluent with pollutants in a direct discharger's effluent would not take into account the mass of pollutants discharged to the POTW from nonindustrial sources nor the dilution of the pollutants in the POTW effluent to lower concentrations from the addition of large amounts of nonindustrial wastewater.

In the battery manufacturing category, the Agency has concluded that the pollutants that would be regulated (primarily toxic metals) under these proposed standards pass through the POTW. The average percentage of these pollutants removed by POTW nationwide ranges from 30 to 80 percent, whereas the percentage that can be removed by a battery manufacturing direct discharger applying BAT is expected to be over 99 percent. Accordingly, these pollutants pass through POTW.

In addidion, toxic metals are not degraded in the POTW; they either pass through or are removed in the sludge. The presence of highly toxic metals discharged from a battery plant in the POTW sludge may limit a POTW's chosen sludge disposal method. For example, a major pollutant discharged by battery plants is cadmium. Under EPA's Criteria for Classification of Solid Waste Disposal Facilities and Practices, the application of POTW sludge to land used for the production of food-chain crops is restricted when the sludge contains significant levels of cadmium.

The pretreatment options considered are parallel to BPT and the BAT options described in Sections IX and X of the Development Document, and previously described under BAT for the Cadmium, Lead, and Zinc subcategories. PSES-O is the equivalent of BPT technology and PSES 1–4 are the equivalent of BAT technology options 1–4. These subcategories and the Leclanche and magnesium subcategories are discussed below. No PSES are proposed for the Calcium and Lithium subcategories because the amount and toxicity of the discharges from these subcategories do not justify developing national standards.

The mass limitations set forth as PSES are presented here as the only method of designating pretreatment standards. Regulation on the basis of concentration only is not appropriate because concentration-based standards do not restrict the total quantity of pollutants discharged. Flow reduction is a significant part of the model technology for pretreatment because it reduces the amount of toxic pollutants introduced into a POTW. Therefore, the Agency is not proposing concentration-based pretreatment standards.

To comply with PSES, EPA estimates that total capital investment would be $25.0 million and that annual costs would be $6.2 million, including interest and depreciation. Section VIII of the Development Document explains the basis for these costs. EPA predicts no plant closures resulting from this regulation. The Economic Impact Analysis assesses the economic impacts. No changes in industry production capacity are expected as a result of these pretreatment standards.

EPA is proposing that the deadline for compliance with PSES in this regulation be three years after promulgation. EPA believes this time for compliance is reasonable because most of the plants do not now have all of the required equipment in-place and this amount of time generally will be needed for proper engineering, installation and start-up of the treatment facilities. The Agency invites comments with supporting documentation and rationale on the need for this or any shorter compliance time.

Cadmium Subcategory PSES Selection

EPA has selected the equivalent of BAT option 1 for reasons discussed under BAT. In addition, the equivalent of BAT option 4 (zero discharge, of pollutants) was rejected because potential product line closures were projected in the Economic Impact Analysis.

As discussed with respect to BAT however, EPA is continuing to give serious consideration to promulgating an option other than option 1 as a final regulation. In particular, the Agency is continuing to evaluate the requirements of filtration. Section VII of the Development Document contains a discussion and tables concerning the effluent concentrations that can be achieved using LS&F. Section II of the Development Document contains effluent standard tables based on LS&F technology.

Pollutant removals and costs of the PSES options are summarized below. Removals and compliance costs are above current estimates of discharge and treatment in place.

Pollutant removal (kilograms per year)		Costs (dollars in thousands)	
Toxics (pounds per year)	Other (pounds per year)	Capital	Annual
PSES-0 27,131(59,813)	39,472(87,020)	$446	$102
PSES-1 27,325(60,241)	42,730(94,203)	430	147
PSES-2 27,340(60,275)	43,000(94,799)	562	189
PSES-3 27,538(60,314)	43,309(95,481)	840	248
PSES-4 27,361(60,322)	43,363(95,599)	2,027	663

Lead Subcategory PSES Selection

EPA has selected the equivalent of BAT option 1 for PSES for reasons discussed under BAT. As discussed with respect to BAT however, EPA is continuing to give serious consideration to promulgating an option other than option 1 as a final regulation. In particular, the Agency is continuing to evaluate the requirements of filtration. Section VII of the Development Document contains a discussion and tables concerning the effluent concentrations that can be achieved using LS&F. Section II of the Development Document contains effluent standard tables based on LS&F technology.

Pollutant removals and costs of the PSES options summarized below. Removals and compliance costs are above current estimates of discharge and treatment in-place.

Pollutant removal (kilograms per year)		Costs (dollars in thousand)	
Toxics (pounds per year)	Other (pounds per year)	Capital	Annual
PSES-0 21,330(47,024)	6,078,968(13,401,639)	$9,363	$3,097
PSES-1 24,522(54,061)	6,133,206(13,521,406)	20,394	5,814
PSES-2 24,748(54,560)	6,136,140(13,527,873)	27,320	6,912
PSES-3 25,019(55,157)	6,136,140(13,527,873)	27,320	6,912
PSES-4 25,092(55,319)	6,139,506(13,535,294)	35,864	10,182

EPA also will consider establishing PSES for the final rule based on technologies that may impose lower costs than the proposed option, if it appears that the proposed option 1 is too high. The Agency is also soliciting comment and supporting cost and economic data for any recommendations.

Leclanche Subcategory PSES Selection

EPA has selected the use of in-process controls or treatment and recycle to achieve zero discharge of toxic pollutants as the basis for proposed PSES. No other options are proposed because zero discharge is common practice within this subcategory. Twelve of the 19 plants active in this subcategory already achieve zero discharge by practicing water conservation, recycle, and using dry manufacturing processes. Wastewater discharge is reduced by 17 million 1/yr (5 million gal/yr), and 1,504 kg/yr (3,316 lb/yr) of toxic pollutants (estimated current basis) are removed. In addition 12,271 kg/yr (27,053 lb/yr) of other pollutants are removed. Compliance costs above estimated current treatment in-place are $61,000 for capital and $38,000 for annual.

Magnesium Subcategory PSES Selection

Option 0. PSES option 0 uses chromium reduction and hydroxide precipitation and settling for heat paper production; permanganate oxidation as intitial treatment for silver chloride cathode production followed by chemical precipitation and settling; and chemical precipitation and settling for cell testing, floor and equipment wash and air scrubber process wastewaters.

Option 1. PSES option 1 is the same as option 0 except a polishing filter to improve the removal of suspended solids and metals is added on to the heat paper production system.

Option 2. PSES option 2 includes a settling and holding tank for heat paper production which allows for recycle and reuse of process solids and wastewaters. Also a polishing filter to improve the removal of suspended solids and metals is added on to the silver cathode, cell testing and floor and equipment process wastewaters. Air scrubber wastewater treatment is the same as option 0.

Option 3. PSES option 3 is the same as option 2 for heat paper production. Permanganate oxidation is replaced by carbon adsorption for silver chloride production, but otherwise the treatment is identical to option 2 for silver chloride cathode, cell testing and floor and equipment process wastewaters. A polishing filter is added on to air scrubber process wastewater system.

The effluent reduction benefits of the PSES options were evaluated in making a selection of PSES. This evaluation resulted in the selection of an alternative option which is a combination of option 0 and 2. EPA has selected recycle and reuse of heat paper production solids and wastewaters (option 2), pretreatment with permanganate oxidation for silver chloride cathode wastewaters (option 0), and lime and settle end-of-pipe treatment for other wastewaters (option 0) as the basis for proposed PSES. This alternative option was selected because it provides protection of the environment consistent with process treatment effectiveness, and the recycling of process materials closed loop in heat paper production results in a cost savings. Pollutant removals (above estimated current) of the selected PSES is the removal of 97 kg/yr (214 lb/yr) of toxic pollutants and 1018 kg/yr (2244 lb/yr) of other pollutants. Compliance costs above treatment in-place is $28,000 capital and $12,000 annual. No plant closures are projected.

Zinc Subcategory PSES Selection

EPA has selected the equivalent of BAT option 1 for PSES for reasons discussed under BAT. No economic impacts are projected for any PSES option. As discussed with respect to BAT however, EPA is continuing to give serious consideration to promulgating an option other than option 1 as a final regulation. In particular, the Agency is continuing to evaluate requirements of filtration. Section VII of the Development Document contains a discussion and tables concerning the effluent concentrations that can be achieved using LS&F. Section II of the Development Document contains effluent standards tables based on LS&F technology.

Pollutant removals and costs of the PSES options are summarized below. Removals and compliance costs are above current estimates of discharge and treatment in place.

Pollutant removal (kilograms per year)		Costs (dollars in thousand)	
Toxics (pounds per year)	Other (pounds per year)	Capital	Annual
PSES-0 3,665(8,079)	2,643(5,827)	349	119
PSES-1 3,729(8,221)	3,543(7,811)	468	135
PSES-2 3,734(8,232)	3,598(7,933)	548	215
PSES-3 3,739 (8,244)	3,609(7,957)	548	215
PSFS-4 3,742(8,250)	3,679(81,808)	739	341

XII. 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 that existing dischargers have. 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.

The PSNS treatment options considered are identical to the NSPS options. As in the case of existing sources, the pollutants considered for regulation under PSNS pass through POTW. For PSNS the Agency is proposing the same treatment options as for NSPS. The selected options will not create barriers to entry, as is discussed in the Economic Impact Analysis.

The Agency recognizes that the selected PSNS may impose high costs and that there may be other technologies that will achieve nearly equivalent pollutant removals at lower costs. The Agency will consider, and invites comments on, alternate technologies that may achieve substantial removals of pollutants at a lower cost.

The mass standards set forth as PSNS are presented here as the only method of designating pretreatment standards. Regulation on the basis of concentration is not adequate because concentration-based standards do not restrict the total quantity of pollutants discharged. Flow reduction is a significant part of the model technology for pretreatment because it reduces the amount of toxic pollutants introduced into a POTW. Therefore, the Agency is not proposing concentration-based pretreatment standards.

XIII. Best Conventional Technology (BCT) Effluent Limitations

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 defined in Section 304(a)(4)—biological oxygen demanding pollutants (BOD_5), total suspended solids (TSS), fecal coliform, and pH—and any additional pollutants defined by the Administrator as "conventional." On July 30, 1979, EPA added oil and grease to the conventional pollutant list (44 FR 44501).

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. (see *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 POTW 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 50732). In the case mentioned above, the Court of Appeals ordered EPA to correct data errors underlying EPA's calculation of the first test, and to apply the second cost test. (EPA had argued that a second cost test was not required.)

For the battery manufacturing category, EPA has determined that the BAT technology sequence (lime and settle following in-process flow reduction) is capable of removing significant amounts of conventional pollutants. However, EPA has not yet promulgated a revised BCT methodology in response to the *American Paper Institute* v. *EPA* decision mentioned earlier. Thus, EPA is deferring a decision on appropriate BCT limitations.

XIV. Regulated pollutants

The basis upon which the controlled pollutants were selected, as well as the general nature and environmental effects of these pollutants, are set out in Sections V, VI, IX and X and XII of the Development Document. Some of these pollutants are designated toxic under Section 307(a) of the Act. The Agency has deleted the following three pollutants from the toxic pollutant list: dichlorodifluroromethane, January 8, 1981, (44 FR 2266); trichlorofluoromethane, January 8, 1981, (46 FR 2266); and bis-(chloromethyl) ether, February 4, 1981, (46 FR 10723).

A. BPT

The pollutants and pollutant properties regulated by the BPT limitations are cadmium, chromium, cobalt, copper, cyanide, iron, lead, manganese, mercury, nickel, silver, zinc, TSS, oil and grease, and pH. Not all of these pollutants are controlled in all subcategories; regulation is established only where subcategories will be regulated and the pollutant appears in significant amounts in the raw waste. The discharge is controlled by maximum daily and monthly average mass effluent limitations stated in milligrams (mg) of each pollutant per kilogram (kg) of production normalizing parameter per process.

B. BAT and NSPS

The pollutants specifically limited by BAT and NSPS are cadmium, chromium, cobalt, copper, cyanide, iron, lead, manganese, mercury, nickel, silver, and zinc. In addition NSPS controls COD, TSS, oil and grease, and pH. Not all of these pollutants are controlled in each of the subcategories; regulation is established only where the pollutant appears in significant amounts in the raw waste. For new sources in the lithium and magnesium subcategories, EPA is proposing a TSS limitation to control asbestos. The analytical method used for screening analysis to determine the concentration of asbestos is not an approved EPA method and though the method is the most viable one available, there are serious concerns as to its precision and accuracy. Accordingly, asbestos (chrysotile) will be controlled at NSPS by the limitations on TSS. Compliance with the TSS limitation will assure removal of suspended solids which will include the removal of asbestos fibers. The use of TSS as an indicator for asbestos removal has been demonstrated in the Development Document supporting the Ore Mining and Dressing Point Source Category (40 CFR 434).

Discharge is controlled by maximum daily and monthly average mass effluent limitations stated in mg of each pollutant per kg of production normalizing parameter per process.

C. PSES and PSNS

The pollutants regulated at PSES and PSNS are the same as those limited by BAT and NSPS, respectively, except that iron, TSS, oil and grease, COD, and pH are not limited in pretreatment. POTW may use iron as a coagulant in the treatment process and are specifically designed to treat the conventional pollutants, including oxygen demand. Not all of the pollutants are controlled in all subcategories; regulation is established only where subcategories will be regulated and the pollutant appears in a significant concentration in the raw waste.

Appendix B to this notice contains a tabulation for each subcategory of the toxic pollutants that are limited by this regulation.

XV. Pollutants and Subcategories Not Regulated

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

Paragraph 8(a)(iii) of the Revised Settlement Agreement allows the Administrator to exclude from regulation specific 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 for each subcategory in Appendix C to this notice.

Paragraph 8(a)(iii) of the Revised Settlement Agreement 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 that were detected in the effluent in amounts that are at or below the nominal limit of analytical quantification which are too small to be effectively reduced by technologies and that are therefore excluded from regulation.

Paragraph 8(a)(iii) also allows the Administrator to exclude from regulation toxic pollutants that are detectable from only a small number of sources within the subcategories and are uniquely related to those sources. Appendix E to this notice lists for each subcategory the toxic pollutants which were detected in the effluents of only one plant and are uniquely related to only that 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 present in amounts too small to be effectively reduced by technologies considered applicable to the category. Appendix F lists those toxic pollutants which are not treatable using technologies considered applicable to the category.

Paragraph 8(a)(iii) also allows the Administrator to exclude from regulation specific pollutants which will be effectively controlled by the technologies upon which are based other effluent limitations and guidelines, standards of performance or pretreatment standards. The toxic pollutants considered for regulation, but excluded from control because adequate protection is now provided by this regulation through the control of other pollutants, are listed for each subcategory in Appendix G of this notice.

Paragraph 8(a)(iv) and 8(b)(ii) of the Revised Settlement Agreement allow the Administrator to exclude from regulation subcategories for which the amount and the toxicity of pollutants in the discharge does not justify developing national regulations. Some subcategories of the battery manufacturing industry meet this provision and are excluded from some parts of this regulation. These subcategories are listed in Appendix G to this notice. The nuclear subcategory is excluded from all regulation since there are no currently operating plants and plans are not being made to resume production. For BPT and BAT, four subcategories are excluded. Currently there are no direct dischargers in the calcium Leclanche, or magnesium subcategories. The amount and toxicity of direct pollutant dischagres (less than 100 lb/yr of toxic pollutants) in the lithium subcategory does not justify developing national regulations. For PSES, two subcategories are excluded. Currently the amount and toxicity of pollutants discharged (less than lb./yr of toxic pollutants) in the calcium and lithium subcategories do not justify developing national regulations.

XVI. Cost and Economic Impact

Executive Order 12291 requires EPA and other agencies to perform regulatory impact analyses of major regulations. Major rules impose an annual cost to the economy of $100 million or more or meet other economic impact criteria. The proposed regulation for battery manufacturing is not a major rule and therefore does not require a formal regulatory impact analysis. This proposed rulemaking satisfies the requirement of the Executive Order for a non-major rule. The Agency's regulatory strategy considered both the cost and the economic impacts of the proposed rulemaking.

The economic impact assessment is presented in *Economic Impact Analysis of Proposed Effluent Standards and Limitations for the Battery Manufacturing Industry*, EPA 440/2-082-002. This report details the investment and annual costs for the industry as a whole and for typical plants covered by the proposed regulation. Compliance costs are based on engineering estimates of capital requirements for the effluent control systems described earlier in this preamble. Cost estimates for hazardous waste disposal are also included in the analysis. The report assesses the impact of effluent control costs in terms of price changes, production changes, plant closures, employment effects, and balance of trade effects. These impacts are discussed in the report for each of the regulatory option. Many of the data used in the Economic Impact Analysis report are primarily from 1977, with some of the data updated where possible. The Agency plans to further update much of the industry background data before promulgation.

EPA has identified 258 facilities that produce the types of batteries covered by this regulation. Total investment for BAT and PSES is estimated to be $24.8 million, with annual costs of $6.4 million, including depreciation and interest. These costs are expressed in 1982 dollars and are based on the determination that plants will move from existing treatment to either BAT or PSES. No significant economic impacts (e.g., plant closures or unemployment) are projected as a result of compliance costs for this regulation. Maximum price increases if all costs were passed on to consumers are small, ranging from 0.04 to 0.3 percent. Balance of trade effects are insignificant.

In order to measure the potential economic impacts, the industry was subcategorized by the type of battery product, described by a cathode-anode pair. The analytical approach included a screening analysis to identify plants with potentially significant impacts, followed by financial analysis of individual plants. The plant-by-plant analysis focuses on profitability and capital requirements. Both characteristics are examined through standard financial analysis techniques. Plant closure determinations are based primarily on measures of financial performance such as return on assets, internal rate of return, and compliance investment cost.

In addition, EPA has conducted an analysis of the incremental removal cost per pound equivalent for each of the proposed technology based options. A pound equivalent is calculated by multiplying the number of pounds of pollutant discharged by a weighting factor for that pollutant. The weighting factor is equal to the water quality criterion for a standard pollutant (copper), divided by the water quality criterion for the pollutant being evaluated. The use of "pound equivalent" gives relatively more weight to removal of more toxic pollutants. Thus for a given expenditure, the cost per pound equivalent removed would be lower when a highly toxic pollutant is removed than if a less toxic pollutant is removed. This analysis entitled "Cost Effectiveness Analysis" is included in the record of this rulemaking. EPA invites comments on the methodology used in this analysis.

BPT. BPT regulations are proposed for direct dischargers in three technical subcategories: zinc, cadmium, and lead. These regulations will affect 23 facilities. Investment costs for BPT are $0.9 million; total annual costs are $0.4 million. There are no significant economic impacts projected as a result of BPT.

BAT

BAT regulations are proposed for direct dischargers in the same three subcategories. To comply directly with BAT twenty-three facilities will incur investment costs of $2.8 million and annual costs of $0.8 million. These regulations, as proposed, do not result in significant economic impacts.

PSES

Pretreatment standards are proposed for indirect dischargers in five technical subcategories: Leclanche, zinc, cadmium, magnesium, and lead. Investment costs for 131 facilities are $25.0 million; total annualized costs are $6.2 million. There are no plant closures projected as a result of PSES.

NSPS and PSNS

Battery manufacturing appears to be growing at a rate slightly greater than that of the GNP. The industry is experiencing technological advances and appears to be following a long-term trend towards fewer and larger plants. Regulations for new sources are not expected to significantly discourage entry into the industry or result in any differential economic impacts to new plants.

Regulatory Flexibility Analysis

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

Value of production is the primary variable used to distinguish firm size. The smallest size category includes 63 facilities (24 percent of the total) with annual revenues of less than $1 million each. The Agency invites comment on this size definition. Annual BAT and PSES compliance costs for these small plants are $170 thousand, and investment costs are $482 thousand. The economic analysis details the impacts associated with this proposed rule and with the other regulatory options the Agency considered. For this proposed rulemaking, there are no significant impacts on small firms; therefore, a formal Regulatory Flexibility Analysis is not required.

XVII. Non-Water Quality Aspects of Pollution Control

The elimination or reduction of one form of pollution may aggravate other environmental problems. Therefore, Sections 304(b) and 306 of the Act require EPA to consider the non-water quality environmental impacts (including energy requirements) of certain regulations. In compliance with these provisions, EPA has considered the effect of this regulation on air pollution, solid waste generation, and energy consumption. This proposal was circulated to and reviewed by EPA personnel responsible for non-water quality environmental programs. While it is always difficult to balance pollution problems against each other and against energy utilization, EPA is proposing regulations that it believes best serve often competing national goals.

The following are the non-water quality environmental impacts associated with the proposed regulatons and are discussed in Section VIII of the Development Document:

A. Air Pollution

Imposition of BPT, BAT, NSPS, PSES, and PSNS will not create any substantial air pollution problems.

B. Solid Waste

EPA estimates that battery manufacturing plants generate a total of 18,960 kkg of solid waste per year from manufacturing process operations, and an indeterminate amount of solid waste from wastewater treatment. Wastewater treatment sludges contain toxic metals including cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc.

EPA estimates that the proposed BPT limitations will contribute an additional 9,176 kkg per year of solid wastes. Proposed BAT and PSES will contribute approximately 54,280 kkg per year. These sludges will necessarily contain additional quantities (and concentrations) of toxic metal pollutants.

Some solid wastes, including some wastewater treatment sludges, may be hazardous under the regulations implementing subtitle C of the Resource Conservation and Recovery Act (RCRA). Under those regulations, generators of these wastes must test the wastes to determine whether they meet any of the characteristics of hazardous waste (see 40 CFR § 262.11, 45 FR 33142-331143 (May 19, 1980)). The Agency may also list these sludges as hazardous (toxic and reactive) pursuant to 40 CFR 261.11 (45 FR 33121 (May 19, 1980).

Wastes identified as hazardous 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 battery manufacturing wastes to meet containerization, labeling, recordkeeping, and reporting requirements; if they dispose of wastes off-site, battery manufacturers would have to prepare a manifesto that tracks the movement of the wastes from the generator's premises to a permitted off-site treatment, storage, or disposal facility. (See 45 FR 33143, May 19, 1980.) The transporter regulations require transporters of battery manufacturing wastes to comply with the manifest system to assure that the wastes are delivered to a permitted facility. (See 45 FR 33151-33152 (May 19, 1980). Finally, RCRA regulations establish standards for hazardous waste treatment, storage and disposal facilities allowed to receive such wastes.

Even if these wastes are not identified as hazardous, they still are subject to disposal in compliance with the subtitle D landfill standards, implementing S4004 of RCRA. (See 44 FR 53438, September 13, 1979.)

The economic impact assessment used preliminary estimates ($287,000 1978 dollars) of costs associated with compliance of RCRA regulations. This assessment, which considered both manufacturing process solid wastes and wastewater treatment sludges, indicated that the costs do not result in any additional economic impacts. A more recent and detailed analysis of solid wastes generated by battery manufacturers indicates that annual costs for compliance with RCRA ($140,000, 1978 dollars) are less than those used in the economic assessment.

For the total category, solid wastes were costed as being subject to the full RCRA requirements for hazardous wastes in the detailed analysis if the wastes had hazardous characteristics as defined under Subtitle C of RCRA and if the total amounts of hazardous waste generated at a manufacturing site exceeded 1,000 kg (2,200 lb) per month. Costs were separated for hazardous wastewater treatment sludges and manufacturing process wastes (spent concentrated solutions, reject batteries, and raw material trimmings). The analysis concluded that only seven plants in the category would incur costs from wastewater treatment sludges. The total category annual cost for RCRA disposal of hazardous wastewater treatment sludges generated as a result of this regulation for existing plants is estimated at $34,000 1978 dollars. No impact on the category is anticipated from handling hazardous wastewater treatment sludges. Costs for new sources are expected to be similar or less than the costs for existing plants because of the alternatives available for a new plant.

C. Energy Requirements

The battery industry in 1977 used about 1.16 billion kilowatt hours of energy. This regulation does not significantly affect the energy requirements of the industry. EPA estimates that the achievement of proposed BPT effluent limitations will result in a net increase in electrical energy consumption of approximately 0.24 million kilowatt-hours per year. Proposed BAT limitations are projected to add another 0.17 million kilowatt-hours to electrical energy consumption.

The Agency estimates that proposed PSES will result in a net increase in electrical energy consumption of approximately 0.91 million kilowatt-hours per year.

The energy requirements for NSPS and PSNS are estimated to be similar to energy requirements for BAT. More accurate estimates are difficult to make because projections for new plant construction are variable.

XVIII. Best Management Practices

Section 304(e) of the Clean Water Act authorizes the Administrator to prescribe "best management practices" (BMP), described under Authority and Background. EPA is not now considering promulgating BMP specific to the battery manufacturing category.

XIX. Upset And Bypass Provisions

An issue of recurrent 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 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 guidelines is necessary because such upsets will inevitably occur due to limitations in even properly operated control equipment. Because technology-based limitations are to require only what technology can achieve, it is claimed that liability for such situations is improper. When confronted with this issue, courts have been divided on the question of whether an explicit upset or excursion exemption is necessary or whether upset or excursion incidents may be handled through EPA's exercise of enforcement discretion. Compare *Marathon Oil Co.* v. *EPA*, 564 F. 2d 1253 (9th Cir. 1977) with *Weyerhaeuser* v. *Costle, supra* and *Corn Refiners Association, et al.* v. *Costle*, No. 78–1069 (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).

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

EPA has determined that both upset and bypass provisions should be included in NPDES permits, and has recently promulgated NPDES regulations that include upset and bypass permit provisions. (See 40 CFR 122.60 and 45 FR 33290, May 19, 1980.) 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. Permittees in battery manufacturing will be entitled to the general upset and bypass provisions in NPDES permits. Thus these proposed regulations do not address these issues.

XX. Variances and Modifications

Upon the promulgation of final regulations, the numerical effluent limitations for the appropriate subcategory must be applied in all Federal and State NPDES permits thereafter issued to battery manufacturing direct dischargers. In addition, on promulgation, the pretreatment limitations are directly applicable to indirect dischargers.

For the BPT effluent limitations, the only exception to the binding limitations is EPA's "fundamentally different factors" variance. See *E. I. duPont de Nemours and Co.* v. *Train*, 430 U.S. 112 (1977); *Weyerhaeuser Co.* v. *Costle, supra; EPA* v. *National Crushed Stone Association, et al* U.S. (No. 79–770, decided December 2, 1980). This variance recognizes that there may be factors concerning a particular discharger that are fundamentally different from the factors considered in this rulemaking. This variance clause was originally set forth in EPA's 1973–1976 industry regulations. It now will be included in the general NPDES regulations and will not be included in the battery manufacturing or other specific industry regulations. See the NPDES regulation, 40 CFR 125, Subpart D, 44 FR 32854, 32893 (June 7, 1979) and 45 FR 33512 (May 19, 1980) for the text and explanation of the "fundamentally different factors" variance.

Dischargers subject to the BAT limitations are also eligible for EPA's "fundamentally different factors" variance. In addition, BAT limitations for nonconventional pollutants may be modified under sections 301 (c) and (g) of the Act. Section 301(1) precludes the Administrator from modifying BAT requirements for any pollutants which are on the toxic pollutant list under section 307(1)(1) of the Act. The economic modification section (301(c)) gives the Administrator authority to modify BAT requirements for nonconventional pollutants for dischargers who file a permit application after July 1, 1977, 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. Applicants interested in applying for both must do so in their initial application. For further details, see 43 FR 40859, September 13, 1978.

The nonconventional pollutants limited under BAT in this regulation are cobalt, iron, and manganese. No regulation establishing criteria for 301(c) and 301(g) determinations have been proposed or promulgated, but the Agency recently announced in the April 12, 1982, Regulatory Agenda plans to propose such regulations by December, 1982 (47 FR 15720). All dischargers who file an initial application within 270 days will be sent a copy of the substantive requirements for 301(c) and 301(g) determinations once they are promulgated. Modification determinations will be considered at the time the NPDES permit is being reissued.

Pretreatment standards for existing sources are subject to the "fundamentally different factors" variance and credits for pollutants removed by POTWs. (see 40 CFR 403.7, 403.13.) Pretreatment standards for new sources are subject only to the credits provision in 40 CFR 403.7. New source performance standards are not subject to EPA's "fundamentally different factors" variance or any statutory or regulatory modifications. (See *duPont* v. *Train, supra.*)

XXI. Relationship To NPDES Permits

The BPT, BAT, and NSPS limitations in this regulation will be applied to individual battery manufacturing plants through NPDES permits issued by EPA or approved State agencies under section 402 of the Act. The preceding section of this preamble discussed the binding effect of this regulation on NPDES permits, except to the extent that variances and modifications are expressly authorized. this section describes several other aspects of the interaction of these regulations and NPDES permits.

One matter that has been subject to different judicial views is the scope of NPDES permit proceedings in the absence of effluent limitations, guidelines, and standards. Under current EPA regulations, states and EPA regions that issued NPDES permits before regulations are promulgated do so on a case-by-case basis on consideration of the statutory factors. (See *U.S. Steel Corp.* v. *Train,* 556 F. 2d 822, 844,854 7th Cir. 1977.) In these situations, EPA documents and draft documents (including these proposed regulations and supporting documents) are relevant evidence, but not binding, in NPDES permit proceedings. (See 44 FR 32854, June 7, 1979.)

Another noteworthy topic is the effect of this regulation on the powers of NPDES permit-issuing authorities. The promulgation of this regulation does not restrict the power of any permit-issuing authority to act in any manner consistent with law or these or any other EPA regulations, guidelines, or policy For example, the fact that this regulation does not control a particular pollutant does not preclude the permit issuer from limiting such pollutant on a case-by-case basis, when 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.

One additional topic that warrants discussion is the operation of EPA's NPDES enforcement program, many aspects of which have been considered in developing this regulation. The agency wishes to emphasize that, although the Clean Water Act is a strict liability statute, the initiation of enforcement proceedings by EPA is discretionary (*Sierra Club v. Train, 557* F 2nd. *485,* 5th Cir. 1977). EPA has exercised and intends to exercise that discretion in a manner that recognizes and promotes good faith compliance efforts.

XXII. Summary of Public Participation

In September 1980, EPA circulated a draft technical Development Document to all battery manufacturers who returned data collection portfolios and to other parties who requested it. This document did not include recommendations for effluent limitations and standards, but rather presented the technical basis for this proposed regulation. A meeting was held in Washington, D.C. on November 3, 1980, for public discussion of comments on this doucment. Seven commenters submitted comments on six particular areas in the Development Document. All comments and responses can be found in the record to this rulemaking. A brief summary of all comments received follows:

1. Comment: Sulfide precipitation technology presents operational hazards to the operators and produces sludges that may be both toxic and reactive hazardous wastes.

Response: Problems associated with sulfide precipitation technology have been addressed and are discussed above in the discussion of the BAT lead subcategory.

2. Comment: Reverse osmosis technology has some operational problems which include frequent plugging and rupturing of the membranes.

Response: With the use of inadequate membranes and improper operation, reverse osmosis technology does have some implementation problems. However, by selecting the appropriate membranes and properly maintaining system pressures, both frequent plugging and rupturing of the membranes is prevented.

3. Comment: There is agreement and disagreement with the treatment effectiveness concentrations to be used for certain metals. One commenter did not agree with the mercury and zinc concentrations and indicated that both should be 0.1 mg/1. Another commenter did not agree with the silver number and indicated that it should be equal to the hazardous waste concentration of 0.5

mg/1. Another commenter indicated support for the nickel concentration, but not for the cadmium concentration.

Response: For the mercury and zinc comments, no supportive data was provided; therefore, EPA will continue to rely on the data discussed in Section VII of the Development Document. For the silver comment, a comparison of hazardous waste concentrations with effluent limits is inappropriate. Treatment effectiveness is based on an extensive statistical analysis of treatment effectiveness data collected from sampling and analysis performed by the Agency. The use of RCRA toxic concentration limits is inappropriate because it reflects solubility of toxic materials under certain extraction processes rather than the level of treatment achievable by the specified treatment. The data base used for cadmium treatment has been expanded and the treatment effectiveness concentrations have changed. The commenter's data support the nickel and cadmium concentration values used for proposal.

4. Comment: Concentration only, rather than a production-related mass of pollutants, should be used for limitations.

Response: Concentration based limitations do not restrict the total quantity of pollutants discharged since the flow volume is not restricted and may vary widely, nor are they related to the production rate of any specific plant. Concentration based limitations allow unlimited quantities to be discharged as long as the pollutants remain at or below a specified concentration in the discharge. Since it is important to limit the quantity of a toxic pollutant discharged in relationship to the size of the production plant, mass-based production related limitations are preferred wherever feasible.

5. Comment: The "foliar" battery is different from other batteries in the Leclanche subcategory.

Response: Although different in physical configuration, the "foliar" battery uses the same raw materials and generates wastewater with characteristics similar to other plants in the Leclanche subcategory. Plants in this subcatetory can reuse the wastewater they are now treating and attain zero discharge.

6. Comment: Some information on plants should be added to the text and some tables; also there are some minor errors.

Response: Information needed for clarification was added; however, information that would release confidential information was not. Other changes and corrections were made as appropriate.

XXIII. Solicitation of Comments

EPA invites and encourages public participation in this rulemaking. The Agency asks that any deficiencies in the record of this proposal be specifically addressed and particularly asks that suggested revisions or corrections be supported by data.

EPA is particularly interested in receiving additional comments and information on the following issues:

1. The Agency is continuing to seek additional data to support these proposed limitations. The treatment effectiveness data set forth in the technical Development Document are based on the results of Agency sampling of the raw wastewaters and treated effluents from a broad range of plants generating similar wastewaters. 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 battery manufacturing plants. The Agency specifically requests long-term sampling data (especially paired raw wastewater—treated effluent data) from battery manufacturing plants having well operated treatment systems using the treatment technologies relied upon for this regulation, and also other equally effective treatment technologies.

2. The Agency requests long-term sampling data (especially paired raw wastewater—treated effluent data) from any plants treating cadmium that use chemical precipitation and settling technology.

3. The Agency requests comments on the Agency's consideration of selecting chemical precipitation, settling and filtration technology instead of only chemical precipitation and settling for the final regulation.

4. The Agency requests comments on the costs which might be incurred by existing plants for retrofitting to implement sulfide precipitation, in exchange and reverse osmosis technologies.

5. The Agency is considering basing limitations for all mercury containing wastewaters on sulfide precipitation technology for existing as well as new plants. The Agency solicits comments and data from plants in the category concerning the reasonableness and potential costs of this alternative.

6. To determine the economic impact of this regulation, the Agency has calculated the cost of installing BPT, BAT, PSES, NSPS, and PSNS for each battery manufacturing facility for which data was available. The details of the estimated costs and other impacts are presented in Section VIII of the technical Development Document and in the Economic Impact Analysis. Based on these analyses, the Agency projects no plant closures or employment losses as a result of this regulation. Because the Agency did not have plant specific data on some financial measures as such data is often proprietary the Agency used industry-wide ranges or averages. The Agency invites comments on these analyses and projections. The Agency has selected and is proposing BAT, PSES, and new source options that are substantially more costly than less stringent options. The Agency particularly seeks comment on whether this incremental cost is achievable by battery manufacturers; especially those that are small or less profitable. Commenters should not focus only on the likelihood of plant closures and employment losses but should also include data on the effects of the regulation on: modernization or expansion of production, production costs, the ability to finance non-environmental investments, product prices, profitability, availability of less costly technology and international competitiveness.

7. In the cost estimates the Agency has not considered cost savings particularly those associated with water flow reduction, process chemical and metal recovery, and process substitution. For example, the Agency estimated that the water use and sewerage savings for indirect dischargers in the lead subcategory may amount to about one third of the cost estimated for flow reduction technology. Similarly, substantial savings appear to be probable in other areas such as energy savings, chemical savings and metals recovery. The Agency invites comments and requests that cost data and documentation particularly in the lead subcategory be submitted to the Agency.

8. The Agency has estimated that there is minimal cost impact imposed on the battery manufacturing category from dealing with hazardous wastewater treatment sludges resulting from the proposed treatment systems. The details of these cost estimations are outlined in the technical Development Document. The Agency invites comments on this conclusion and requests that commenters submit any relevant hazardous waste and sludge data, and cost data to the Agency.

9. Most of the existing plants in the battery manufacturing category discharge to POTW. Because battery

wastewaters and sludges contain substantial amounts of toxic metals, the Agency invites comments and any supporting data concerning the incompatibility of battery manufacturing wastwaters with the POTW treatment systems or sludge disposition.

The proposed regulation was submitted to the Office of Management and Budget for review as required by Executive Order 12291.

XXIV. List of Subjects in 40 CFR Part 461

Battery manufacturing, Water pollution control, Waste treatment and disposal.

Dated: October 29, 1982.

Anne M. Gorsuch,

Administrator.

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

Act—The Clean Water Act
Agency—The U.S. Environmental Protection Agency
BAT—The best available technology economically achievable under section 304(b)(2)(b) of the Act
BCT—The best conventional pollutant control technology, under section 304(b)(4) of the Act
BDT—The best available demonstrated control technology processes, operating methods, or other alternatives, including where practicable, a standard permitting no discharge of pollutants under section 306(a)(1) of the Act
BMP—Best management practices under section 304(e) of the Act
BPT—The best parcticable control technology currently available under section 304(b)(1) of the Act
Clean Water Act—The Federal Water Pollution Control Act Amendments of 1972 (33 U.S.C. 1251 *et seq.),* as amended by the Clean Water Act of 1977 (Pub. L. 95-217)
Direct discharger—A plant that discharges pollutants into waters of the United States
Indirect discharger—A plant that introduces pollutants into a publicly owned treatment works
NPDES permit—A National Pollutant Discharge Elimination System permit issued under section 402 of the Act
NSPS—New source performance standards under section 306 of the Act
POTW—Publicly owned treatment works
PSES—Pretreatment standards for existing sources of indirect discharges under section 307(b) of the Act
PSNS—Pretreatment standards for new sources of direct discharges under section 307(b) and (c) of the Act
RCRA—Resource Conservation and Recovery Act (Pub. L. 94-580) of 1976, as amended.

Appendix B—Toxic Pollutants Limited by This Regulation

(a) Subpart A—Cadmium Subcategory
118 Cadmium
124 Nickel
126 Silver
128 Zinc

(b) Subpart B—Calcium Subcategory
116 Asbestos
119 Chromium

9(c) Subpart C—Lead Subcategory
120 Copper
122 Lead

(d) Subpart D—Leclanche Subcategory
115 Arsenic
118 Cadmium
119 Chromium
120 Copper
122 Lead
123 Mercury
124 Nickel
125 Selenium
128 Zinc

9(e) Subpart E—Lithium Subcategory
119 Chromium
122 Lead

(f) Subpart F—Magnesium Subcategory
119 Chromium
122 Lead
126 Silver

(g) Subpart G—Zinc Subcategory
119 Chromium
121 Cyanide
123 Mercury
124 Nickel
126 Silver
128 Zinc

Appendix C—Toxic Pollutants Not Detected

(a) Subpart A—Cadmium Subcategory
001 Acenaphthene
002 Acrolein
003 Acrylonitrile
004 Benzene
005 Benzidine
006 Carbon tetrachloride (tetrachloromethane)
007 Chlorobenzene
008 1,2,4-trichlorobenzene
009 Hexachlorobenzene
010 1,2-dichloroethane
011 1,1,1-trichloroethane
012 hexachloroethane
013 1,1-dichloroethane
014 1,1,2-trichloroethane
015 1,1,2,2-tetrachloroethane
016 Chloroethane
017 Bis (chloromethyl) ether
018 Bis (2-chloroethyl) ether
019 2-chloroethyl vinyl ether (mixed)
020 2-chloronaphthalene
021 2,4,6-trichlorophenol
022 Parachlorometa cresol
024 2-chlorophenol
025 1,2-dichlorobenzene
026 1,3-dichlorobenzene
027 1,4-dichlorobenzene
028 3,3-dichlorobenzidine
029 1,1-dichloroethylene
030 1,2-trans-dichloroethylene
031 2,4-dichlorophenol
032 1,2-dichloropropane
033 1,2-dichloropropylene (1,3-dichloropropene)
034 2,4-dimethyphenol
035 2,4-dinitrotoluene
036 2,6-dinitrotoluene
037 1,2-diphenylhydrazine
038 Ethylbenzene
039 Fluoranthene
040 4-chlorophenyl phenyl ether
041 4-bromophenyl phenyl ether
042 Bis(2-chloroisopropyl) ether
043 Bis(2-chloroethoxy) methane
045 Methyl chloride (dichloromethane)
046 Methyl bromide (bromomethane)
047 Bromoform (tribromomethane)
049 Trichlorofluoromethane
050 Dichlorodifluoromethane
051 Chlorodibromomethane
052 Hexachlorobutadiene
053 Hexachloromyclopentadiene
054 Isophorone
055 Napthalene
056 Nitrobenzene
057 2-nitrophenol
058 4-nitrophenol
059 2,4-dinitrophenol
060 4,6-dinitro-o-cresol
061 N-nitrosodimethylamine
062 N-nitrosodiphenylamine
063 N-nitrosodi-n-propylamine
064 Pentachlorophenol
065 Phenol
067 Butyl benzylphthalate
068 Di-N-butyl phthalate
069 Di-N-octyl phthalate
070 Diethyl phthalate
071 Dimethyl phthalate
072 1,2-benzanthracene (benzo(a)anthracene)
073 Benzo(a)pyrene (3,4-benzopyrene)
074 3,4-Benzofluoranthene (benzo(b)fluoranthene)
075 11,12-benzofluoranthene (benzo(b)fluoranthene
076 Chrysene
077 Acenaphthylene
078 Anthracene
079 1,12-benzoperylene (benzo(ghi)perylene)
080 Fluorene
081 Phenanthrene
082 1,2,5,6-dibenzanthracene dibenzo(,h)anthracene
083 Ideno(1,2,3-cd) pyrene (2,3-o-phenylene pyrene)
084 Pyrene
085 Tetrachloroethylene
088 Vinyl chloride (chloroethylene)
089 Aldrin
090 Dieldrin
091 Chlordane (technical mixture and metabolites)
092 4,4-DDT
093 4,4-DDE (p,p-DDX)
094 4,4-DDD (p,p-TDE)
095 Alpha-endosulfan
096 Bete-endosulfan
097 Endosulfan sulfate
098 Endrin
099 Endrin aldehyde
100 Heptachlor
101 Heptachlor epoxide (BHC-hexachlorocyclohexane
102 Alpha-BHC
103 Beta-BHC
104 Gamma-BHC (lindane)
105 Delta-BHC (PCB-poly-chlorinated biphenyls)
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
114 Antimony
115 Arsenic
125 Selenium
127 Thallium
129 2,3,7,8-tetrachloro-dibenzo-p-dioxin (TCDD)

(b) Subpart B—Calcium Subcategory
001 Acenaphthene
002 Acrolein
003 Acrylonitrile
004 Benzene
005 Benzidine
006 Carbon tetrachloride (tetrachloromethane)
007 Chlorobenzene
008 1,2,4-trichlorobenzene
009 Hexachlorogenzene
010 1,2-dichloroethane
011 1,1,1-trichloroethane
012 Hexachloroethane
013 1,1,1-dichloroethane
015 1,1,2,2-tetrachloroethane
016 Chloroethane
017 Bis (chloromethyl) ether
018 Bis (2-chloroethyl) ether
019 2-chloroethyl vinyl ether (mixed)
020 2-chloronaphthalene
021 2,4,6-trichlorophenol
022 Parachlorometa cresol
024 2-chlorophenol
025 1,2-dichlorobenzene
026 1,3-dichlorobenzene
027 1,4-dichlorobenzene
028 3,3-dichlorobenzidine
029 1,1-dichloroethylene
030 1,2-trans-dichloroethylene
031 2,4-dichlorophenol
032 1,2-dichloropropane
033 1,2-dichloropropylene (1,3-dichloropropene)
034 2,4-dimethylphenol
035 2,4-dinitrotoluene
036 2,6-dinitrotoluene
037 1,2-diphenylhydrazine
038 Ethylbenzene
039 Fluoranthene
040 4-chlorophenyl phenyl ether
041 4-bromophenyl phenyl ether
042 Bis (2-chloroisopropyl) ether
043 Bis (2-chloroethoxy) methane
045 Methyl chloride (dichloromethane)
046 Methyl bromide (bromomethane)
047 Bromoform (tribromomethane)
048 Dichlorobromomethane)
049 Trichlorofluoromethane
050 Dichlorodifluoromethane
051 Chlorodibromomethane
052 Hexachlorobutadiene
053 Hexachloromyclopentadiene
054 Isophorone
055 Napthalene
056 Nitrobenzene
057 2-nitrophenol
058 4-nitrophenol
059 2,4-dinitrophenol
060 4,6-dinitro-o-cresol
061 N-nitrosodimethylamine
062 N-nitrosodiphenylamine
063 N-nitrosodi-n-propylamine
065 Phenol
067 Butyl benzylphthalate
069 Di-N-octyl phthalate
070 Diethyl phthalate
071 Dimethyl phthalate
072 1,2-benzanthracene (benzo(a)anthracene)
073 Benzo(a)pyrene (3,4-benzopyrene)
074 3,4-Benzofluoranthene (benzo(b)fluoranthene)
075 11,12-benzofluoranthene (benzo(b)fluoranthene)
076 Chrysene
077 Acenaphthylene
078 Anthracene
079 1,12-benzoperylene (benzo(ghi)perylene)
080 Fluorene
081 Phenanthrene
082 1,2,5,6-dibenzanthracene dibenzo (,h)anthracene
083 Ideno(1,2,3-cd) pyrene (2,3-o-pheynylene pyrene)
084 Pyrene
085 Tetrachloroethylene
087 Trichloroethylene
088 Vinyl chloride (chloroethylene)
089 Aldrin
090 Dieldrin
091 Chlordane (technical mixture and metabolites)
092 4,4-DDT
093 4,4-DDE (p,p-DDX)
094 4,4-DDD (p,p-TDE)
095 Alpha-endosulfan
096 Beta-endosulfan
097 Endosulfan sulfate
098 Endrin
099 Endrin aldehyde
100 Heptachlor
101 Heptachlor epoxide (BHC-hexachlorocyclohexane)
102 Alpha-BHC
103 Beta-BHC
104 Gamma-BHC (lindane)
105 Delta-BHC (PCB-polychlorinated biphenyls)
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
121 Cyanide, Total
129 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)

(c) Subpart C—Lead Subcategory
002 Acrolein
003 Acrylonitrile
005 Benzidine
006 Carbon tetrachloride (tetrachloromethane)
007 Chlorobenzene
008 1,2,4-trichlorobenzene
009 Hexachlorobenzene
010 1,2-dichloroethane
012 Hexachloroethane
013 1,1-dichloroethane
014 1,1,2-trichloroethane
015 1,1,2,2-tetrachloroethane
016 Chloroethane
017 Bis (chloromethyl) ether
018 Bis (2-chloroethyl) ether
019 2-chloroethyl vinyl ether (mixed)
020 2-chloronaphthalene
022 Parachlorometa cresol
025 1,2-dichlorobenzene
027 1,4-dichlorobenzene
028 3,3-dichlorobenzidine
029 1,1-dichloroethylene
030 1,2-trans-dichloroethylene
032 1,2-dichloropropane
033 1,2-dichloropropylene (1,3-dichloropropene)
034 2,4-dimethylphenol
035 2,4-dinitrotoluene
036 2,6-dinitrotoluene
037 1,2-diphenylhydrazine
040 4-chlorophyenyl phenyl ether
041 4-bromophenyl phenyl ether
042 Bis(2-chloroisopropyl) ether
043 Bis(2-chloroethoxy) methane
045 Methyl chloride (dichloromethane)
046 Methyl bromide (bormomethane)
047 Bromoform (tribromomethane)
049 Trichlorofluoromethane
050 Dichlorodifluoromethane
052 Hexachlorobutadiene
053 Hexachloromyclopentadiene
054 Isophorone
056 Nitrobenzene
057 2-nitrophenol
058 4-nitrophenol
059 2,4-dinitrophenol
060 4,6-dinitro-o-cresol
061 N-nitrosodimethylamine
062 N-nitrosodiphenylamine
063 N-nitrosodi-n-propylamine
071 Dimethyl phthalate
077 Acenaphthylene
079 1,12-benzoperylene (benzo(ghi)perylene)
082 1,2,5,6-dibenzanthracene dibenzo(,h)anthracene
083 Ideno(1,2,3-cd) pyrene (2,3-o-pheynylene pyrene)
085 Tetrachloroethylene
088 Vinyl chloride (chloroethylene)
089 Aldrin
090 Dieldrin
091 Chlordane (technical mixture and metabolites)
092 4,4-DDT
093 4,4-DDE (p,p-DDX)
094 4,4-DDD (p,p-TDE)
095 Alpha-endosulfan
096 Beta-endosulfan
097 Endosulfan sulfate
098 Endrin
099 Endrin aldehyde
100 Heptachlor
102 Alpha-BHC
103 Beta-BHC
104 Gamma-BHC (lindane)
105 Delta-BHC (PCB-polychlorinated biphenyls)
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-1216 (Arochlor 1016)
113 Toxaphene
116 Asbestos
125 Selenium
127 Thallium
129 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)

(d) Subpart D—Leclanche Subcategory
001 Acenaphthene
002 Acrolein
003 Acrylonitrile
004 Benzene
005 Benzidine

006 Carbon tetrachloride (tetrachloromethane)
007 Chlorobenzene
008 1,2,4-trichlorobenzene
009 Hexachlorobenzene
010 1,2-dichloroethane
012 Hexachloroethane
013 1,1-dichloroethane
014 1,1,2-trichloroethane
016 Chloroethane
017 Bis (chloromethyl) ether
018 Bis (2-chloroethyl) ether
019 2-chloroethyl vinyl ether (mixed)
020 2-chloronaphthalene
021 2,4,6-trichlorophenol
022 Parachlorometa cresol
024 2-chlorophenol
025 1,2-dichlorobenzene
026 1,3-dichlorobenzene
027 1,4-dichlorobenzene
028 3,3-dichlorobenzidine
029 1,1-dichloroethylene
030 1,2-trans-dichloroethylene
031 2,4-dichlorophenol
032 1,2-dichloropropane
033 1,2-dichloropropylene (1,3-dichloropropene)
034 2,4-dimethyphenol
035 2,4-dinitrotoluene
036 2,6-dinitrotoluene
037 1,2-diphenylhydrazine
038 Ethylbenzene
039 Fluoranthene
040 4-chlorophenyl phenyl ether
041 4-bromophenyl phenyl ether
042 Bis(2-chloroisopropyl) ether
043 Bis(2-chloroethoxy) methane
045 Methyl chloride (dichloromethane)
046 Methyl bromide (bromomethane)
047 Bromoform (tribromomethane)
049 Trichlorofluoromethane
050 Dichlorodifluoromethane
052 Hexachlorobutadiene
053 Hexachloromyclopentadiene
054 Isophorone
055 Napthalene
056 Nitrobenzene
057 2-nitrophenol
058 4-nitrophenol
059 2,4-dinitrophenol
060 4,6-dinitro-o-cresol
061 N-nitrosodimethylamine
062 N-nitrosodiphenylamine
063 N-nitrosodi-n-propylamine
064 Pentachlorophenol
068 Di-n-butyl phthalate
072 1,2-benzanthracene (benzo(a)anthracene
073 Benzo(a)pyrene (3,4-benzopyrene)
074 3,5-Benzofluoranthene (benzo(b)fluoranthene)
075 11,12-benzofluoranthene (benzo(b)fluoranthene)
076 Chrysene
077 Acenaphthylene
078 Anthracene
079 1,12-benzoperylene (benzo(ghi) perylene)
080 Fluorene
081 Phenanthrene
082 1,2,5,6-dibenzanthracene dibenzo(,h)anthracene
083 Ideno(1,2,3-cd) pyrene (2,3-o-phenynylene pyrene)
084 Pyrene
085 Tetrachloroethylene
087 Trichloroethylene
088 Vinyl chloride (chloroethylene)
089 Aldrin
090 Dieldrin
091 Chlordane (technical mixture and metabolites)
092 4,4-DDT
093 4,4-DDE (p,p-DDX)
094 4,4-DDD (p,p-TDE)
095 Alpha-endosulfan
096 Beta-endosulfan
097 Endosulfan sulfate
098 Endrin
099 Endrin aldehyde
100 Heptachlor
101 Heptachlor epoxide (BHC-hexachlorocyclohexane
102 Alpha-BHC
103 Beta-BHC
104 Gamma-BHC (lindane)
105 Delta-BHC (PCB-polychlorinated biphenyls)
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
127 Thallium

(e) Subpart E—Lithium Subcategory

001 Acenaphthene
002 Acrolein
003 Acrylonitrile
004 Benzene
005 Benzidine
006 Carbon tetrachloride (tetrachloromethane)
007 Chlorobenzene
008 1,2,4-trichlorobenzene
009 Hexachlorobenzene
010 1,2-dichloroethane
012 Hexachloroethane
013 1,1-dichloroethane
015 1,1,2,2-tetrachloroethane
016 Chloroethane
017 Bis (chloromethyl) ether
018 Bis (2-chloroethyl) ether
019 2-chloroethyl vinyl ether (mixed)
020 2-chloronaphthalene
021 2,4,6-trichlorophenol
022 Parachlorometa cresol
024 2-chlorophenol
025 1,2-dichlorobenzene
026 1,3-dichlorobenzene
027 1,4-dichlorobenzene
028 3,3-dichlorobenzidine
029 1,1-dichloroethylene
030 1,2-trans-dichloroethylene
031 2,4-dichlorophenol
032 1,2-dichloropropane
033 1,2-dichloropropylene (1,3-dichloropropene)
034 2,4-dimethyphenol
035 2,4-dinitrotoluene
036 2,6-dinitrotoluene
037 1,2-diphenylhydrazine
038 Ethylbenzene
039 Fluoranthene
040 4-chlorophenyl phenyl ether
041 4-bromophenyl phenyl ether
042 Bis (2-chloroisopropyl) ether
043 Bes (2-chloroethoxy) methane
045 Methyl choloride (dichloromethane)
046 Methyl bromide (bromomethane)
047 Bromoform (tribromomethane)
049 Trichlorofluoromethane
050 Dichlorodifluoromethane
051 Chlorodibromomethane
052 Hexachlorobutadiene
053 Hexachloromyclopentadiene
054 Isophorone
055 Napthalene
056 Nitrobenzene
057 2-nitrophenol
058 4-nitrophenol
059 2,4-dinitrophenol
060 4,6-dinitro-o-cresol
061 N-nitrosodimethylamine
062 N-nitrosodiphenylamine
063 N-nitrosodi-n-propylamine
063 Phenol
069 Di-N-octyl phthalate
070 Diethyl phthalate
071 Dimethyl phthalate
072 1,2-benzanthracene (benzo(a)anthracene)
073 Benzo(a)pyrene (3,4-benzopyrene)
074 3,4-Benzofluoranthene (benzo(b)fluoranthene)
075 11,12-benzofluoranthene (benzo(b)fluoranthene)
076 Chrysene
077 Acenaphthylene
078 Anthracene
079 1,12-benzoperylene (benzo(ghi)perylene)
080 Fluorene
081 Phenanthrene
082 1,2,5,6-dibenzanthracene dibenzo(,h)anthracene
083 Ideno (1,2,3-cd) pyrene (2,3-o-pheynylene pyrene)
084 Pyrene
085 Tetrachloroethylene
088 Vinyl chloride (chloroethylene)
089 Aldrin
090 Dieldrin
091 Chlordane (technical mixture and metabloites)
092 4,4-DDT
093 4,4-DDE (p, p-DDX)
094 4,4-DDD (p, p-TDE)
095 Alpha-endosulfan
096 Beta-endosulfan
097 Endosulfan sulfate
098 Endrin
099 Endrin aldehyde
100 Heptachlor
101 Heptachlor epoxide (BHC-hexachlorocyclohexane
102 Alpha-BHC
103 Beta-BHC
104 Gamma-BHC (lindane)
105 Delta-BHC (PCB-polychlorinated biphenyls)
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

(f) Subpart F—Magnesium Subcategory

001 Acenaphthene
002 Acrolein
003 Acrylonitrile
004 Benzene

005 Benzidine
006 Carbon tetrachloride (tetrachloromethane)
007 Chlorobenzene
008 1,2,4-trichlorobenzene
009 Hexachlorobenzene
010 1,2-dichloroethane
011 1,1,1-trichloroethane
012 Hexachloroethane
013 1,1-dichloroethane
015 1,1,2,2-tetrachloroethane
016 Chloroethane
017 Bis (chloromethyl) ether
018 Bis (2-chloroethyl) ether
019 2-chloroethyl vinyl ether (mixed)
020 2-chloronaphthalene
021 2,4,6-trichlorophenol
022 Parachlorometa cresol
024 2-chlorophenol
025 1,2-dichlorobenzene
026 1,3-dichlorobenzene
027 1,4-dichlorobenzene
028 3,3-dichlorobenzidine
029 1,1-dichloroethylene
030 1,2-trans-dichloroethylene
031 2,4-dichlorophenol
032 1,2-dichloropropane
033 1,2-dichlopropylene (1,3-dichloropropene)
034 2,4-dimethyphenol
035 2,4-dinitrotoluene
036 2,6-dinitrotoluene
037 1,2-diphenylhydrazine
038 Ethylbenzene
039 Fluoranthene
040 4-chlorophenyl phenyl ether
041 4-bromophenyl phenyl ether
042 Bis(2-chloroisopropyl) ether
043 Bis(2-chloroethoxy)methane
045 Methyl chloride (dichloromethane)
046 Methyl bromide (bromomethane)
047 Bromoform (tribromomethane)
049 Trichlorofluoromentane
050 Dichlorodifluoromethane
052 Hexachlorobutadiene
053 Hexachloromyclopentadiene
054 Isophorone
055 Napthalene
056 Nitrobenzene
057 2-nitrophenol
058 4-nitrophenol
059 2,4-dinitrophenol
060 4,6-dinitro-o-cresol
061 N-nitrosodimethylamine
062 N-nitrosodiphenylamine
063 N-nitrosodi-n-propylamine
065 Phenol
067 Butyl benzylphthalate
070 Diethyl phthalate
071 Dimethyl phthalate
072 1,2-benzanthracene (benzo(a)anthracene)
073 Benzo(a)pyrene (3,4-benzopyrene)
074 3,4-Benzofluoranthene (benzo(b)fluoranthene)
075 11,12-benzofluoranthene (benzo(b)fluoranthene)
076 Chrysene
077 Acenaphthylene
078 Anthracene
079 1,12-benzoperylene (benzo(ghi)perylene)
080 Fluorene
081 Phenanthrene
082 1,2,5,6-dibenzanthracene dibenzo(,h)anthracene
083 Ideno(1,2,3-cd) pyrene (2,3-o-pheynylene pyrene)
084 Pyrene
085 Tetrachloroethylene
088 Vinyl chloride (chloroethylene)
089 Aldrin
090 Dieldrin
091 Chlordane (technical mixture and metabolites)
092 4,4-DDT
093 4,4-DDE (p,p-DDX)
094 4,4-DDD (p,p-TDE)
095 Alpha-endosulfan
096 Beta-endosulfan
097 Endosulfan sulfate
098 Endrin
099 Endrin aldehyde
100 Heptachlor
101 Heptachlor epoxide (BHC-hexachlorocyclohexane)
102 Alpha-BHC
103 Beta-BHC
104 Gamma-BHC (lindane)
105 Delta-BHC (PCB-polychlorinated biphenyls)
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
121 Cyanide. Total

(g) Subpart C—Zinc Subcategory
001 Acenaphthene
002 Acrolein
003 Acrylonitrile
005 Benzidine
006 Carbon tetrachloride (tetrachloromethane)
007 Chlorobenzene
008 1,2,4-trichlorobenzene
009 Hexachlorobenzene
010 1,2-dichloroethane
012 Hexachloroethane
015 1,1,2,2-tetrachloroethane
016 Chloroethane
017 Bis (chloromethyl) ether
018 Bis (2-chloroethyl) ether
019 2-chloroethyl vinyl ether (mixed)
020 2-chloronaphthalene
022 Parachlorometa cresol
025 1,2-dichlorobenzene
026 1,3-dichlorobenzene
027 1,4-dichlorobenzene
028 3,3-dichlorobenzidine
031 2,4-dichlorophenol
032 1,2-dichlorcpropane
033 1,2-dichloropropylene (1,3-dichloropropene)
034 2,4-dimethyphenol
035 2,4-dinitrotoluene
036 2,6-dinitrotoluene
037 1,2-diphenylhydrazine
039 Fluoranthene
040 4-chlorophenyl phenyl ether
041 4-bromophenyl phenyl ether
042 Bis(2-chloroisopropyl) ether
043 Bis(2-chloroethoxy) methane
045 Methyl chloride (dichloromethane)
046 Methyl bromide (bromomethane)
047 Bromoform (tribromomethane)
049 Trichlorofluoromethane
050 Dichlorodifluoromethane
052 Hexachlorobutadiene
053 Hexachloromyclopentadiene
054 Isophorone
056 Nitrobenzene
057 2-nitrophenol
058 4-nitrophenol
059 2,4-dinitrophenol
060 4,6-dinitro-o-cresol
061 N-nitrosodimethylamine
062 N-nitrosodiphenylamine
063 N-nitrosodi-n-propylamine
071 Dimethyl phthalate
072 1,2-benzanthracene (benzo(a)anthracene)
073 Benzo(a)pyrene (3,4-benzopyrene)
074 3,4-Benzofluoranthene (benzo(b)fluoranthene)
075 11,12-benzofluoranthene (benzo(b)fluoranthene)
076 Chrysene
079 1,12-benzoperylene (benzo(ghi)perylene)
082 1,2,5,6-dibenzanthracene dibenzo(,h)anthracene
083 Ideno(1,2,3-cd) pyrene (2,3-o-pheynylene pyrene)
088 Vinyl chloride (chlorethylene)
089 Aldrin
090 Dieldrin
091 Chlordane (technical mixture and metabolites)
092 4,4-DDT
093 4,4-DDE (p,p-DDX)
094 4,4-DDD (p,p-TDE)
095 Alpha-endosulfan
096 Beta-endosulfan
097 Endosulfan sulfate
098 Endrin
099 Endrin aldehyde
100 Heptachlor
101 Heptachlor epoxide (BHC-hexachlorocyclohexane
102 Alpha-BHC
103 Beta-BHC
104 Gramma-BHC (lindane)
105 Delta-BHC (PCB-polychlorinated biphenyls)
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
127 Thallium

Appendix D—Toxic Pollutants Detected Below the Nominal Quantification Limit

(a) Subpart A—Cadmium Subcategory
044 Methylene chloride (dichloromethane)
048 Dichlorobromo methane
066 Bis(2-ethylhexyll) phthalate
087 Trichloroethylene
117 Beryllium

(b) Subpart B—Calcium Subcategory
064 Pentachlorophenol
068 Di-N-butyl phthalate
086 Toluene
114 Antimony
115 Arsenic
117 Beryllium
125 Selenium
127 Thallium

(c) Subpart C—Lead Subcategory
001 Acenapthene

004 Benzene
021 2,4,6-trichlorophenol
024 2-chlorophenol
026 1,3-dichlorobenzene
031 2,4-dichlorophenol
038 Ethylbenzene
039 Fluoranthene
044 Methylene chloride (dichloromethane)
048 Dichlorobromethane
051 Chlorodibromomethane
065 Phenol
072 1,2-benzanthracene (benzo(a)anthracene)
073 Benzo(a)pyrene (3, 4-benzopyrene)
074 3,4-Benzofluoranthene (benzo(b)fluoranthene)
075 11,12-benzofluoranthene (benzo(b)fluoranthene)
076 Chrysene
080 Fluorene
084 Pyrene
087 Trichloroethylene
101 Heptachlor epoxide (BHC-hexachlorocyclohexane
117 Beryllium
121 Cyanide, Total

(d) Subpart D—Leclanche Subcategory
011 1,1,1-trichloroethane
015 1,1,2,2-tetrachloroethane
044 Methylene Chloride (dichloromethane)
048 Dichlorobromomethane
051 Chlorodibromomethane
065 Phenol
066 Bis(2-ethylhexyl) Phthalate
067 Butyl benzyl-phthalate
068 Di-n-butyl phthalate
069 Di-n-octyl phthalate
071 Dimethyl phthalate
086 Toluene
117 Beryllium
126 Silver

(e) Subpart E—Lithium Subcategory
011 1,1,1-trichloroethane
064 Pentachlorophenol
067 Butyl benzly-phthalate
068 Di-n-butyl phthalate
086 Toluene
087 Trichloroethylene
114 Antimony
115 Arsenic
117 Beryllium
123 Mercury
125 Selenium
127 Thallium

(f) Subpart F—Magnesium Subcategory
064 Pentachlorophenol
068 Di-n-butyl phthalate
086 Toluene
087 Trichloroethylene
101 Heptachlor epoxide (BHC hexachlorohexane)
114 Antimony
115 Arsenic
117 Beryllium
125 Selenium
127 Thallium

(g) Subpart G—Zinc Subcategory
004 Benzene
014 1,1,2-trichloroethane
021 2,4,6-trichlorophenol
024 2-chlorophenol
029 1,1-dichloroethylene
030 1,2-trans-dichloroethylene
038 Ethylbenzene
067 Butyl benzyl-phthalate
068 Di-n-butyl phthalate
070 Diethyl phthalate
077 Acenaphthylene
078 Anthracene
080 Fluorene
081 Phenanthrene
084 Pyrene
085 Tetrachloroethylene
086 Toluene
087 Trichloroethylene
114 Antimony
117 Beryllium

Appendix E—Toxic Pollutants Detected From a Small Number of Sources

(a) Subpart A—Cadmium Subcategory
023 Chloroform (trichloromethane)
086 Toluene
116 Asbestos
120 Copper

(b) Subpart B—Calcium Subcategory
066 Bis(2-ethylhexyl) phthalate

(c) Subpart C—Lead Subcategory
066 Bis(2-ethylhexyl) phthalate
067 Butyl benzyl-phtalate
068 Di-n.butyl phthalate
069 Di-n-octyl phthalate
078 Anthracene
081 Phenanthrene
086 Toluene

(d) Subpart D—Leclanche Subcategory
023 Chloroform (trichloromethane)
114 Antimony
121 Cyanide, Total

(e) Subpart E—Lithium Subcategory
066 Bis(2-ethylhexyl) phthalate

(f) Subpart F—Magnesium Subcategory
023 Chloroform (trichloromethane)
066 Bis(2-ethylhexyl) phthalate
069 Di-n-octyl phthalate

(g) Subpart G—Zinx Subcategory
023 Chloroform (trichloromethane)
064 Pentachlorophenol
065 Phenol
066 Bis(2-ethylhexyl) phthalate

Appendix F—Toxic Pollutants Detected in Small Amounts

(a) Subpart A—Cadmium Subcategory
None

(b) Subpart B—Calcium Subcategory
014 1, 1, 2-trichloroethane
023 Chloroform (trichloromethane)
044 Methylene chloride (dichloromethane)
118 Cadmium
120 Copper
122 Lead
124 Nickel
126 Silver
128 Zinc

(c) Subpart C—Lead Subcategory
011 1, 1, 1-trichloroethane
023 Chloroform (trichloromethane)
055 Napthalene
115 Arsenic

(d) Subpart D—Lechanche Subcategory
070 Diethyl Pthalate

(e) Subpart E—Lithium Subcategory
014 1, 1, 2-trichloroethane
023 Chloroform (trichloromethane)
044 Methylene chloride (dichloromethane)
118 Cadmium
120 Copper
121 Cyanide, Total
124 Nickel
126 Silver

(f) Subpart F—Magnesium Subcategory
014 1, 1, 2-trichloroethane
044 Methylene chloride (dichloromethane)
048 Dichlorobromomethane
118 Cadmium
120 Copper
123 Mercury
123 Nickel
128 Zinc

(g) Subpart G—Zinc Subcategory
011 1, 1, 1-trichloroethane
013 1, 1-dichloroethane
044 Methylene chloride (dichloromethane)
055 Napthalene

Appendix G—Toxic Pollutants Controlled But Not Specifically Regulated

(a) Subpart A—Cadmium Subcategory
119 Chromium
121 Cyanide
122 Lead
123 Mercury

(b) Subpart B—Calcium Subcategory
None

(c) Subpart C—Lead Subcategory
114 Antimony
118 Cadmium
119 Chromium
123 Mercury
124 Nickel
125 Silver
128 Zinc

(d) Subpart D—Leclanche Subcategory
None

(e) Subpart E—Lithium Subcategory
116 Asbestos
128 Zinc

(f) Subpart F—Magnesium Subcategory
116 Asbestos

(g) Subpart G—Zinc Subcategory
115 Arsenic
118 Cadmium
120 Copper
122 Lead
125 Selenium

Appendix H—Subcategories Not Regulated

(a) BPT
Calcium
Leclanche
Magnesium
Nuclear

(b) BAT, BCT
Calcium
Leclanche
Lithium
Magnesium
Nuclear

(C) PSES
Calcium
Lithium
Nuclear

(d) NSPS, PSNS
Nuclear

EPA proposes to establish a new Part 461 to read as follows:

PART 461—BATTERY MANUFACTURING POINT SOURCE CATEGORY

General Provisions

Sec.
461.01 Applicability.

Authority: Secs. 301, 304(b), (c), (e), and (g), 306(b) and (c), 307(b) and (c), and 501, Clean Water Act (the Federal Water Pollution Control Act Amendments of 1972, as amended by the Clean Water Act of 1977) (the "Act"). 33 U.S.C. 1311, 1314(b), (c), (e), and (g), 1316(b) and (c), 1317(b) and (c), and 1361; 86 Stat. 816, Pub. L. 92-500; 91 Stat. 1567, Pub. L. 95-217.

General Provisions

§ 461.01 Applicability.

This part applies to any battery manufacturing plant that discharges a pollutant to waters of the United States or that introduces pollutants to a publicly owned treatment works.

§ 461.02 General definitions.

In addition to the definitions set forth in 40 CFR Part 401, the following definitions apply to this part:

(a) "Battery" means a modular electric power source where part of all of the fuel is contained within the unit and electric power is generated directly from a chemical reaction rather than indirectly through a heat cycle engine.

(b) "Battery manufacturing operations" means the specific methods used to produce a battery. These manufacturing operations are not included in any other point source category.

(c) "Discharge allowance" means the amount of pollutant (mg per kg of production unit) that a plant will be permitted to discharge. For this category the allowances are specific to battery manufacturing operations.

§ 461.03 Monitoring and reporting requirements.

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

§ 461.04 Compliance date for PSES.

The compliance date for pretreatment standards for existing sources will be three years from the date of promulgation.

Subpart A—Cadmium Subcategory

§ 461.10 Applicability; description of the cadmium subcategory.

This subpart applies to discharges to waters of the United States, and introductions of pollutants into publicly owned treatment works from the manufacturing of cadmium anode batteries.

§ 461.11 Effluent limitations 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-.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:

(a) There shall be no discharge allowance of wastewater pollutants from any battery manufacturing operations except from those set forth below:

(1) Subpart A—Pasted and Pressed Powder Anodes.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of cadmium English Units—lb/1,000,000 lb of cadmium	
Cadmium	0.87	0.41
Nickel	3.81	2.70
Zinc	3.59	1.51
Cobalt	0.79	0.33
Oil and Grease	54.0	32.4
TSS	111.0	54.0
pH	[1]	[1]

[1] Within the range of 7.5-10.0 at all times.

(2) Subpart A—Electrodeposited Anodes.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of cadmium English Units—lb/1,000,000 lb of cadmium	
Cadmium	223.0	105.0
Nickel	983.0	697.0
Zinc	927.0	391.0
Cobalt	202.0	83.7
Oil and Grease	14000.0	8370.0
TSS	28600.0	14000.0
pH	(¹)	(¹)

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

(3) Subpart A—Impregnated Anodes.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of cadmium English Units—lb/1,000,000 lb of cadmium	
Cadmium	320.0	150.0
Nickel	1407.0	998.0
Zinc	1328.0	559.0
Cobalt	290.0	120.0
Oil and Grease	20000.0	12000.0
TSS	40900.0	20000.0
pH	(¹)	(¹)

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

(4) Subpart A—Nickel Electrodeposited Cathodes.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of nickel applied English Units—lb/1,000,000 lb of nickel applied	
Cadmium	182.0	85.4
Nickel	803.0	569.0
Zinc	757.0	319.0
Cobalt	165.0	68.3
Oil and Grease	11400.0	6830.0
TSS	23400.0	11400.0
pH	(¹)	(¹)

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

(5) Subpart A—Nickel Impregnated Cathodes.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of nickel applied English Units—lb/1,000,000 lb of nickel applied	
Cadmium	525.0	246.0
Nickel	2320.0	1640.0
Zinc	2180.0	919.0
Cobalt	476.0	197.0
Oil and Grease	32800.0	19700.0
TSS	67300.0	32800.0

BPT EFFLUENT LIMITATIONS—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
pH	(¹)	(¹)

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

(6) Subpart A—Cell Wash, Electrolyte Preparation, Floor & Equipment Wash, and Employee Wash.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of cells produced English Units—lb/1,000,000 lb of cells produced	
Cadmium	5.93	2.78
Nickel	26.1	18.5
Zinc	24.6	10.4
Cobalt	5.37	2.22
Oil and Grease	370.0	222.0
TSS	759.0	370.0
pH	(¹)	(¹)

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

(7) Subpart A—Cadmium Powder Production.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of cadmium powder produced English Units—lb/1,000,000 lb of cadmium powder produced	
Cadmium	21.1	9.86
Nickel	92.7	65.7
Zinc	87.4	36.8
Cobalt	19.1	7.89
Oil and Grease	1320.0	785.0
TSS	2700.0	1320.0
pH	(¹)	(¹)

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

(8) Subpart A—Silver Powder Production.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of silver powder produced English Units—lb/1,000,000 lb of silver powder produced	
Cadmium	6.79	3.18
Nickel	29.9	21.2
Silver	8.69	3.61
Zinc	28.2	11.9
Cobalt	6.15	2.55
Oil and Grease	424.0	255.0
TSS	869.0	424.0
pH	(¹)	(¹)

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

(9) Subpart A—Cadmium Hydroxide Production.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of cadmium used English Units—lb/1,000,000 lb of cadmium used	
Cadmium	0.29	0.14
Nickel	1.27	0.90
Zinc	1.20	0.51
Cobalt	0.26	0.11
Oil and Grease	18.0	10.8
TSS	36.9	18.0
pH	(¹)	(¹)

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

(10) Subpart A—Nickel Hydroxide Production.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of nickel used English Units—lb/1,000,000 lb of nickel used	
Cadmium	35.2	16.5
Nickel	155.0	110.0
Zinc	147.0	61.6
Cobalt	31.9	13.2
Oil and Grease	2200.0	1320.0
TSS	4510.0	2200.0
pH	(¹)	(¹)

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

(b) [Reserved]

§ 461.12 Effluent limitations 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–.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 available technology economically achievable.

(a) There shall be no discharge allowance of wastewater pollutants from any battery manufacturing operations except from those set forth below:

(1) Subpart A—Electrodeposited Anodes.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of cadmium English units—lb/1,000,000 lb of cadmium	
Cadmium	11.3	5.27
Nickel	49.6	35.2
Zinc	46.8	19.7
	134	
Cobalt	10.2	4.22

(2) Subpart A—Impregnated Anodes.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of cadmium English units—lb/1,000,000 lb of cadmium	
Cadmium	64.0	30.0
Nickel	282.0	200.0
Zinc	266.0	112.0
Cobalt	58.0	24.0

(3) Subpart A—Nickel Electrodeposited Cathodes.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of nickel applied English units—lb/1,000,000 lb of nickel applied	
Cadmium	10.6	4.95
Nickel	46.6	33.0
Zinc	43.9	18.5
Cobalt	9.57	3.96

(4) Subpart A—Nickel Impregnated Cathodes.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of nickel applied English units—lb/1,000,000 lb of nickel applied	
Cadmium	64.0	30.0
Nickel	282.0	200.0
Zinc	266.0	112.0
Cobalt	58.0	24.0

(5) Subpart A—Cell Wash, Electrolyte Preparation, and Employee Wash.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of cells produced English Units—lb/1,000,000 lb of cells produced	
Cadmium	0.75	0.35
Nickel	3.29	2.33
Zinc	3.10	1.31
Cobalt	0.68	0.28

(6) Subpart A—Cadmium Powder Production.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of cadmium powder produced English Units—lb/1,000,000 lb of cadmium powder produced	
Cadmium	2.10	0.99
Nickel	9.27	6.57
Zinc	8.74	3.68
Cobalt	1.91	0.79

(7) Subpart A—Silver Powder Production.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of silver powder produced English Units—lb/1,000,000 lb of silver powder produced	
Cadmium	1.03	0.48
Nickel	4.53	3.21
Silver	1.32	0.55
Zinc	4.27	1.80
Cobalt	0.93	0.39

(8) Subpart A—Cadmium Hydroxide Production.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of cadmium used English Units—lb/1,000,000 lb of cadmium used	
Cadmium	0.05	0.021
Nickel	0.20	0.14
Zinc	0.19	0.078
Cobalt	0.04	0.017

(9) Subpart A—Nickel Hydroxide Production.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of nickel used English Units—lb/1,000,000 lb of nickel used	
Cadmium	5.28	2.48
Nickel	23.3	16.5
Zinc	22.0	9.24
Cobalt	4.79	1.98

(b) [Reserved]

§ 461.13 New source performance standards.

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

(a) There shall be no discharge of wastewater pollutants from any battery manufacturing operations.

(b) [Reserved]

§ 461.14 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 pretreatment standards for existing sources listed below. The mass wastewater pollutants in battery manufacturing process wastewater introduced into a POTW shall not exceed the following:

(a) There shall be no discharge allowance of wastewater pollutants from any battery manufacturing operations except those set forth below:

(1) Subpart A—Electrodeposited anodes.

PRETREATMENT STANDARDS FOR EXISTING SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of cadmium English Units—lb/1,000,000 lb of cadmium	
Cadmium	11.3	5.27
Nickel	49.6	35.2
Zinc	46.7	19.8
Cobalt	10.2	4.22

(2) Subpart A—Impregnated anodes.

PRETREATMENT STANDARDS FOR EXISTING SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of cadmium English Units—lb/1,000,000 lb of cadmium	
Cadmium	64.0	30.0
Nickel	282.0	200.0
Zinc	266.0	112.0
Cobalt	58.0	24.0

(3) Subpart A—Nickel Electrodeposited Cathodes.

PRETREATMENT STANDARDS FOR EXISTING SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of nickel applied English Units—lb/1,000,000 lb of nickel applied	
Cadmium	10.6	4.95
Nickel	46.6	33.0

PRETREATMENT STANDARDS FOR EXISTING SOURCES—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Zinc	43.9	18.5
Cobalt	9.57	3.96

(4) Subpart A—Nickel Impregnated Cathodes.

PRETREATMENT STANDARDS FOR EXISTING SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of nickel applied English Units—lb/1,000,000 lb of nickel applied	
Cadmium	64.0	30.0
Nickel	282.0	200.0
Zinc	266.0	112.0
Cobalt	58.0	24.0

(5) Subpart A—Cell Wash, Electrolyte Preparation, and Employee Wash.

PRETREATMENT STANDARDS FOR EXISTING SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of cells produced English Units—lb/1,000,000 lb of cells produced	
Cadmium	0.75	0.35
Nickel	3.29	2.33
Zinc	3.10	1.31
Cobalt	0.68	0.28

(6) Subpart A—Cadmium Powder Production.

PRETREATMENT STANDARDS FOR EXISTING SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of cadmium powder produced English Units--lb/1,000,000 lb of cadmium powder produced	
Cadmium	2.10	0.99
Nickel	9.27	6.57
Zinc	8.74	3.68
Cobalt	1.91	0.79

(7) Subpart A—Silver Powder Production.

PRETREATMENT STANDARDS FOR EXISTING SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of silver powder produced English Units—lb/1,000,000 lb of silver powder produced	
Cadmium	1.03	0.48
Nickel	4.53	3.21
Silver	1.32	0.55
Zinc	4.27	1.80
Cobalt	0.93	0.39

(8) Subpart A—Cadmium Hydroxide Production

PRETREATMENT STANDARDS FOR EXISTING SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of cadmium used English Units—lb/1,000,000 lb of cadmium used	
Cadmium	0.045	0.021
Nickel	0.20	0.14
Zinc	0.19	0.078
Cobalt	0.041	0.017

(9) Subpart A—Nickel Hydroxide Production

PRETREATMENT STANDARDS FOR EXISTING SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of nickel used English Units—lb/1,000,000 lb of Nickel used	
Cadmium	5.28	2.48
Nickel	23.3	16.5
Zinc	22.0	9.24
Cobalt	4.79	198

(b) [Reserved]

§ 461.15 Pretreatment standards for new sources.

Except as provided in §403.7 of this chapter, any new source subject to this subpart that introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the pretreatment standards for new sources listed below. The mass wastewater pollutants in battery manufacturing process wastewater introduced into a POTW shall not exceed the following:

(a) There shall be no discharge of wastewater pollutants from any battery manufacturing operations.

(b) [Reserved]

§ 461.16 [Reserved]

Subpart B—Calcium Subcategory

§ 461.20 Applicability; description of the calcium subcategory

This subpart applies to discharges to waters of the United States and introductions of pollutants into publicly owned treatment works from manufacturing calcium anode batteries.

§ 461.21 [Reserved]

§ 461.22 [Reserved]

§ 461.23 New source preformance standards.

Any new source subject to this subpart must achieve the following performance standards.

(a) There shall be no discharge of wastewater pollutants from any battery manufacturing operations.

(b) [Reserved]

§ 461.24 [Reserved]

§ 461.25 Pretreatment standards for new sources.

Except as provided in § 403.7 of this chapter any new source subject to this subpart that introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the pretreatment standards for new sources listed below. The mass wastewater pollutants in battery manufacturing process wastewater introduced into a POTW shall not exceed the following:

(a) There shall be no discharge of wastewater pollutants from any battery manufacturing operations.

(b) [Reserved]

§ 461.26 [Reserved]

Subpart C—Lead Subcategory

§ 461.30 Applicability; description of the lead subcategory.

This subpart applies to discharges to waters of the United States and introduction of pollutants into publicly owned treatment works from the manufacturing of lead anode batteries.

§ 461.31 Effluent limitations 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-.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:

(a) There shall be no discharge allowance of wastewater pollutants from any battery manufacturing operations except from those set forth below:

(1) Subpart C—Closed Formation—Double Fill, or Fill and Dump.

BDT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of lead used English Units—lb/1,000,000 lb of lead used	
Copper	0.86	0.45
Lead	0.067	0.059
Iron	0.56	0.29
Oil and Grease	9.00	5.40
TSS	18.5	9.0
pH	(1)	(1)

[1] Within the range of 7.5–10.0 at all times.

(2) Subpart C—Open Formation—Dehydrated.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of lead used English Units—lb/1,000,000 lb of lead used	
Copper	17.1	9.0
Lead	1.35	1.17
Iron	11.1	5.67
Oil and Grease	180.0	108.0
TSS	369.0	180.0
pH	(1)	(1)

[1] Within the range of 7.5–10.0 at all times.

(3) Subpart C—Battery Wash.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of lead used English Units—lb/1,000,000 lb of lead used	
Copper	1.37	0.72
	145	
Lead	0.11	0.10
Iron	0.89	0.46
Oil and Grease	14.4	8.64
TSS	29.5	14.4
pH	(1)	(1)

[1] Within the range of 7.5–10.0 at all times.

(4) Subpart C—Floor Wash.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of lead used English Units—lb/1,000,000 lb of lead used	
Copper	0.78	0.41

BPT EFFLUENT LIMITATIONS—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Lead	0.062	0.053
Iron	0.51	0.26
Oil and Grease	8.20	4.92
TSS	16.8	8.20
pH	(1)	(1)

[1] Within the range of 7.5–10.0 at all times.

(5) Subpart C—Battery Repair.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of lead used English Units—lb/1,000,000 lb of lead used	
Copper	0.27	0.14
Lead	0.021	0.018
Iron	0.18	0.088
Oil and Grease	2.80	1.68
TSS	5.74	2.8
pH	(1)	(1)

[1] Within the range of 7.5–10.0 at all times.

(b) [Reserved]

§ 461.32 Effluent limitations 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–.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 available technology economically achievable:

(a) There shall be no discharge allowance of wastewater pollutants from any battery manufacturing operations except from those set forth below:

(1) Subpart C—Open Formation—Dehydrated.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of lead used English Units—lb/1,000,000 lb of lead used	
Copper	2.59	1.36
Lead	0.21	0.18
Iron	1.68	0.86

(2) Subpart C—Battery Wash.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 10 consecutive sampling days
	Metric Units—mg/kg of lead used English Units—lb/1,000,000 lb of lead used	
Copper	0.69	0.36
Lead	0.054	0.047
Iron	0.45	0.23

(3) Subpart C—Battery Repair.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of lead used English Units—lb/1,000,000 lb of lead used	
Copper	0.27	0.14
Lead	0.021	0.018
Iron	0.17	0.088

(b)[Reserved]

§ 461.33 New source performance standards

Any new source subject to this subpart must achieve the following performance standards.

(a) There shall be no discharge allowance of wastewater pollutants from any battery manufacturing operations except from those set forth below:

(1) Subpart C—Open Formation—Dehydrated.

NEW SOURCE PERFORMANCE STANDARDS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of lead used English Units—lb/1,000,000 lb of lead used	
Copper	0.039	0.016
Lead	0.008	0.002
Iron	0.25	0.13
Oil and Grease	2.04	2.04
TSS	3.06	2.25
pH	(1)	(1)

[1] Within the limits of 7.5–10.0 at all times.

(2) Subpart C—Battery Wash.

NEW SOURCE PERFORMANCE STANDARDS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of lead used English Units—1b/1,000,000 1b of lead used	
Copper	0.011	0.004

NEW SOURCE PERFORMANCE STANDARDS—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Lead	0.002	0.001
Iron	0.067	0.034
Oil and Grease	0.54	0.54
TSS	0.81	0.60
pH	(1)	(1)

[1] Within the limits of 7.5—10.0 at all times.

(3) Subpart C—Battery Repair.

NEW SOURCE PERFORMANCE STANDARDS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of lead used English Units—1b/1,000,000 1b of lead used	
Copper	0.004	0.002
Lead	0.0008	0.0003
Iron	0.026	0.013
Oil and Grease	0.21	0.21
TSS	0.32	0.23
pH	(1)	(1)

[1] Within the limits of 7.5—10.0 at all times.

(b) [Reserved]

§ 461.34 Pretreatment standards for existing sources.

Except as provided in 40 CFR 403.7 and 403.13, any existing source subject to this subpart that introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the pretreatment standards for existing sources listed below. The mass wastewater pollutants in battery manufacturing process wastewater introduced into a POTW shall not exceed the following:

(a) There shall be no discharge allowance of wastewater pollutants from any battery manufacturing operations except from those set forth below:

(1) Subpart C—Open Formation—Dehydrated Pretreatment.

STANDARDS FOR EXISTING SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of lead used English Units—1b/1,000,000 1b of lead used	
Copper	2.59	1.38
Lead	0.21	0.18

(2) Subpart C—Battery Wash.

PRETREATMENT STANDARDS FOR EXISTING SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of lead used English units—lb/1,000,000 lb of lead used	
Copper	0.69	0.36
Lead	0.054	0.047

(3) Subpart C—Battery Repair.

PRETREATMENT STANDARDS FOR EXISTING SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of lead used English units—lb/1,000,000 lb of lead used	
Copper	0.27	0.14
Lead	0.021	0.018

(b) [Reserved].

§ 461.35 Pretreatment standards for new sources.

Except as provided in § 403.7 of this chapter, any new source subject to this subpart that 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 wastewater pollutants in battery manufacturing process wastewater introduced into a POTW shall not exceed the following:

(a) There shall be no discharge allowance of wastewater pollutants from any battery manufacturing operations except from those set forth below:

(1) Subpart C—Open Formation—Dehydrated.

PRETREATMENT STANDARDS FOR NEW SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of lead used English units—lb/1,000,000 lb of lead used	
Copper	0.039	0.016
Lead	0.008	0.002

(2) Subpart C—Battery Wash.

PRETREATMENT STANDARDS FOR NEW SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of lead used English units—lb/1,000,000 lb of lead used	
Copper	0.011	0.004
Lead	0.002	0.001

(3) Subpart C—Battery Repair.

PRETREATMENT STANDARDS FOR NEW SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric units—mg/kg of lead used English units—lb/1,000,000 lb of lead used	
Copper	0.004	0.002
Lead	0.001	0.0003

(b) [Reserved]

§ 461.36 [Reserved]

Subpart D-Leclanche Subcategory

§ 461.40 Applicability; description of the Leclanche subcategory.

This subpart applies to discharges to waters of the United States, and introductions of pollutants into publicly owned treatment works from manufacturing Leclanche type batteries (zinc anode batteries with acid electrolyte).

§ 461.41 [Reserved]

§ 461.42 [Reserved]

§ 461.43 New source performance standards.

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

(a) There shall be no discharge of wastewater pollutants from any battery manufacturing operations.

(b) [Reserved]

§ 461.44 Pretreatment standards for existing sources.

Except as provided in 40 CFR 403.7 and 403.13, any existing source subject to this subpart that introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for existing sources listed below. The mass wastewater pollutants in battery manufacturing process wastewater introduced into a POTW shall not exceed the following:

(a) There shall be no discharge of wastewater pollutants from any battery manufacturing operations.

(b) [Reserved]

§ 461.45 Pretreatment standards for new sources.

Except as provided in § 403.7 of this chapter any new source subject to this subpart that introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for new sources listed below. The mass wastewater pollutants in battery manufacturing process wastewater introduced into a POTW shall not exceed the following:

(a) There shall be no discharge of wastewater pollutants from any battery manufacturing operations.

(b) [Reserved]

§ 461.46 [Reserved]

Subpart E-Lithium Subcategory

§ 461.50 Applicability; description of the lithium subcategory.

This subpart applies to discharges to waters of the United States and introduction of pollutants into publicly owned treatment works from the manufacturing of lithium anode batteries.

§ 461.51 [Reserved]

§ 461.52 [Reserved]

§ 461.53 New source performance standards.

Any new source subject to this subpart must achieve the following performance standards.

(a) There shall be no discharge allowance of wastewater pollutants from any battery manufacturing operations except from those set forth below:

(1) Subpart E—Lead Iodide Cathodes.

NEW SOURCE PERFORMANCE STANDARDS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of lead English Units—lb/1,000,000 lb of lead	
Chromium	23.4	9.46
Lead	6.31	5.68
Iron	77.6	39.8
TSS	946.0	694.0
pH	(1)	(1)

[1] Within the range of 7.5–10.0 at all times.

(2) Subpart E—Iron Disulfide Cathodes.

NEW SOURCE PERFORMANCE STANDARDS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of iron disulfide English Units—lb/1,000,000 lb of iron disulfide	
Chromium	2.79	1.13
Lead	0.76	0.68
Iron	9.28	4.75
TSS	113.0	83.0
pH	(1)	(1)

[1] Within the range of 7.5–10.0 at all times.

(3) Subpart E—Floor and Equipment Wash, Cell Testing, and Lithium Scrap Disposal.

NEW SOURCE PERFORMANCE STANDARDS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of cells produced English Units—lb/1,000,000 lb of cells produced	
Chromium	0.040	0.016
Lead	0.011	0.010
Iron	0.14	0.068
TSS	1.62	1.19
pH	(1)	(1)

[1] Within the range of 7.5–10.0 at all times.

(4) Subpart E—Air scrubbers.

NEW SOURCE PERFORMANCE STANDARDS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of cells produced English Units—lb/1,000,000 lb of cells produced	
TSS	434.0	212.0
pH	(1)	(1)

[1] Within the range of 7.5–10.0 at all times.

(b) [Reserved]

§ 461.54 [Reserved]

§ 461.55 Pretreatment standards for new sources.

Except as provided in § 403.7 of this chapter, any new source subject to this subpart that introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for new sources listed below. The mass wastewater pollutants in battery manufacturing process wastewater introduced into a POTW shall not exceed the following:

(a) There shall be no discharge allowance of wastewater pollutants from any battery manufacturing operations except from those set forth below;

(1) Subpart E—Lead Iodide Cathodes.

PRETREATMENT STANDARDS FOR NEW SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of lead English Units—lb/1,000,000 lb of lead	
Chromium	23.4	9.46
Lead	6.31	5.68

(2) Subpart E—Iron Disulfide Cathodes.

PRETREATMENT STANDARDS FOR NEW SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of iron disulfide English Units—lb/1,000,000 lb of iron disulfide	
Chromium	2.79	1.13
Lead	0.76	0.68

(2) Subpart E—Floor and Equipment Wash, Cell Testing, and Lithium Scrap Disposal.

NEW SOURCE PERFORMANCE STANDARDS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of cells produced English Units—lb/1,000,000 lb of cells produced	
Chromium	0.040	0.016
Lead	0.011	0.010

(b) [Revised]

§ 461.56 [Reserved]

Subpart F—Magnesium Subcategory

§ 461.60 Applicability; description of the magnesium subcategory.

This subpart applies to discharges to waters of the United States and introduction of pollutants into publicly owned treatment works from the manufacturing of magnesium anode batteries.

§ 461.61 [Reserved]

§ 461.62 [Reserved]

§ 461.63 New source performance standards.

Any new source subject to this subpart must achieve the following performance standards.

(a) There shall be no discharge allowance of wastewater pollutants from any battery manufacturing operations except from those set forth below:

(1) Subpart F—Silver Chloride Cathodes—Chemically Reduced.

NEW SOURCE PERFORMANCE STANDARDS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of silver processed English Units—lb/1,000,000 lb of silver processed	
Lead	8.19	7.37
Silver	23.75	9.83
Iron	100.8	51.96
COD	4095.0	1999.0
TSS	1229.0	901.0
pH	(1)	(1)

[1] Within the range of 7.5–10.0 at all times.

(2) Subpart F—Silver Chloride Cathodes—Electrolytic.

NEW SOURCE PERFORMANCE STANDARDS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of silver processed English Units—lb/1,000,000 lb of silver processed	
Lead	14.5	13.1
Silver	42.1	17.4
Iron	179.0	91.4
COD	7250.0	3540.0
TSS	2180.0	1600.0
pH	(1)	(1)

[1] Within the range of 7.5–10.0 at all times.

(3) Subpart F—Cell Testing.

NEW SOURCE PERFORMANCE STANDARDS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of cells produced English Units—lb/1,000,000 lb of cell produced	
Lead	5.26	4.74
Silver	15.3	6.31
Iron	64.7	33.2
COD	2630.0	1290.0
TSS	789.0	579.0
pH	(1)	(1)

[1] Within the range of 7.5–10.0 at all times.

(4) Subpart F—Floor and Equipment Wash

NEW SOURCE PERFORMANCE STANDARDS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of cells produced English Units—lb/1,000,000 lb of cell produced	
Lead	0.009	0.008
Silver	0.027	0.011

NEW SOURCE PERFORMANCE STANDARDS.—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Iron	0.12	2.30
COD	4.70	2.30
TSS	1.41	1.04
pH	(1)	(1)

[1] Within the range of 7.5–10.0 at all times.

(5) Subpart F—Air Scrubber.

NEW SOURCE PERFORMANCE STANDARDS.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of cells produced English Units—lb/1,000,000 lb of cells produced	
TSS	8467.0	4130.0
pH	(1)	(1)

[1] Within the range of 7.5–10.0 at all times.

(b) [Reserved]

§ 461.64 Pretreatment standards for existing sources.

Except as provided in 40 CFR 403.7 and 403.13, any existing source subject to this subpart that introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for existing sources listed below. The mass wastewater pollutants in battery manufacturing process wastewater introduced into a POTW shall not exceed the following:

(a) There shall be no discharge allowance of wastewater pollutants from any battery manufacturing operations except from those set forth below:

(1) Subpart F—Silver Chloride Cathodes—Chemically Reduced.

PRETREATMENT STANDARDS FOR EXISTING SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of silver processed English Units—lb/1,000,000 lbs of silver processed	
Lead	368.7	319.6
Silver	1008.0	417.9

(2) Subpart F—Silver Chloride Cathodes—Electrolytic.

PRETREATMENT STANDARDS FOR EXISTING SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of silver processed English Units—lb/1,000,000 lb of silver processed	
Lead	21.8	18.9
Silver	59.5	24.7

(3) Subpart F—Cell Testing.

PRETREATMENT STANDARDS FOR EXISTING SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of cells produced English Units—lb/1,000,000 lb of cells produced	
Lead	7.89	6.84
Silver	21.6	8.94

(4) Subpart F—Floor and Equipment Wash.

PRETREATMENT STANDARDS FOR EXISTING SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of cells produced English Units—lb/1,000,000 lb of cells produced	
Lead	0.02	0.013
Silver	0.039	0.016

(b) [Reserved]

§ 461.65 Pretreatment standards for new sources.

Except as provided in §403.7 of this chapter, any new source subject to this subpart that introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for new sources listed below. The mass wastewater pollutants in battery manufacturing process wastewater introduced into a POTW shall not exceed the following:

(a) There shall be no discharge allowance of wastewater pollutants from any battery manufacturing operations except from those set forth below:

(1) Subpart F—Silver Chloride Cathodes—Chemically Reduced.

PRETREATMENT STANDARDS FOR NEW SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of silver processed English Units—lb/1,000,000 lb of silver processed	
Lead	8.19	7.37
Silver	23.75	9.83

(2) Subpart F—Silver Chloride Cathode—Electrolytic.

PRETREATMENT STANDARDS FOR NEW SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of silver processed English Units—lb/1,000,000 lb of silver processed	
Lead	14.5	13.1
Silver	42.1	17.4

(3) Subpart F—Cell Testing.

PRETREATMENT STANDARDS FOR NEW SOURCE

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of cells produced English Units—lb/1,000,000 lb of cells produced	
lead	5.26	4.74
Silver	15.3	6.31

(4) Subpart F—Floor and Equipment Wash.

PRETREATMENT STANDARDS FOR NEW SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of cells produced English Units—lb/1,000,000 lb of cells produced	
Lead	0.009	0.008
Silver	0.027	0.011

(b) [Reserved]

461.66 [Reserved]

Subpart G—Zinc Subcategory

§ 461.70 Applicability; description of the zinc subcategory.

This subpart applies to discharge to waters of the United States, and introductions of pollutants into publicly owned treatment works from the manufacturing of zinc anode batteries.

§ 461.71 Effluent limitations 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:

(a) There shall be no discharge allowance of wastewater pollutants from any battery manufacturing operations except from those set forth below:

(1) Subpart G—Wet Amalgamated Powder Anodes.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of zinc English Units—lb/1,000,000 lb of zinc	
Chromium	1.60	0.65
Mercury	0.95	0.38
Silver	1.56	0.65
Zinc	5.06	2.13
Manganese	1.64	1.29
Oil and Grease	76.0	45.6
TSS	156.0	76.0
pH	(1)	(1)

[1] Within the range of 7.5–10.0 at all times.

(2) Subpart G—Gelled Amalgam Anodes.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of zinc English Units—lb/1,000,000 lb of zinc	
Chromium	0.29	0.12
Mercury	0.17	0.068
Silver	0.28	0.12
Zinc	0.91	0.38
Manganese	0.29	0.23
Oil and Grease	13.6	8.16
TSS	27.9	13.6
pH	(1)	(1)

[1] Within the range of 7.5—10.0 at all times.

(3) Subpart G—Zinc Oxide, Formed Anodes.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of zinc English Units—lb/1,000,000 lb of zinc	
Chromium	60.1	24.3
Mercury	35.8	14.3
Silver	58.7	24.3
Zinc	190.0	80.1
Manganese	61.5	48.6
Oil and Grease	2,860.0	1,720.0
TSS	5,870.0	2,860.0

BPT EFFLUENT LIMITATIONS—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
pH	(1)	(1)

[1] Within the range of 7.5-10.0 at all times.

(4) Subpart G—Electrodeposited anodes.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of zinc deposited English Units—lb/1,000,000 lb of zinc deposited	
Chromium	1,340.0	543.0
Mercury	798.0	319.0
Silver	1,310.0	543.0
Zinc	4,250.0	1,790.0
Manganese	1,370.0	1,090.0
Oil and Grease	63,800.0	38,300.0
TSS	131,000.0	63,800.0
pH	(1)	(1)

[1] Within the range of 7.5-10.0 at all times.

(5) Subpart G—Silver Powder, Formed Cathodes.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of silver applied English Units—lb/1,000,000 lb of silver applied	
Chromium	82.3	33.3
Mercury	49.0	19.6
Silver	80.4	33.3
Zinc	261.0	110.0
Manganese	84.3	66.7
Oil and Grease	3,920.0	2,350.0
TSS	8,040.0	3,920.0
pH	(1)	(1)

[1] Within the range of 7.5-10.0 at all times.

(6) Subpart G—Silver Oxide Powder, Formed Cathodes.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of silver applied English Units—lb/1,000,000 lb of silver applied	
Chromium	55.0	22.3
Mercury	32.8	13.1
Silver	53.7	22.3
Zinc	175.0	73.4
Manganese	56.4	44.6
Oil and Grease	2,620.0	1,570.0
TSS	5,370.0	2,620.0
pH	(1)	(1)

[1] Within the range of 7.5-10.0 at all times.

(7) Subpart G—Silver Peroxide Cathodes.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of silver applied English Units—lb/1,000,000 lb of silver applied	
Chromium	13.2	5.34
Mercury	7.85	3.14
Silver	12.9	5.34
Zinc	41.8	17.6
Manganese	13.5	10.7
Oil and Grease	628.0	377.0
TSS	1,290.0	628.0
pH	(¹)	(¹)

¹Within the range of 7.5–10.0 at all times

(8) Subpart G—Nickel Impregnated Cathodes.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of nickel applied English Units—lb/1,000,000 lb of nickel applied	
Chromium	689.0	279.0
Mercury	410	164.0
Nickel	2,320.0	1,640.0
Silver	673.0	279.0
Zinc	2,180.0	919.0
Manganese	705.0	558.0
Oil and Grease	32,800.0	19,700.0
TSS	67,300.0	32,800.0
pH	(¹)	(¹)

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

(9) Subpart G—Cell Wash, Electrolyte Preparation, Employee Wash, Reject Cell Handling, Floor and Equipment Wash.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of cells produced English Units—lb/1,000,000 lb of cells produced	
Chromium	3.68	1.49
Cyanide	2.54	1.05
Mercury	2.19	0.88
Nickel	12.4	8.76
Silver	3.59	1.49
Zinc	11.7	4.91
Manganese	3.77	2.98
Oil and Grease	175.0	105.0
TSS	359.0	175.2
ph	(¹)	(¹)

¹Within the limits of 7.5–10.0 at all times.

(10) Subpart G—Silver Etch.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of silver processed English Units—lb/1,000,000 lb of silver processed	
Chromium	20.7	8.35

BPT EFFLUENT LIMITATIONS—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Mercury	12.3	4.91
Silver	20.2	8.35
Zinc	65.3	27.5
Manganese	21.1	16.7
Oil and Grease	982.0	589.0
TSS	2,020.0	982.0
ph	(¹)	(¹)

¹Within the limits of 7.5–10.0 at all times.

(11) Subpart G—Silver Peroxide Production.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of silver peroxide produced English Units—lb/1,000,000 lb of silver in silver peroxide produced	
Chromium	22.0	8.88
Mercury	13.1	5.22
Silver	21.4	8.88
Zinc	69.5	29.3
Manganese	22.5	17.8
Oil and Grease	1,050.0	627.0
TSS	2,140.0	1,050.0
ph	(¹)	(¹)

¹Within the limits of 7.5–10.0 at all times.

(12) Subpart G—Silver Powder Production.

BPT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of silver powder produced English Units—lb/1,000,000 lb of silver powder produced	
Chromium	8.91	3.61
Mercury	5.30	2.12
Silver	8.69	3.61
Zinc	28.2	11.9
Manganese	9.12	7.21
Oil and Grease	424.0	255.0
TSS	869.0	424.0
ph	(¹)	(¹)

¹Within the limits of 7.5–10.0 at all times.

(b) [Reserved]

§ 461.72 Effluent limitations 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–.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 available technology economically achievable:

(a) There shall be no discharge allowance of wastewater pollutants from any battery manufacturing operations except from those set forth below:

(1) Subpart G—Wet Amalgamated Powder Anodes.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of zinc English Units—lb/1,000,000 lbs of zinc	
Chronium	0.23	0.093
Mercury	0.14	0.055
Silver	0.23	0.093
Zinc	0.73	0.31
Manganese	0.24	0.19

(2) Subpart G—Gelled Amalgam Anodes.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of zinc English Units—lb/1,000,000 lb of zinc	
Chromium	0.029	0.012
Mercury	0.017	0.007
Silver	0.028	0.012
Zinc	0.091	0.038
Manganese	0.029	0.023

(3) Subpart G—Zinc Oxide Formed Anodes.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of zinc English Units—lb/1,000,000 lb of zinc	
Chromium	9.10	3.69
Mercury	5.42	2.17
Silver	8.89	3.69
Zinc	28.9	12.2
Manganese	9.32	7.37

(4) Subpart G—Electrodeposited Anodes.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum fo any 1 day	Maximum for monthly average
	Metric Units—mg/kg of zinc deposited English Units—lb/1,000,000 lb of zinc deposited	
Chromium	101.0	41.0
Mercury	60.3	24.1
Silver	98.8	41.0
Zinc	321.0	135.0
Manganese	104.0	81.9

(5) Subpart G—Silver Powder Formed Cathodes.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of silver applied English Units—lb/1,000,000 lb of silver applied	
Chromium	12.5	5.05
Mercury	7.43	2.97
Silver	12.2	5.05
Zinc	39.5	16.7
Manganese	12.8	10.1

(6) Subpart G—Silver Oxide Powder Formed Cathodes.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of silver applied English Units—lb/1,000,000 lb of silver applied	
Chromium	8.34	3.38
Mercury	4.97	1.99
Silver	8.14	3.38
Zinc	26.4	11.1
Manganese	8.54	6.75

(7) Subpart G—Silver Peroxide Cathodes.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of silver applied English Units—lb/1,000,000 lb of silver applied	
Chromium	2.00	0.81
Mercury	1.19	0.48
Silver	1.95	0.81
Zinc	6.33	2.67
Manganese	2.05	1.62

(8) Subpart G—Nickel Impregnated Cathodes.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of nickel applied English Units—lb/1,000,000 lb of nickel applied	
Chromium	84.0	34.0
Mercury	50.0	20.0
Nickel	282.0	200.0
Silver	82.0	34.0
Zinc	266.0	112.0
Manganese	86.0	68.0

(9) Subpart G—Cell Wash, Employee Wash, Reject Cell Handling & Floor and Equipment Wash.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of cells produced English Units—lb/1,000,000 lb of cells produced	
Chromium	0.54	0.22
Cyanide	0.38	0.16
Mercury	0.33	0.13
Nickel	1.82	1.29
Silver	0.53	0.22
Zinc	1.72	0.72
Manganese	0.56	0.44

(10) Subpart G—Silver Etch.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of silver processed English Units—lb/1,000,000 lb of silver processed	
Chromium	3.13	1.27
Mercury	1.86	0.75
Silver	3.05	1.27
Zinc	9.90	4.17
Manganese	3.20	2.53

(11) Subpart G—Silver Peroxide Production.

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of silver in silver peroxide produced English Units—lb/1,000,000 lb of silver in silver peroxide produced	
Chromium	3.32	1.35
Mercury	1.98	0.79
Silver	3.25	1.35
Zinc	10.5	4.43
Manganese	3.40	2.69

(12) Subpart G—Silver Powder Production

BAT EFFLUENT LIMITATIONS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of silver powder produced English Units—lb/1,000,000 lb of silver powder produced	
Chromium	1.35	0.55
Mercury	0.80	0.32
Silver	1.32	0.55
Zinc	4.27	1.80
Manganese	1.38	1.09

(b) [Reserved]

§ 461.73 New source performance standards.

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

(a) There shall be no discharge allowance of wastewater pollutants from any battery manufacturing operations except from those set forth below:

(1) Subpart G—Zinc Oxide Formed Anodes.

NEW SOURCE PERFORMANCE STANDARDS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of zinc English Units—lb/1,000,000 lb of zinc	
Chromium	0.62	0.33
Mercury	0.43	0.19
Silver	0.62	0.28
Zinc	0.12	0.062
Manganese	0.98	0.75
Oil and Grease	32.5	32.5
TSS	48.8	35.8
pH	(1)	(1)

[1] Within the limits of 7.5-10.0 at all times.

(2) Subpart G—Electrodeposited Anodes.

NEW SOURCE PERFORMANCE STANDARDS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of zinc deposited English Units—lb/1,000,000 lb of zinc deposited	
Chromium	6.87	3.65
Mercury	4.70	2.06
Silver	6.87	3.04
Zinc	1.34	0.69
Manganese	10.9	8.31
Oil & Grease	362.0	362.0
TSS	542.0	398.0
pH	(1)	(1)

Within the limits of 7.5—10.0 at all times.

(3) Subpart G—Silver Powder Formed Cathodes.

NEW SOURCE PERFORMANCE STANDARDS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of silver applied English Units—lb/1,000,000 lb of silver applied	
Chromium	0.85	0.45
Mercury	0.58	0.26
Silver	0.85	0.38
Zinc	0.17	0.085
Manganese	1.34	1.03
Oil & Grease	44.5	44.5
TSS	66.8	49.0
pH	(1)	(1)

Within the limits of 7.5—10.0 at all times.

(4) Subpart G—Silver Oxide Powder Formed Cathodes.

NEW SOURCE PERFORMANCE STANDARDS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of silver applied English Units—lb/1,000,000 lb of silver applied	
Chromium	0.57	0.30
Mercury	0.39	0.17
Silver	0.57	0.25
Zinc	0.11	0.057
Manganese	0.90	0.69
Oil & Grease	29.8	29.8
TSS	44.7	32.8
pH	(¹)	(¹)

Within the limits of 7.5—10.0 at all times.

(5) Subpart G—Silver Peroxide Cathodes.

NEW SOURCE PERFORMANCE STANDARDS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of silver applied English Units—lb/1,000,000 lb of silver applied	
Chromium	0.14	0.072
Mercury	0.93	0.041
Silver	0.14	0.060
Zinc	0.027	0.014
Manganese	0.22	0.17
Oil & Grease	7.14	7.14
TSS	10.7	7.86
pH	(¹)	(¹)

Within the limits of 7.5—10.0 at all times.

(6) Subpart G—Nickel Impregnated Cathodes.

NEW SOURCE PERFORMANCE STANDARDS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of nickel applied English Units—lb/1,000,000 lb of nickel applied	
Chromium	5.70	3.03
Mercury	3.90	1.71
Nickel	5.70	2.49
Silver	5.70	2.52
Zinc	1.11	0.57
Manganese	9.00	6.90
Oil & Grease	300.0	300.0
TSS	450.0	330.0
pH	(¹)	(¹)

Within the limits of 7.5—10.0 at all times.

(7) Subpart G—Cell Wash, Employee Wash, Reject Cell Handling, & Floor and Equipment Wash.

NEW SOURCE PERFORMANCE STANDARDS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of cells produced English Units—lb/1,000,000 lb of cells produced	
Chromium	0.037	0.020
Cyanide	0.039	0.016
Mercury	0.026	0.011
Nickel	0.037	0.016
Silver	0.037	0.016
Zinc	0.008	0.004
Manganese	0.059	0.045
Oil & Grease	1.95	1.95
TSS	2.93	2.15
pH	(¹)	(¹)

¹Within the limits of 7.5-10.0 at all times.

(8) Subpart G—Silver Etch.

NEW SOURCE PERFORMANCE STANDARDS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of silver processed English Units—lb/1,000,000 lb of silver processed	
Chromium	0.20	0.12
Mercury	0.15	0.064
Silver	0.20	0.094
Zinc	0.040	0.021
Manganese	0.34	0.26
Oil & Grease	11.2	11.2
TSS	16.8	12.3
pH	(¹)	(¹)

¹Within the limits of 7.5-10.0 at all times.

(9) Subpart G-Silver Peroxide Production.

NEW SOURCE PERFORMANCE STANDARDS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of cells produced English Units—lb/1,000,000 lb of Silver in silver peroxide produced	
Chromium	0.23	0.12
Mercury	0.16	0.068
Silver	0.23	0.10
Zinc	0.044	0.023
Manganese	0.36	0.28
Oil & Grease	11.9	11.9
TSS	17.8	13.1
ph	(¹)	(¹)

¹Within the limits of 7.5-10.0 at all times.

(10) Subpart G—Silver Powder Production.

NEW SOURCE PERFORMANCE STANDARDS

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of silver powder English Units—lb/1,000,000 lb of Silver powder produced	
Chromium	0.092	0.049
Mercury	0.063	0.027
Silver	0.092	0.041
Zinc	0.018	0.009
Manganses	0.15	0.11
Oil & Grease	4.82	4.82
TSS	7.24	5.31
pH	(¹)	(¹)

¹Within the limits of 7.5-10.0 at all times.

(b) [Reserved].

§ 461.74 Pretreatment standards for existing sources.

Except as provided in 40 CFR 403.7 and 403.13, any existing source subject to this subpart that 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 wastewater pollutants in battery manufacturing process wastewater introduced into a POTW shall not exceed the following:

(a) There shall be no discharge allowance of wastewater pollutants from any battery manufacturing operations except from those set forth below:

(1) Subpart G—Wet Amalgamated Powder Anode.

PRETREATMENT STANDARDS FOR EXISTING SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units-mg/kg of zinc English Units-lb/1,000,000 lbs of zinc	
Chromium	0.23	0.093
Mercury	0.14	0.055
Silver	0.23	0.093
Zinc	0.73	0.31
Manganese	0.24	0.19

(2) Subpart G—Gelled Amalgam Anodes.

PRETREATMENT STANDARDS FOR EXISTING SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units-mg/kg of zinc English Units-lb/1,000,000 lbs of zinc	
Chromium	0.029	0.012
Mercury	0.017	0.007
Silver	0.028	0.012
Zinc	0.091	0.038
Manganese	0.029	0.023

(3) Subpart G—Zinc Oxide Formed anodes.

PRETREATMENT STANDARDS FOR EXISTING SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units-mg/kg of zinc English Units-lb/1,000,000 lbs of zinc	
Chromium	9.10	3.69
Mercury	5.42	2.17
Silver	8.89	3.69
Zinc	28.9	12.2
Manganese	9.32	7.37

(4) Subpart G—Electrodeposited Anodes Pretreatment.

STANDARDS FOR EXISTING SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units-mg/kg of zinc deposited English Units-lb/1,000,000 lbs of zinc deposited	
Chromium	101.0	41.0
Mercury	60.3	24.1
Silver	98.8	41.0
Zinc	321.0	135.0
Manganese	104.0	81.9

(5) Subpart G—Silver Powder Formed Cathodes.

PRETREATMENT STANDARDS FOR EXISTING SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of silver applied English Units—lb/1,000,000 lb of silver applied	
Chromium	12.5	5.05
Mercury	7.43	2.97
Silver	12.2	5.05
Zinc	39.5	16.7
Manganese	12.8	10.1

(6) Subpart G—Silver Oxide Powder Formed Cathodes

PRETREATMENT STANDARDS FOR EXISTING SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of silver applied English Units—lb/1,000,000 lb of silver applied	
Chromium	8.34	3.38
Mercury	4.97	1.99
Silver	8.14	3.38
Zinc	26.4	11.1
Manganese	8.54	6.75

(7) Subpart G—Silver Peroxide Cathodes

PRETREATMENT STANDARDS FOR EXISTING SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of silver applied English Units—lb/1,000,000 lb of silver applied	
Chromium	2.00	0.81
Mercury	1.19	0.48
Silver	1.95	0.81
Zinc	6.33	2.67
Manganese	2.05	1.62

(8) Subpart G—Nickel Impregnated Cathodes

PRETREATMENT STANDARDS FOR EXISTING SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of nickel applied English Units—lb/1,000,000 lb of nickel applied	
Chromium	84.0	34.0
Mercury	50.0	20.0
Nickel	282.0	200.0
Silver	82.0	34.0
Zinc	266.0	112.0
Manganese	86.0	68.0

(9) Subpart G—Cell Wash, Employee Wash, Reject Cell Handling, and Floor and Equipment Wash

PRETREATMENT STANDARDS FOR EXISTING SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of cells produced English Units—lb/1,000,000 lb of cells produced	
Chromium	0.54	0.22
Cyanide	0.38	0.16
Mercury	0.33	0.13
Nickel	1.82	1.29
Silver	0.53	0.22
Zinc	1.72	0.72
Manganese	0.56	0.44

(10) Subpart G—Silver Etch

PRETREATMENT STANDARDS FOR EXISTING SOURCES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of silver processed English Units—lb/1,000,000 lb of silver processed	
Chromium	3.13	1.27
Mercury	1.86	0.75
Silver	3.05	1.27
Zinc	9.90	4.17
Manganese	3.20	2.53

(11) Subpart G—Silver Peroxide Production.

PRETREATMENT STANDARDS FOR EXISTING SOURCES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of silver in silver peroxide produced English Units—lb/1,000,000 lb of silver in silver peroxide produced	
Chromium	3.32	1.35
Mercury	1.98	0.79
Silver	3.25	1.35
Zinc	10.5	4.43
Manganese	3.40	2.69

(12) Subpart G—Silver Powder Production

PRETREATMENT STANDARDS FOR EXISTING SOURCES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of silver powder produced English Units—lb/1,000,000 lb of silver powder produced	
Chromium	1.35	0.55
Mercury	0.80	0.32
Silver	1.32	0.55
Zinc	4.27	1.80
Manganese	1.38	1.09

(b) [Reserved]

§ 461.75 Pretreatment standards for new sources.

Except as provided in § 403.7 any new source subject to this subpart that introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for new sources listed below. The mass wastewater pollutants in battery manufacturing process wastewater introduced into a POTW shall not exceed the following:

(a) There shall be no discharge allowance of wastewater pollutants from any battery manufacturing operations except from those set forth below:

(1) Subpart G—Zinc Oxide Formed Anodes.

PRETREATMENT STANDARDS FOR NEW SOURCES.

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of zinc English Units—lb/1,000,000 lb of zinc	
Chromium	0.62	0.33
Mercury	0.43	0.19
Silver	0.62	0.28
Zinc	0.12	0.062
Manganese	0.98	0.75

(2) Subpart G—Electrodeposited Anodes.

PRETREATMENT STANDARDS FOR NEW SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of zinc deposited English Units—lb/1,000,000 lb of zinc deposited	
Chromium	6.87	3.65
Mercury	4.70	2.06
Silver	6.87	3.04

PRETREATMENT STANDARDS FOR NEW SOURCES—Continued

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
Zinc	1.34	0.69
Manganese	10.9	8.31

(3) Subpart G—Silver Powder Formed Cathodes

PRETREATMENT STANDARDS FOR NEW SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of silver applied English Units—lb/1,000,000 lb of silver applied	
Chromium	0.85	0.45
Mercury	0.58	0.26
Silver	0.85	0.38
Zinc	0.17	0.085
Manganese	1.34	1.03

(4) Subpart G—Silver Oxide Powder Formed Cathodes

PRETREATMENT STANDARDS FOR NEW SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of silver applied English Units—lb/1,000,000 lb of silver applied	
Chromium	0.57	0.30
Mercury	0.39	0.17
Silver	0.57	0.25
Zinc	0.11	0.057
Manganese	.90	0.69

(5) Subpart G—Silver Peroxide Cathodes

PRETREATMENT STANDARDS FOR NEW SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of silver applied English Units—lb/1,000,000 lb of silver applied	
Chromium	0.14	0.072
Mercury	0.093	0.041
Silver	0.14	0.060
Zinc	0.07	0.014
Manganese	0.22	0.17

(6) Subpart G—Nickel Impregnated Cathodes

PRETREATMENT STANDARDS FOR NEW SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of nickel applied English Units—lb/1,000,000 lb of nickel applied	
Chromium	5.70	3.03
Mercury	3.9	1.71
Nickel	5.70	2.49
Silver	5.70	2.52
Zinc	1.11	0.57
Manganese	9.00	6.90

(7) Subpart G—Cell Wash, Employee Wash, Reject Cell Handling, Floor and Equipment Wash

PRETREATMENT STANDARDS FOR NEW SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of cells produced English Units—lb/1,000,000 lb of cells produced	
Chromium	0.037	0.020
Cyanide	0.039	0.016
Mercury	0.026	0.011
Nickel	0.037	0.016
Silver	0.037	0.016
Zinc	0.008	0.004
Manganese	0.059	0.045

(8) Subpart G—Silver Etch.

PRETREATMENT STANDARDS FOR NEW SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of silver processed English Units—1b/1,000,000 1b of silver processed	
Chromium	0.20	0.12
Mercury	0.15	0.064
Silver	0.20	0.094
Zinc	0.042	0.021
Manganese	0.34	0.26

(9) Subpart G—Silver Peroxide production

PRETREATMENT STANDARDS FOR NEW SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of silver peroxide produced English Units—lb/1,000,000 lb of silver peroxide produced	
Chromium	0.23	0.12
Mercury	0.16	0.068
Silver	0.23	0.10
Zinc	0.044	0.023
Manganese	0.36	0.28

(10) Subpart G—Silver Powder Production.

PRETREATMENT STANDARDS FOR NEW SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	Metric Units—mg/kg of silver powder produced English Units—lb/1,000,000 lb of silver powder produced	
Chromium	0.092	0.049
Mercury	0.063	0.027
Silver	0.092	0.040
Zinc	0.018	0.009
Manganese	0.15	0.11

(b) [Reserved]

§ 461.76 [Reserved]

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