ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 464

[OW-FRL-2220-8]

Metal Molding and Casting Point Source Category; Effluent Limitations Guidelines, Pretreatment Standards, and New Source Performance Standards

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed regulation.

SUMMARY: EPA is proposing a regulation to limit the effluent that metal molding and casting plants (foundries) discharge to waters of the United States and into publicly owned treatment works (POTWs). This proposal provides effluent limitations based on "best practicable technology" and "best available technology" and establishes 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 must be submitted by January 14, 1983.

ADDRESS: Send comments to: Mr. Ernst P. Hall, Chief, Metals and Machinery Branch, Effluent Guidelines Division (WH-552), Environmental Protection Agency, 401 M Street, SW., Washington, D.C. 20460, Attention: EGD Docket Clerk, Proposed Metal Molding and Casting (Foundry) Rules. The supporting information and all comments on this proposal will be available for inspection and copying at the EPA Public Information Reference Unit, Room 2404 [EPA Library Rear] 401 M Street, SW., Washington, D.C. The EPA information regulation (40 CFR Part 2) provides that a reasonable fee may be charged for copying. Copies of the technical documents may be obtained from the Distribution Officer at the above address or call (202) 382-7115. The economic analysis supporting this proposal may be obtained from John W. Kukulka, Economic Analysis Staff (WH-586), Environmental Protection Agency, 401 M. St. SW., Washington, D.C. 20460, or call (202) 382-5388.

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

SUPPLEMENTARY INFORMATION: The Supplementary Information section of this preamble 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 May, 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. 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 Metal Molding and Casting (Foundry) Point Source Category.* The Agency's economic analysis is found in *Economic Analysis of Proposed Effluent Standards and Limitations for the Metal Molding and Casting (Foundry) Industry.* Copies of these technical and economic analysis documents may be obtained as indicated above.

Organization of This Notice

I. Legal Authority

The regulation described in this notice is proposed under authority of Sections 301, 304, 306, 307, and 501 of the Clean Water Act (the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1251 *et seq.*, as amended by the Clean Water Act of 1977, Pub. L. 95-217) (the "Act"). 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, 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).

Section 301(b)(1)(B) set a deadline of July 1, 1977, for existing industrial direct dischargers to achieve "effluent limitations requiring the application of the best practicable control technology currently available" ("BPT").

Section 301 (b)(2)(A) set a deadline of July 1, 1983, for these dischargers to achieve "effluent limitations requiring the application of the best available technology economically achievable * * * which will result in reasonable further progress toward the national goal of eliminating the discharge of all pollutants ("BAT").

Section 306 required that new industrial direct dischargers comply with new source performance standards (NSPS"), based on best available demonstated technology.

Sections 307(b) and (c) required EPA to set pretreatment standards for new and existing dischargers to publicly owned treatment works ("POTW"). While the requirements for direct dischargers were to be incorporated into National Pollutant Discharge Elimination System (NPDES) permits issued under Section 402, the Act made pretreatment standards enforceable directly against dischargers to POTWs (indirect dischargers).

Section 402(a)(1) of the 1972 Act does allow requirements for direct dischargers to be set case-by case. However, Congress, intended control requirements to be based for the most part on regulations promulgated by the Administrator of EPA.

Section 304(b) required regulations that establish effluent limitations reflection the ability of BPT and BAT to reduce effluent discharges.

Sections 304(c) and 306 of the Act required regulations for NSPS.

Sections 304)g), 307(b), and 307(c) required regulations for pretreatment standards.

In addition to these regulations for designated industry categories, Section 307(a) required the Administrator to promulgate effluent standards applicable to all dischargers of toxic pollutants.

Finally, Section 501(a) authorized the Administrator to prescribe any additional regulations "necessary to carry out his functions" under the Act.

The EPA was unable to promulgate many of these regulations by the deadlines contained in the Act, and as a result, in 1976, EPA was sued by several environmental groups. In settling this lawsuit, EPA and the planitiffs executed a "Settlement Agreement required EPA to develop a program and meet a schedule for controlling 65 "priority" pollutants and classed of pollutants. In carrying out this program EPA was directed to promulgate BAT effluent limitations, pretreatment, standards, and new source performance standsrds for 21 major industries, including the foundries industry. See *Natural Resources Defense Council, Inc.* v. *Train*, 8 ERC 2120 (D.D.C. 1976), modified, 12 ERC 1833 (D.D.C. 1979).

Several of the basic elements of the Settlement Agreement program were incorporated into the Clean Water Act of 1977. This law also makes several important changes in the Federal water pollution control program.

Sections 301(b)(2)(A) and 301 (b)(2)(C) of the ACt now set July 1, 1984 as the deadline for industries to achieve effluent limitations requiring application of BAT for "toxic" pollutants. "Toxic" pollutants here includes the 65 "priority" pollutants and other classes of pollutants which Congress declared "toxic" under Section 307(a) of the Act.

Likewise, EPA's programs for new source performance standsrds and pretreatment standards are now aimed principally at controlling toxic pollutants.

To strengthen the toxics control program, Section 304(e) of the Act authorizes the Administrator to prescribe certain "best management practices"(BMPs"). These BMPs are to prevent the release of toxic and hazardous pollutants from: (1) Plant site runoff, (2) spillage or leaks, (3) sludge or waste disposal, and (4) drainage from raw material storage if any of those events are 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.

For "conventional" pollutants identified under Section 304(a)(4) (including biochemical oxygen demand, suspended solids, fecal coliform and pH), the new Section 301(b)(2)(E) requires "effluent limitations requiring the application of the best conventional pollutant control technology" ("BCT") instead of BAT to be achieved by July 1, 1984. The factors considered in assessing BCT for an industry are the relationship between the cost of attaining a reduction in effluents and the effluent reduction benefits attained, and a comparision of the cost and level of reduction of such pollutants by publicly owned treatment works and industrial sources. For non-toxic, nonconventional pollutants, Sections 301(b)(2)(A) and (b)(2)(F) require achievement of BCT effluent limitations within three years after their establishment or by July 1, 1984, whichever is later, but not later than July 1, 1987.

The purpose of this proposed regulation is to establish BPT and BAT effluent limitations and NSPS, PSES, and PSNS for the Metal Molding and Casting (Foundries) Category.

EPA has not previously proposed or promulgated effluent guidelines limitations or standards specifically for the Metal Molding and Casting (Foundry) Point Source Category.

B. Overview of the Industry

The Metal Molding and Casting (Foundry) Category includes those plants that remelt and cast metal. These plants form a cast intermediate or final product by pouring or forcing the molten metal into a mold. However, the casting of ingots, pigs, or other cast shapes related to primary metal smelting are not included in this category. These operations are covered under other regulations. Casting plants are included within the United States Department of Commerce, Bureau of the Census Standard Industrial Classification (SIC) Major Group 33—Primary Metal Industries. Those parts of this major Group 33 covered by this proposal are the subgroup SIC Nos. 3321, 3322, 3324, 3325, 3361, 3362, and 3369. The types of metal associated with these SIC codes and considered for regulation under this category are: Gray iron, ductile iron, malleable iron, steel, aluminum, copper, lead, magnesium and zinc and their respective alloys, The casting of these metals represent over 98 percent of the total of all metals cast in the country. The Agency also considered for regulation the casting of nickel, tin, and titanium but has determined that no process wastewater pollutants result from the casting of these metals.

The Agency's data from a 1977 survey of the industry indicate that over 3,600 commercial casting plants are located in the United States employing approximately 300,000 workers and producing over 19 million tons per year of cast products. The foundry industry ranks fifth among all manufacturing industries based on "value added by manufacture" according to data issued by the United States Department of Commerce in 1970 (Survey of Manufacturers, SIC 29-30).

Plants in this industry include both "captive" plants (plants that sold 50% or more of their production to customers outside the corporate entity) and "job shops" (plants that sold 50% or more of their products internally or were used within the corporate entity). They vary greatly in metal cast, production wastewater source and volume, size, age, and number of employees,

Annual castings production has ranged between 15 and 20 million tons during most of the last 20 years. Ferrous castings have accounted for about 90 percent of the total tons produced annually since 1956.

The number of smaller iron foundries has dropped dramatically in the past 20 years, while the number of large and medium size iron foundries has moderately increased. Among the nonferrous metals, aluminum casting has been increasing whereas the trends for the other metals are mixed. There is a trend toward a decreasing percentage of zinc casting shipments compared with total foundry shipments and compared to aluminum casting shipments.

Metal casting is done in several ways, and the selection and use of a particular manufacturing process, e.g., type of mold medium, is often governed by the type of metal cast. However, the variety of manufacturing processes can be typified by essentially six standard process steps: (1) Metal is remelted in a furnace, (2) molds are prepared, (3) the molten metal is poured or injected into a mold, (4) the mold medium is separated from the casting, (5) the casting is cooled, and (6) the casting is further processed before shipment. Generally, this regulation is applicable to the first five of these processes and would not apply to the sixth step. The sixth step would be covered by proposed effluent limitations and standards applicable to electroplating and metal finishing. See 46 FR 9462 (January 28, 1981, Part 413) and 47 FR 38462 (August 31, 1982, Parts 413, 433). The casting of magnesium, however, is the exception; grinding scrubber operations are covered by this proposed regulation.

Water is used throughout these various process steps and becomes contaminated either through its use in air pollution control devices associated with the various manufacturing processes or through direct contact of the water with some part of the process or casting. The pollutant characteristics of the resulting wastewater may vary depending on the type of metal cast, the manufacturing process employed and, the type of air pollution control device associated with the manufacturing process. About 80% of the wastewater associated with foundry operations is generated by air pollution control devices. This watewater does not contact the products cast.

Of the 3600 commercial foundries in the United States, only 965 generate process wastewater. Over one-third of the 965 plants completely recycle their wastewater.

The most significant pollutants and pollutant properties present in foundry wastewaters are suspended solids, oil and grease, chromium, copper, lead, zinc, listed and non-listed phenols, acenaphthlene, para-chlorometacresol, chloroform, crysene, tetrachlorethylene and pH.

III. Summary of Methodology for Developing the Proposed Regulation

This proposed regulation would establish BPT and BAT limitations and NSPS, PSES, and PSNS for the foundries category.

EPA, in developing this proposed regulation, has performed extensive analyses of the foundry industry and the water pollution problems associated with it. The Agency and its laboratories and consultants developed analytical methods for toxic pollutant detection and measurement, which are discussed under the Sampling and Analytical Program section of this notice. EPA has also gathered technical and financial data about the industry. EPA's analyses arer summarized here and under Data Gathering Efforts, Section IV of this notice.

EPA studied the foundry industry to determine whether differences in raw materials, final products, manufacturing processes, equipment, age and size of plants, water usage, wastewater constituents, or other factors required the development of separate effluent limitations and standards for different 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. This study is explained in detail in Section IV of the Development Document. As a result of this study the Agency has determined the constituents of wastewaters, including toxic pollutants. Section V of the Development Document explains these determinations in detail. EPA then identified for each of the subcategories, the pollutants that are being considered for effluent limitations guidelines and standards of performance, as discussed in detail in Section VI of the Development Document.

Next, EPA identified specific control and treatment alternatives or options, including both in-plant and end-of-process technologies, that are in use or are capable of being used in the foundry industry. Specific treatment alternatives were identified that have demonstrated effective removal of pollutants from raw wastewaters characteristic of metal molding and casting process wastewaters. In may foundries, treatment technologies are combined to form a treatment train comprised of various treatment technologies or unit processes. Each component of the treatment train perform a specific function. The Agency has investigated both the treatment technologies themselves and the ways in which these technologies are coupled together to achieve desired results. In this way the Agency developed several treatment alternatives. The Agency also compiled and analyzed historical data and newly generated data on the effluent quality resulting from the application of these technologies. The long-term performance, operational limitations, and reliability of each of the treatment and control technologies were also identified. In addition, EPA considered the non-water quality environmental impacts of these technologies, including impacts on air quality, solid waste generation and disposal, water scarcity, and energy requirements.

The Agency then estimated the cost of each control and treatment option by using standard engineering costing practices. EPA derived costs for each treatment process unit (i.e., primary coagulation-sedimentation, activated sludge, multi-media filtration, etc.) from model treatment plant characteristics. Model treatment plant characteristics were developed using raw waste characteristics including wastewater flows, industry supplied production data, and treatment technology capabilities and performance data. To determine the cost of the treatment these unit process costs were summed to yield total treatment cost for each treatment alternative. Both investment cost and operating and maintenance costs have been developed in this manner. EPA has confirmed the reasonableness of this methodology by comparing EPA cost estimates with actual treatment system costs reported by the industry and to costs (for similar equipment of similar size) developed by consulting firms not associated with the development of this proposed regulation.

Based on the technical data collected, EPA identified various control and treatment alternatives and their resulting effluent levels of pollutants whose performance could serve as the basis for a proposed regulation setting effluent limitations and standards for BPT, BAT, PSES, PSNS, and NSPS. In addition, the Agency selected pollutants to be regulated specifically from among those that were considered for regulation.

The proposed effluent limitations and standards identified in the Development Document for BPT, BAT, NSPS, PSES, and PSNS are expresed as either no discharge of process wastewater pollutants or as mass limitations, kg/kkg (lbs/1,000 lbs) of pollutants per unit of metal poured for these subcategories or segments for which a discharge is allowed. Pollutant concentration was not chosen as an appropriate measure for limitations because mass-based limitations achieve much greater quantifiable reductions in the discharge of pollutants.

Details about the selection of the production-normalized parameters used to calculate mass limitations are set forth in Section IV of the Development Document.

IV. Data Gathering Efforts

The Agency collected extensive technical data prior to the preparation of this proposal. Initially, in 1974, the Agency conducted several plant visits and collected wastewater samples and made analyses for conventional pollutants and some metal pollutants. In 1977 the Agency conducted an extensive mail survey to supplement existing data. The mail survey was designed to collect information about all types of plants engaged in metal molding and casting. Information was requested on, among other things, plant size, age, historical production, number of employees, land availability, water usage, manufacturing processes, raw material and process chemical usage, as well as air pollution control techniques that result in a process wastewater, wastewater treatment technologies, the known or believed presence or absence of toxic pollutants in the plant's raw and treated process wastewaters, and other pertinent factors. The mail survey was sent to 1,200 plants; 960 plants responded.

During review of existing data, 15 trade associations and interest groups associated with metal molding and casting activities were identified. Representatives of these 15 groups met with EPA to review a draft questionnaire. Their comments were reviewed and, where appropriate, were incorporated into the final questionnaire.

The survey questionnaire was mailed in December, 1977. It requested technical information reflective of plant operations pertinent to calendar year 1976. A detailed discussion of this survey and the information obtained are presented in Section V of the Development Document.

EPA also obtained data from NPDES permit files, contact with pollution control equipment suppliers, treatability studies, and literature searches.

In 1981 the Agency again updated its technical data base because the Agency became aware that continued progress had been made by the foundry industry in the installation of pollution control technologies and in the abatement of pollutant discharge. Therefore, a phone survey was undertaken to determine what additional control equipment had been installed during the 1976 thru 1980 period and to determine the current costs of wastewater treatment sludge disposal. Through this survey the Agency obtained information from 153 foundries and found a continuing trend towards implementation of 100 percent recycle of process wastewater.

Based on the data gathered, the Agency estimates that there are 287 direct discharging foundries, 327 foundries that discharge wastewaters to POTWs and 351 foundries do not discharge process wastewaters.

V. Sampling and Analytical Program

In a two-phase sampling and analysis program, EPA checked for the presence and quantities in foundry wastewaters of the toxic pollutants designated in the Clean Water Act. The Agency also sampled and analyzed for conventional and nonconventional pollutants.

Before sampling and analyzing foundry wastes, EPA isolated specific toxic pollutants for analysis. It was not feasible to analyze for every pollutant included in the group of 65 "priority" pollutants and classes of pollutants identified in the Clean Water Act; this group potentially encompasses thousands of specific pollutants. Instead, EPA selected 129 specific toxic pollutants for study in this and other rulemakings. The criteria for choosing these pollutants included the frequency of their occurrence in water, their chemical stability and structure, the amount of the chemical produced, and the availability of chemical standards for measurement.

In addition to the 129 toxic pollutants, EPA sampled for several other conventional and nonconventional pollutants and pollutant properties such as total suspended solids; oil and grease; pH; iron; ammonia; and nonlisted phenolics.

EPA derived data in a field sampling program designed to determine the concentrations of pollutants in foundry wastewaters. Sampled plants were selected to be representative of the manufacturing processes, the prevalent mix of production among plants, and the in-place treatment technologies found in the industry. EPA obtained and analyzed samples from 40 facilities. Before visiting a plant, EPA reviewed available plant specific data on manufacturing processes and wastewater treatment. The Agency selected representative points to sample the raw wastewater leaving the manufacturing process or air pollution control device prior to treatment and to sample the final treated wastewater. The Agency prepared, reviewed, and approved a detailed sampling plan showing the selected sample points and the overall sampling procedure.

Under the sampling plan, the Agency conducted the sampling in the following manner: sampling visits were made during three consecutive days of plant operation, with raw wastewater samples taken before treatment. Treated effluent samples were taken following application of in-place treatment technologies. EPA also sampled plant intake water to determine the presence of pollutants prior to contamination by manufacturing processes.

This first phase of the sampling program detected and quantified waste constituents included in the list of 129 toxic pollutants. Wherever possible, each sample of an individual raw waste stream or a treated effluent was collected by an automatic, time-series compositor over three consecutive 8 to 24 hour sampling and operational periods. Where automatic compositing was not possible, grab samples were taken and composited manually. The second phase of the sampling program confirmed the presence and further quantified the concentrations and pollutant mass loadings of the toxic pollutants found during the first phase of the program.

Metal analyses for the first phase of sampling and analysis were made by inductively coupled plasma atomic emission spectrometry, except that the standard flameless atomic adsorption method was used for mercury. Metals analyses for the second phase were by a combination of flame and flameless atomic adsorption methods.

Analyses for cyanide and cyanide amenable to chlorination were performed using methods promulgated by the Agency under Section 304(h) of the Act (304(h) methods).

Analysis for asbestos fibers included transmission electron microscopy with selected area defraction; results were reported as chrysotile fiber count.

Analyses for conventional pollutants (BOD^5, TSS, pH, and oil and grease) and nonconventional pollutants [ammonia, fluoride, and iron] were performed by 304(h) methods.

EPA employed the analytical methods for the organic pollutants that are described in a sampling and analytical protocol. This protocol is set forth in *"Sampling and Analysis Procedures for Screening of Industrial Effluents for Priority Pollutants"*, revised April, 1977.

Analysis for total phenols was performed using the 4-aminoantipyrine (4AAP) method.

Full details of the sampling and analysis program and the water and wastewater data derived from that program are presented in Section V of the Development Document.

VI. Industry Subcategorization

This proposed regulation subcategorizes the industry into six subcategories, which encompass 19 process segments.

Included in the foundry category are a number of different kinds of plants which cast a variety of metals and employ various metal molding and casting techniques. Foundries which cast dissimilar metals, employ different manufacturing processes (many of which require air pollution control devices) have substantially different raw waste characteristics and employ different process wastewater treatment and control technologies. EPA concluded, therefore, that this category was not amenable to a single set of effluent limitations and standards. Section IV of the Development Document contains a detailed discussion of the factors considered and the rationale for subcategorization of the foundry category.

In developing the subcategorization scheme, the Agency examined the following factors:

1. Type of metal cast
2. Manufacturing process
3. Air pollution sources and control devices
4. Water use
5. Process wastewater characteristics
6. Raw materials
7. Process chemicals
8. Wastewater treatability
9. Plant size
10. Plant age
11. Geographic location
12. Non-water quality impacts; solid waste generation and disposal; energy requirements

The type of metal cast is the principal factor affecting the Agency's subcategorization scheme. Metals differ, among other things, in physical and chemical properties. While ferrous metals are all alloys of iron, nonferrous metals, i.e., aluminum, copper, lead, magnesium, zinc, etc., differ among themselves in physical and chemical aspects and differ substantially from the alloys of iron in most aspects. Differences in the physical and chemical properties of the various types of metal cast result in a diversity of manufacturing processes, raw materials, process chemical use, sources of air pollution, water use, and process wastewater characteristics. Accordingly, the six subcategories reflect the six types of base metal. EPA has determined that differences in alloys of the same base metal were not significant enough to warrant subcategorization by alloy.

Consideration of the various manufacturing processes helped to refine the subcategorization scheme. Subcategories based on metal type were divided in 19 process segments to allow for dissimilar manufacturing processes among the different subcategories. In some cases, different process segments contain different pollutants, requiring treatment by different control systems (e.g. oil and grease by emulsion breaking in aluminum die casting and metal removal by precipitation in iron and steel melting furnace scrubber) or are dissimilar with respect to water usage and flow rates. The proposed subcategorization scheme reflects these differences.

Each subcategory follows the same basic process of remelting the metal or its alloy to form a cast intermediate or final product by pouring or forcing the molten metal into a mold (except for ingots, pigs, or other cast shapes related to primary metal smelting).

The proposed subcategories for the foundry industry are as follows:

(1) Subpart A—Aluminum Casting Subcategory. Aluminum casting operations involve 5 manufacturing process segments that are sources of process wastewater; investment casting, melting furnace scrubber, casting quench, die casting, and die lube.

(2) Subpart B—Copper Casting Subcategory. Copper casting operations involve 2 manufacturing process segments that are sources of process wastewater; dust collection scrubber, and mold cooling and casting quench.

(3) Subpart C—Iron and Steel Casting Subcategory. In the Iron and Steel Casting Subcategory 5 manufacturing process segments are sources of process wastewater; dust collection scrubber, melting furnace scrubber, slag quench, mold cooling and casting quench and sand washing.

(4) Subpart D—Lead Casting Subcategory. In the Lead Casting Subcategory 3 manufacturing process segments are sources of process wastewater; melting furnace scrubber, continuous strip casting, and grid casting scrubber.

(5) Subpart E—Magnesium Casting. Magnesium casting involves 2 manufacturing process segments that are sources of process wastewater; grinding scrubber, and dust collection scrubber.

(6) Subpart F—Zinc Casting. In the Zinc Casting Subcategory 2 manufacturing process segments are sources of process wastewater; casting quench, and melting furnace scrubber.

VII. Available Wastewater Control and Treatment Technology

A. Status of In-Place Technology

In-place treatment technologies in the foundry industry vary widely. Many plants have eliminated the discharge of process wastewater. These plants have either eliminated the use of process water entirely or have installed treatment technologies consisting of simple settling tanks or lime and settle equipment followed by 100% recycle of process wastewater. Other plants have installed treatment technologies to treat discharges designed to meet permit limitations. In some cases, oil skimming devices have been added to the settling tanks to remove oil. Some plants have installed other physical/chemical treatment technologies including flocculation, filtration, emulsion breaking and carbon adsorption. About 80 percent of the plants in the industry have installed little or no equipment to control discharges of pollutants.

The phone survey conducted in 1981 to update the Agency's technical data base revealed that foundries had increased their water pollution controls between 1976 and 1980 and indicated several trends; the most significant of these was the elimination of the discharge of pollutants from all or some of the foundry water pollution sources. About 25% of the 153 plants contacted have eliminated the discharge of process wastewater from one or more of their manufacturing processes through complete recycle of process wastewater.

More specific details of the results of the 1981 phone survey are contained in Section V of the Development Document and in the Administrative Record for this rulemaking.

B. Control Technologies Considered

To control the level of pollutants at the BPT, BAT, NSPS, PSES, and PSNS levels of treatment, various treatment systems were evaluated. These treatment systems are discussed in detail in Section VII of the Development Document. Some of these include in-plant controls; however, most involve the installation of additional add-on treatment components followed by recycle of process wastewater.

In-plant controls are available and in use in many plants and as a result, are being incorporated into the treatment models at the BPT, BAT, NSPS, PSES, and PSNS levels. These in-plant control measures include the reduction of wastewater generation via process water reduction and recycle. (Recycle of process wastewater is the practice of treating and returning water to be used again for the same purpose).

Add-on treatment components considered include:

Chemical Precipitation. Chemical precipitation generally involves adjusting pH and adding flocculating agent to precipitate out of solution metal ions and certain anions.

Sedimentation. Sedimentation is a process which removes solid particles from a liquid by gravity. This is done by reducing the velocity of the feed stream in a large volume tank, clarifier, lagoon or other similar device so that gravitational settling can occur.

Chemical precipitation and sedimentation is generally referenced in this notice as lime and settle technology.

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

Chemical emulsion breaking. Chemical emulsion breaking is used to break stable oil water emulsions. By adding chemicals, and adjusting the pH, the oil water attraction induced in the emulsion is diminished allowing the oil fraction to separate and float on the water fraction where it can be skimmed off.

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

C. Treatment Effectiveness

The Agency has a limited amount of effluent analytical data from foundries. Nearly half of the plants sampled during the sampling program did not have effluents to sample bacause they recycle 100 percent of their wastewater.

To develop proposed effluent limitations and standards for the process segments with an allowable discharge allowance, the Agency examined the technologies treating foundry wastewaters and compared the performance of these technologies with the performance of identical technologies found in other industries with wastewater characteristics similar to those of foundry wastewaters.

The other industries with wastewaters similar to foundry wastewaters are: Copper and aluminum forming, battery manufacturing, porcelain enameling, and coil coating. The Agency has assembled a combined treatment effectiveness data base for lime and settle technology compiled from effluent data from plants in these industries. This data base is referred to as the "combined metal data base." The Agency is transferring from these industries to 4 process segments of the Foundry Category. These process segments are aluminum investment casting, melting furnace scrubber and die casting and zinc melting furnace scrubbers.

The wastewaters from these 4 process segments are similar to the wastewaters of the plants in the combined metals data base with respect to suspended solids, zinc, and (for aluminum die casting) lead. These wastewaters contain similar ranges of these metals and solids which can be readily removed by lime and settle technology.

The Agency compared the available treatment performance data for these 4 process segments and compared it to the performance data of the combined metals data base. For aluminum investment casting and melting furnace and zinc melting furnace process segments the Agency found the performance of the lime and settle treatment systems at the sampled plants to be inadequate compared to other well operated lime and settle treatment systems whose performance is included in the combined metals data base. For example, the effluent solids concentration of the treatment systems for the 3 process segments mentioned above exceeds the maximum effluent level of the combined metals data base for 5 out of the 6 sampling days at the plants sampled. For the one sampling day below the maximum value, the effluent solids concentrations at the sampled plant exceeds the monthly average values by 35 and 74 percent respectively. The performance of the treatment systems at these plants is considered to be inadequate.

For aluminum die casting the performance of the one plant with lime, settle and filter technology (plant 17089) is nearly identical to or better than the performance of lime, settle and filter technology in the combined metals data base. For example, the effluent suspended solids level at the sampled plant for all three sampled are 13 mg/l, 10 mg/l, and 3 mg/l respectively. These concentrations are below the maximum value of 15 mg/l for the combined data base. For two of the three days the solids concentration is below the 30 day average value of 10 mg/l of the combined date base. For one day, the sampled concentration of 12 mg/l exceeds the 30 day average by 3 mg/l. The zinc effluent concentration of 0.45, 0.14, 0.13 for the three days of sampling is well below both the 30 day (0.31 mg/l) and 1 day maximum (1.2 mg/l) values of the combined data base.

Because data from the one plant with properly operating technology does not provide an adequate statistical base for establishing limitations for this process segment, we have based limitations on the treatment effectiveness data in the combined metals data base. The results noted above from one plant in the process segment indicate that the recommended technology will achieve results equal to that achieved in the plants from which the combined metals data base was compiled.

Technologies which could be added to the BPT level of control have also been evaluated for BAT, NSPS, PSES, and PSNS. Some of these technologies for control of the toxic pollutants include: chemical oxidation, granular activated carbon (carbon adsorption), and pressure filtration. Details on these treatment systems are presented in Section X of the Development Document.

VIII. Best Practicable Control Technology Currently Available (BPT)

A. General Criteria and Methodology

The factors considered in identifying BPT include the total cost of application of technology in relation to the effluent reduction benefits of the technology, the age of equipment and facilities involved, the process employed, the engineering aspects of the application of the various types of control techniques, process changes, non-water quality environmental impacts (including energy requirements), and other factors the Administrator considers appropriate. In general, the BPT technology levels represent 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 established through transfer of technology from a different subcategory or category. See *Tanners' Council of America* v. *Train*, (540 F. 2d 1188, 4th Cir. 1976). BPT may include process changes or internal controls where such measures are common industry practice.

The cost-benefit inquiry for BPT is a limited balancing, committed to EPA's discretion, which does not require the Agency to quantify benefits in monetary terms. See, e.g., *American Iron and Steel Institute* v. *EPA*, 526 F. 2d 1027 (3d Cir. 1975). In balancing costs in relation to effluent reduction benefits, EPA considers the volume and nature of discharges expected after application of BPT, the general environmental effects of the pollutants, and the cost and economic impacts of the required pollution control level. The Act does not require or permit consideration of water quality problems attributable to particular point sources or industries, or water quality improvements in particular water bodies. Therefore, EPA has not considered these factors. See *Weyerhauser Company* v. *Costle*, 590 F. 2d 1011 (D.C. Cir. 1978).

The initial step in the development of BPT involves a review of technologies available for the removal of pollutants characteristic of foundry process wastewaters. These technologies are simple settling, lime and settle, chemical emulsion breaking, carbon adsorption and the other technologies discussed previously under the status of in place technologies. Each technology was evaluated in terms of the degree of effluent reduction attainable through its application to plants within a subcategory and within a subcategory process segment. In a few instances, the proposed BPT limitations are based on technology transferred from one process segment to another. Such technology transfers are detailed below and in section IX of the Development Document.

B. Proposed BPT Limitations

1. *General.* EPA is proposing BPT limitations for 18 process segments of all six subcategories. (For one process segment, lead continuous strip casting, there are no direct dischargers; therefore EPA is not proposing BPT limitations for this process segment.)

EPA is proposing complete recycle (no discharge) of process wastewater pollutants for 14 process segments: 9 process segments of the iron and steel, copper and magnesium casting subcategories and 5 process segments associated with the other 4 subcategories. These five other process segments are: the aluminum casting quench and die lube, lead melting furnace scrubber and the lead grid casting scrubbers, and the zinc casting quench process.

EPA is proposing BPT limitations and standards for the remaining 4 process segments based on treatment followed by some discharge of pollutants. These 4 process segments are: Aluminum investment casting, melting furnace scrubber, and die casting, and zinc melting furnace scrubber. Discharges would be allowed for these process segments because 100 percent recycle has not been demonstrated for the first three process segments, and technology for implementing 100 percent recycle cannot easily be transferred. Complete recycle has been demonstrated in one zinc melting furnace scrubber process and is considered under BAT.

Proposed BPT limitations would result in the removal of an estimated 285.3 thousand kilograms per year of toxic pollutants, and 4.2 million kilograms per year of other pollutants (primarily suspended solids and oils and greases).

The Agency estimates that investment costs for BPT are $44.6 million (first quarter 1982 dollars). Total annual costs are estimated to be $10.7 million. EPA estimates that 10 plant closures may result from compliance costs associated with BPT. EPA estimates a loss of approximately 168 jobs if these closures occurred.

2. *BPT of 100 percent recycle for 14 Process Segments.* One hundred percent recycle is demonstrated extensively throughout 9 process segments. For five other process segments, technology transferred from other foundry process segments can achieve 100 percent recycle. The number of plants achieving 100 percent recycle in the 9 process segments ranges from 20 percent for sand washing processes to 80 percent for lead melting furnace scrubber. Specific details about these plants are summarized in Section III of the Development Document.

No discharge of process wastewater is achieved by plants in the industry in a variety of ways, the most common of which are simple settling and complete recycle or lime and settle technology with complete recycle. Oil removal equipment for some process segments is also used. The proposed BPT limitations are based upon these technologies. Simple settling and 100 percent recycle is the basis for BPT limitations for twelve of the fourteen process segments for which no discharge would be allowed. Lime and settle followed by 100 percent recycle is the basis for BPT limitations for the ferrous melting furnace scrubber process segment. Die lubricant reclamation through cyclonic separation and recycle is the basis for BPT limitations for the aluminum die lube process segment. Appendix B of this notice lists the pollutants proposed for specific regulation.

The Agency has concluded that 100 percent recycle is technically and economically feasible for fourteen process segments. These conclusions are based on several sources of information. Plant supplied information via data collection questionnaires and data collected at plant visits serve as the primary technical basis. Many plant visits confirmed the practice of 100 percent recycle when reported in the data questionnaire. For many of the plants not visited, other sources of information confirming the feasibility of no discharge was sought. Several EPA regions and State environmental authorities supplied information. In addition, three engineering design firms were contacted which design 100 percent recycle treatment systems for foundries and other similar plants. Client lists of these firms were obtained and confirmatory phone calls made to verify that 100 percent recycle was feasible and was being used widely in foundries. Finally, for some plants which furnished confusing information follow-up phone calls were made to determine if the plant was in fact achieving no discharge of process wastewater.

Most of the technical data were collected in 1978. The Agency updated a portion of its data base to reflect the degree of treatment technology in place as of 1980. The Agency obtained information from 153 plants previously surveyed and found a continuing trend toward complete recycle of process wastewater.

During plant visits and in phone calls to many plants, inquiries were made to identify possible operating and maintenance problems, and the solutions implemented to overcome the problems encountered by plants with 100 percent recycle of process wastewater. Information from plants operating under conditions of high total dissolved solids or other conditions conducive to fouling and scaling of pipes, pumps, air pollution control equipment, and related equipment indicates that through periodic maintenance, maintaining a proper water balance within the recycle systems and properly operating a well-designed treatment system (for example, controlling pH within recommended limits and adding biocides when needed), fouling and scaling conditions are manageable plant operating problems and within the scope of routine maintenance activity.

Additionally, EPA, as part of its sampling and analysis effort, analyzed water chemistry data which indicate that many plants operating at 100 percent recycle are operating successfully under severe fouling or scaling conditions. Details of these analyses are in Section IX of the Development Document. Many plants have operated for many years with 100 percent recycle of process wastewater.

For five process segmnts (aluminum casting quench, copper mold cooling and casting quench, lead grid casting scrubber, and magnesium grinding and dust collection scrubbers) 100 percent recycle is based on transfer technology from another foundry process segment. Most plants provide little or no treatment for these processes. Therefore, the Agency concluded that treatment was uniformly inadequate. Treatment information from other processes was examined to determine an appropriate transfer of treatment technology. For the above process segments EPA has transferred technology from the following process segments: from zinc casting quench to aluminum casting quench; from ferrous mold cooling and casting quench to copper mold cooling and casting quench; from lead melting furnace scrubbers to lead grid casting scrubbers; from ferrous dust collection scrubbers to magnesium grinding and dust collection scrubbers. EPA has examined the wastewaters from these processes and determined that the wastewater between the respective processes are similar in all material respects.

After consideration of the engineering aspects of transferring this technology, the Agency concludes that the performance of the technology transferred would be substantially equal to the performance achieved in the process from which it is transferred.

3. *BPT for Other Process Segments.* For four process segments, BPT will be based upon treatment and some discharge. Generally, this treatment consists of settling and partial recycle or lime and settle technology, oil removal where required, and partial recycle.

a. Aluminum Investment Casting: EPA is basing proposed BPT limitations for aluminum investment casing on the combined metals data base for lime and settle technology and the average effluent flow of the investment casting plants with the lowest effluent flows. No aluminum investment casting plants recycle process wastewater and EPA is not basing effluent limitations on the use of recycle following lime and settle treatment. No investment casting plants recycle process wastewater and only one plant has any degree of treatment in place; it has lime and settle technology. The Agency used the combined metals data base to set BPT limitations because the operation of lime and settle technology at the one plant in the process segment with technology in place was judged to be poor. EPA is proposing aluminum investment casting effluent BPT limitations for total suspended solids, oil and grease and pH. EPA estimates proposed BPT compliance costs for aluminum investment casting of $2.3 million for capital investment and $411,500 for annual operating costs. Proposed BPT would result in the removal of 857.4 kilograms per year of conventional and nonconventional pollutants. No toxic organic pollutants were found in aluminum investment casting wastewaters. Copper and zinc, detected in investment casting raw wastewaters, are present at levels below those achievable with lime and settle and filtration technology.

b. Aluminum Melting Furnace Scrubbers: Proposed BPT limitations for aluminum melting furnace scrubbers are based on lime and settle technology with oil skimming. The proposed limitations for suspended solids and oil and grease and pH are derived from the combined metals data base and the average recycle and effluent flows at plants with the greatest degree of recycle for this process; that is 95 percent recycle. Sixty percent of these plants extensively recycle at rates of at least 95%. EPA estimates proposed BPT compliance costs of lime and settle technology of $913.8 thousand for capital investment and $168.0 thousand for annual operating costs. Proposed BPT would result in the removal of 15,868 kilograms per year of conventional and nonconventional pollutants. Zinc detected in the raw wastewaters from aluminum melting furnace scrubbers is below the treatability levels of lime and settle and filter technologies.

c. Aluminum Die Casting. EPA is basing proposed BPT Limitations for aluminum die casting on the lime settle, filter and chemical emulsion breaking technologies at two aluminum die casting plants, the combined industry treatment effectiveness data and the average recycle and effluent flows at plants with greatest degree of recycle and lowest effluent flows. Filters are used to provide the necessary water quality for recycle rates greater than 80 percent. Die lubricants used in this process are chemical emulsions that require chemical emulsion breaking as demonstrated by several of the plants in addition to lime and settle technology. Highest recycle rates average 85 percent. EPA is proposing effluent limitations for total suspended solids, oil and grease, pH, lead, zinc, and phenols (4AAP). Proposed BPT compliance costs are 1.84 million for capital investment and 507.9 thousand annual operating costs.

EPA estimates the removal of 30.2 thousand kilograms per year of conventional and nonconventional pollutants and 425.5 kilograms per year of toxic organic and metal pollutants.

d. Zinc Melting Furnace Scrubbers. Proposed BPT limitations for zinc melting furnace scrubbers are based on the combined metals data base and the following technology: chemical emulsion breaking, skimming, lime and settle, and 95 percent recycle. These technologies are demonstrated in 60 percent of the plants in this process segment. Complete recycle has been demonstrated by 1 plant with a zinc melting furnace scrubber and 100 percent recycle is considered under BAT. EPA is proposing effluent limitations for total suspended solids, oil and grease, pH, zinc, and phenols (4AAP). EPA estimates proposed BPT compliance costs of $264.0 thousand capital investment and $162.8 thousand for annual operating costs. Proposed BPT would result in the removal of 26.0 thousand kilograms per year of conventional and nonconventional pollutants and 45.9 kilograms per year of toxic metal pollutants.

4. *Other BPT Options Considered.* For the fourteen process segments for which the Agency is proposing 100 percent recycle of process wastewater at BPT, the Agency considered two less stringent treatment alternatives. These options call for partial recycle and treatment of the wastewater not recycled. Both discharge alternatives are designed to be compatible with existing in place treatment technologies and are based on solids and metals removal technologies currently used by foundries: lime and settle. The options differ by the extent of partial recycle after simple settling. The wastewater not recycled is treated by lime and settle technology prior to discharge. One option is based on 90 percent recycle and the other is based on 50 percent recycle. Oil skimming devices are included for both options for oil removal.

BPT limitations that would be established if either the 90 percent or 50 percent recycle option were selected as the basis for BPT in the final regulation would be based upon lime and settle technologies, probably using treatment effectiveness data from the combined metals data base. The effluent limitations that probably would be established if either the 90 percent or 50 percent recycle option were selected are detailed in Section IX of the Development Document. The Agency did not sample the effectiveness of lime and settle technology in plants for which 100 percent recycle is proposed since so many foundries with those process segments were achieving 100 percent recycle. Accordingly, the only data that indicate what lime and settle is achieving in the category was derived from the process segments for which some discharge would be allowed at BPT and PSES. As was mentioned previously, that data generally indicate that the performance of the technology is uniformly inadequate.

The wastewaters of the process segments for which 100 percent recycle is proposed for BPT (and for PSES) is similar to the wastewaters of the categories from which the combined metals data base was compiled, and the processes and technologies used in these process segments are similar to the processes and technologies used in the categories from which the combined data base was compiled. Where plants have installed waste treatment technologies but have not implemented 100 percent recycle, lime and settle treatment technology and partial recycle is the most frequently selected technology. Therefore, the Agency believes that the combined data base shows the treatment effectiveness that lime and settle would achieve in the foundry process segments for which 100 percent recycle is being proposed.

The Agency compared 100 percent recycle with the two discharge options and concluded that 100 percent recycle is preferable, based on the extent to which 100% recycle is practiced and on cost and pollutant removal considerations. However, comments are solicited on these and other treatment technologies as possible bases for BPT.

The Agency examined its data base and found that approximately 228 (80 percent) of the 287 direct dischargers, other than those that practice 100 percent recycle, have little or no treatment in place or have only simple settling and partial recycle with a discharge. Seven percent of these dischargers (21 plants) now have lime and settle treatment in place with recycle rates of 90 percent. The remaining (thirteen percent) of these dischargers (38 plants) have lime and settle technology in place but predominantly do not recycle their treated wastewater. Those few plants that do recycle do so at rates of less than 40 percent. Using this treatment in place information, the Agency estimated for each of the two options the capital and annual costs to industry, the amounts of pollutants discharged into waterways and POTWs, the amounts of sludge generated and the amount of energy consumed.

For plants with little or no treatment in place, it is substantially less costly to install simple settling with 100 percent recycle than it is to install lime and settle treatment with either 90 percent or 50 percent recycle. For example, for a medium-sized ferrous foundry with no existing technology for treating dust collection scrubber wastewater, simple settling with 100 percent recycle would require capital costs of $159,400 (1982 dollars) and annual costs of $128,600. Technology would be a dragout tank and recycle pumps and piping. The comparative figures for installing and operating equipment for the 90 percent and 50 percent recycle options are significantly higher. For the 90% recycle option, capital costs would be $331,000 and annual costs would be $159,500. Technology for treatment of the 10 percent discharge would include chemical feed equipment, a clarifier, and a vacuum filter. For the 50 percent recycle option, capital costs would be $482,400 and annual costs would be $187,600; technology would be the same as for the 90 percent recycle option, but the chemical feed equipment, clarifier and vacuum filter would be larger. Costs are higher for the 50 percent recycle option because the treatment system must be larger to treat five time as much water.

For the alternatives with recycle of less than 100 percent, annual operating costs increase due to greater capital and depreciation costs, and chemical costs, and slightly greater sludge disposal costs because of the greater sludge volume and sludge dewatering equipment made necessary due to the lime. A comparison of the options with respect to a typical medium size foundry with simple settling and partial recycle in place gives similar results. The range of cost differences between the two options remains about the same as the previous example.

The analysis of the two discharge options assumed that plants would choose the least costly method of complying with BPT limitations. Thus, total costs and pollutant removals were calculated based on the fact that the vast majority of plants subject to BPT requirements have either no treatment in place or only simple settling and partial recycle and the assumption that these plants would install simple settling and 100 percent recycle in preference to partial recycle and lime and settle treatment of water to be discharged. The Agency solicits comment on this assumption and specific details of why plants with little or no treatment in place may not install complete recycle. The Agency solicits specific comments together with technical support documentation identifying process material and equipment, air pollution control devices, and site specific factors such as sludge disposal, process water quality, and plant layout that because of design characteristics or peculiarities may not enable operation at 100 percent recycle.

EPA estimates that BPT compliance costs for this regulation incorporating 100 percent recycle for 14 process segments and discharge allowances for 4 process segments are $44.6 million for capital investment and $10.7 million per year for annual costs of operation. The 90 percent recycle option would lower this cost to $44.2 million for capital investment and $10.6 million per year for annual costs. For the 50 percent recycle option, the total capital cost would be $42.3 million, and annual costs would be $10.4 million.

The 100 percent recycle option (which includes allowing discharges for four process segments) provides greater pollutant removals than either of the two other options. Proposed BPT effluent levels would result in the removal of an estimated 285 thousand kilograms per year of both toxic metal and organic pollutants and 4.5 million kilograms per year of other pollutants, primarily suspended solids and oils and greases. Those four processes with a BPT discharge allowance would discharge 192 kilograms per year of toxics and 3200 kilograms per year of conventional and other pollutants. If the 21 direct dischargers with existing lime and settle treatment and 90 percent recycle continue with their current 90 percent recycle and the 38 plants with existing lime and settle treatment and no recycle implement 90 percent recycle, the discharge of toxic pollutants would increase by an additional 19,399 kilograms per year and the discharge of conventional and other pollutants would increase by 74,137 kilogram per year over the discharge resulting from the 100 percent recycle option.

The Agency also estimated the increase in waste load discharges resulting from plants with existing lime and settle technology that install 50 percent recycle. The discharge of toxic pollutants would increase by an additional 4,300 kilograms per year and the discharges of conventional and nonconventional pollutants would increase by 151,600 kilograms per year above the discharge resulting from the 90 percent recycle option.

The Agency believes that these comparisons of 100 percent recycle with systems that require less recycle confirms the appropriateness of 100 percent recycle as the basis of the proposed regulation for 14 process segments. Not only is 100 percent recycle practiced widely in the industry; also it results in no discharge of pollutants into waterways and is only slightly more costly than the 90 percent recycle option. The cost difference would not affect plant closures. The 50 percent recycle option's overall cost would be only slightly lower than 100 or 90 percent recycle and it would result in the discharge of substantially greater amounts of pollutants than the 100 percent or 90 percent recycle options. Details of these comparisons are presented in Section IX of the development document.

The Agency evaluated but rejected two other types of options to 100 percent recycle: Simple settling with no recycle and simple settling with low recycle rates. The Agency does not consider them possible bases for final regulation.

The discharge from simple settling systems contains large amounts of conventional and toxic pollutants in the range of 375 mg/l to 16,000 mg/l total suspended solids and 0.15 mg/l to 38 mg/l toxic metals; phenols are also present in the range of 0.5 mg/l to 30.7 mg/l. The discharge of pollutants from these systems cannot be justified without further treatment.

Lime and settle treatment alternatives that do not incorporate at least 50 percent recycle would result in the discharge of large quantities of pollutants. Mass based limitations are determined by the product of treatment effectiveness concentration multiplied by discharge flow. Lime and settle treatment alternatives that contained no recycle would discharge twice the mass of pollutants than similar treatment with 50 percent recycle and ten times the amount of pollutants than similar treatment with 90 percent recycle. Some reduction in pollutant discharge could be achieved by filtration after lime and settle. The Agency's analysis showed that filtration could decrease the concentration of suspended solids by about 33 percent, but this decrease is minor compared to the pollutant reductions achieved by recycle. Because most plants are recycling extensively and because of the great difference in the amount of pollutants discharged after 50 percent or greater recycle and the amount discharged after lime and settle with little or no recycle, the Agency does not consider treatment alternatives that include little or no recycle as appropriate bases for BPT.

IX. Best Available Technology Economically Achievable (BAT)

A. General Criteria and Methodology

The factors considered in assessing best available technology economically achievable (BAT) include the age of equipment and facilities involved, the process employed, the engineering aspects of the application of various types of control techniques, process changes, the cost of achieving effluent reduction, non-water quality environmental impacts (including energy requirements), and such other factors as the Administrator deems appropriate (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 limitations may be based on technologies transferred from a different subcategory or category. BAT may include feasible process changes or internal controls, even when such measures are 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 Company* v. *Costle supra.*), 11 ERC 2149, D.C. Cir. 1978). In developing the proposed BAT limits, however, EPA has carefully considered the costs of BAT treatment. The Agency has considered the volume and nature of discharges, the volume and nature of discharges expected after application of BAT, the general environmental effects of the pollutants, and the costs and economic impacts of complying with the proposed BAT limitations.

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 from direct discharging plants. EPA is proposing effluent limitations based on technology that will control these toxic pollutants.

B. Proposed BAT Limitations

For 14 subcategory process segments, the BPT level of control results in 100 percent recycle. This is also the best available technology; therefore BAT is equal to BPT for these process segments.

There are no direct dischargers in the lead continuous strip process segment. Therefore, no BAT limitations are proposed for this process segment.

The Agency has considered both discharge and nondischarge technologies which might be applied at BAT for the remaining four process segments. These technologies were set forth in a draft development document made available to industry representatives for preliminary comment. These technologies are also described in detail in Section X of the Development Document and are outlined below. No additional plant closures or unemployment effects over those that BPT may cause are projected as a result of compliance with the BAT limitations.

The 90% and 50% recycle options considered as possible bases for BPT and PSES were rejected for the reasons set forth in those sections. Complete recycle is economically achievable and will remove substantial quantities of toxic pollutants. A number of process segments would discharge toxic organic pollutants (principally phenolic compounds) if complete recycle were not the basis for BAT. These pollutants would appear in the range of 0.5 mg/l to 30.7 mg/l in the discharges. Neither the 90% nor the 50% recycle option was based upon technologies that would treat these toxic organic pollutants. If a discharge option were selected for BAT and these pollutants required treatment, the total cost of these options would far exceed the cost of complete recycle.

1. *Aluminum Investment Casting.* BPT for this process segment is based upon lime and settle technology.

The toxic metal pollutants present in the raw wastewater of aluminum investment facilities casting are at the limits of treatability of well operated lime and settle treatment systems and therefore are not likely removed by this technology. After meeting BPT limitations, facilities in this process segment would discharge about 280.0 kg per year of conventional and nonconventional pollutants and 3.35 kg per year of toxic metal pollutants.

EPA has determined to exclude this process segment from further regulation at BAT because toxic organic pollutants were not detected or not present at treatable levels and because the only toxic metals detected, copper and zinc, are present in amounts too small to be effectively reduced by the technologies considered.

EPA is not requiring filtration following lime and settle treatment because the levels of copper and zinc found in raw wastewaters are below the treatability limits of filters. The technology to achieve 100 percent recycle cannot readily be transferred to this process segment.

2. *Aluminum Melting Furnace Scrubber.* BPT for this process segment is based upon lime and settle with 95 percent recycle. After meeting BPT limitations, facilities in this process segment would discharge about 1100.0 kg per year of conventional and nonconventional pollutants and 61.0 kg per year of toxic organic and metal pollutants, primarily 2,4,5-trichlorophenol and zinc.

EPA proposes to exclude this process segment from the BAT limitations. The toxic pollutants present in the raw wastewaters of aluminum melting furnace scrubbers are below the treatability limits of well operated lime and settle treatment systems or other technologies considered. The toxic metal pollutants and toxic organic pollutants are present in amounts too small to be effectively reduced by any of the technologies considered. Complete recycle is not a viable BAT option because the technology to achieve complete recycle has not been demonstrated by aluminum plants with melting furnace scrubber processes and cannot readily be transferred. EPA did not consider filtration following lime and settle treatment with a discharge because the toxic metal pollutants found in raw wastewaters are below the treatability limits of filters. EPA estimates the discharge of toxic pollutants not controlled will be 61.0 kilograms per year.

3. *Aluminum Die Casting.* BPT limitations for this process segment are based upon hydroxide precipitation-sedimentation, filtration and chemical emulsion breaking with 85 percent recycle of process wastewater. EPA is proposing BAT limitations based on the BPT technology with recycle increased to 95 percent.

BAT limitations would result in the removal of 55 kilograms per year of toxic organic and toxic metal pollutants from the BPT discharge. The toxic pollutants removed are: Acenaphthlene, 2, 4, 6-trichloroethylene, para-chlormetacresol, chlorofrom, phenol, butylbenzyl phthalate, crysene, tetrachloroethylene, phenols (4AAP), lead, and zinc. Compliance with BAT would require investment costs of $26,800 and anual costs of $,360 above BPT.

BAT limitations for solids and toxic metal pollutants are based on the combined metals data base for lime, settle and filter treatment and, for the toxic organic pollutants, from treated efluent data from die casting plants with the recommended BAT technology. Ninety-five percent recycle is based on the plant with the highest recycle rate. Twenty percent of the die casting plants treat their process wastwater with chemical emulsion breaking and filters after lime and settle.

4. *Zinc Melting Furnance Scrubber.* BPT limitations for this process segment are based upon chemical emulsion breaking lime and settle and 95 percent recycle of process wastewater. For BAT, EPA considered two options.

Option 1. BAT option 1 would make BAT limitations identical to BPT limitations. Toxic metals and organics discharged would be 665 kg annually. Organic toxic pollutants, primarily phenols, are present in zinc melting furnance wastewaters at high levels; 1.3 to 15.6 mg/l. EPA estimates some organic toxic pollutant removals as a result of chemical emulsion breaking but is not able to quantity the removal characteristics.

Option 2. BAT option requires the same level of in-process wastewater flow control and hydroxide precipitation and sedimentation required for BPT with increased recycle from 95 percent to 100 percent. This option would eliminate the 665 kg per year of toxic organic, 2, 4, 6-trichlorophenol, phenol and 4AAP phenols, and zinc pollutants discharged at BPT. All but two plants with melting furnance scrubbers have recycle rates 95 to 100 percent. Compliance with BAT option 2 would require investment of $49,600 and annual costs of $10,700.

Zinc Melting Furnace Scrubber BAT Selection

EPA has selected option 2 as the basis for proposed BAT effluent limitations. One hundred percent recycle has been demonstrated and high recycle rates are common in this process, and 100 percent recycle will remove 665 kg per year of toxic pollutants.

X. New Source Performance Standards (NSPS)

The basis for new source performance standards under Section 306 of the Act is the best available demonstrated technology (BDT). New plants have the opportunity to design the best and most efficient metal molding and casting processes and wastewater treatment technologies, and Congress therefore directed EPA to consider the best demonstrated process changes, in-plant controls, and end-of-pipe treatment technologies that reduce pollution to the maximum extent feasible.

EPA is proposing NSPS for all 19 process segments of all six subcategories: the 18 process segments for which BPT and BAT limitations are proposed plus the lead continuous strip casting process segment, in which there are no existing direct dischargers. For the 15 process segments where proposed BPT and BAT limitations are 100 percent recycle, pollutant discharges have been reduced to the maximum extent possible. The Agency has selected NSPS technology that is equivalent to BPT/BAT technology for these 15 process segments. BAT technology achieves no discharge of process wastewater pollutants and is demonstrated in the industry.

For the remaining 4 process segments EPA considered and selected for NSPS the technologies discussed under BPT and BAT. For lead continuous strip casting EPA considered the technologies discussed under PSES and PSNS.

Aluminum Investment Casting

EPA has selected the equivalent of BPT as the best demonstrated technology fo NSPS. Complete recycle has not been demonstrated for this process segment and cannot readily be transferred.

Aluminum Melting Furnace Scrubber

NSPS would be equivalent to BPT limitations. Complete recycle has not been demonstrated by plants with aluminum melting furnace scrubbers.

Aluminum Die Casting

NSPS would be equivalent to BAT limitations. This technology and its pollutant removal effectiveness have been demonstrated in this process segment.

Lead Continuous Strip Casting

NSPS are based upon lime and settle plus a polishing filter to improve the removal of lead. This technology is equivalent to that of PSES and PSNS was selected as the basis for NSPS because hydroxide precipitation and sedimentation is demonstrated in the process segment by 4 out of the 5 lead continuous strip casting plants. TSS, oil and grease, pH and lead are regulated by NSPS.

XI. Pretreatment Standards for Existing Sources (PSES)

Section 307(b) of the Act requires EPA to promulgate pretreatment standards for existing sources (PSES). 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 that serve as the framework for the proposed pretreatment standards are in 40 CFR Part 403. (See 43 FR 27736 June 26, 1978; 46 FR 9404 Jan. 28, 1981; 47 FR 4518 Feb. 1, 1982.)

Before proposing pretreatment standards, the Agency examines whether the pollutants discharged by the industry pass through the POTW or interfere with the POTW operations or its chosen sludge disposal practices. In determining whether pollutants pass through a POTW, the Agency compares the precentage of a pollutant removed by a 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 a well-operated POTW meeting secondary treatment requirements is less than the precentage removed by direct dischargers complying with BAT effluent limitations 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 direct discharger. 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 non-industrial 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 foundry category the Agency has concluded that the toxic metals and organics that would be regulated under these proposed standards pass through the POTW. The average percentage of these pollutants removed by POTW nationwide ranges from 19 to 65 percent for metals and up to 95% for organics, whereas the percentage that can be removed by a direct discharger applying BAT is expected to be above 70 percent for metals and greater than 95 percent for toxic organics. Accordingly, these pollutants pass through POTW's.

In addition, since toxic metals are not degraded in the POTW (they either pass through or are removed in the sludge), their presence in the POTW sludge may limit a POTW's chosen sludge disposal method.

The pretreatment technologies considered are the same as those for BAT described in Sections IX and X of the Development Document and as previously described except for lead continuous strip castings.

EPA Is proposing PSES for 15 of the 19 process segments of all six subcategories. For the two process segments of the magnesium subcategory there are no indirect dischargers; EPA is not proposing PSES. For two process segments, aluminum investment casting and melting furnace scrubber, EPA is not proposing PSES because at the levels of total suspended solids and oil and grease discharged from these processes are considered compatibile with treatment by POTWs. For the 13 process segments where proposed BAT limitations are based on 100% recycle the Agency has selected the equivalent of BAT as the basis for proposed PSES. EPA is proposing PSES equivalent to BAT for aluminum die casting. For lead continuous strip casting EPA is proposing PSES based on the lime settle and filter technologies as demonstrated by 4 of the 5 continuous strip casting plants. Proposed PSES would remove 6.9 kg per year of lead. Compliance with PSES would require investment costs of $19,300 and annual costs of $9,500.

In all subcategories the equipment required for the selected pretreatment option is of reasonable size, appropriate for installation within an urban plant that discharges to POTW. Urban plans may not have the room to install settling ponds so clarifiers and settling tanks are used in the treatment models.

To comply with PSES, EPA estimates that total capital investment would be $48.1 million and that annual costs would be $11.52 million, including interest and depreciation. EPA estimates 15 potential plant closures resulting from PSES. EPA also estimates 316 job losses as a result of these closures. The Agency has determined that the effluent reduction benefits associated with compliance with pretreatment standards justify these costs.

For the 13 process segments for which the Agency is proposing 100 percent recyle of process wastewater as the basis for PSES, the Agency considered two less stringent treatment alternatives. These are the same alternatives as were considered as bases for BPT and are discussed fully in the BPT section of this preamble. A comparison of these alternatives with the proposed PSES standards based upon 100 percent recycle is as follows:

The 90 percent recycle alternative would require capital costs of $47.8 million and annual costs of $11.5 million. If the 19 indirect dischargers with existing lime and settle treatment and 90 percent recycle continue with their current 90 percent recyle and plants with existing lime and settle and no recycle implement 90 percent recycle the discharge of toxic pollutants would increase by an additional 17.4 thousand kilograms per year and the discharge of conventional and other pollutants would increase by 48.7 thousand kilograms per year over the discharge resulting from the 100 percent recycle option.

The 50 percent recycle alternative would require capital costs of $47.6 million and annual costs of $11.5 million. The Agency also estimated the increase in waste load discharges resulting from the 9 plants with existing lime and settle technology that install 50 percent recycle. The discharge of toxic pollutants would increase by an additional 541 kilograms per year and the discharges of conventional and nonconventional pollutants would increase by 17,700 kilograms per year above the discharge resulting from the 90 percent recycle option.

The Agency is proposing PSES based upon 100% recycle rather than on either of the other treatment alternatives because 100% recycle is achievable and will result in additional pollutant removals. PSES, like BAT, should represent the best existing performance in the industrial category or subcategory. As was true for BPT, for most indirect dischargers for which 100 percent recycle forms and the basis of PSES, it will be less expensive to implement 100 percent recycle after simple settling than to install and operate technology that would achieve lower recycle but would treat the wastewater not recycled.

The proposed compliance date for PSES is two years after promulgation of this regulation.

Indirect dischargers with combined wastestreams subject to different categoreical pretreatment standards must use the "combined wastestream formula" set forth at 40 CFR 403.6(e) in calculating discharge limits. The "monthly average" figures set forth in regulations are to be used in making these calculations.

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. These standards are intended to prevent the discharge of pollutants which pass through, interfere with, or are otherwise incompatible with a POTW. New indirect dischargers, like new direct dischargers, have the opportunity to incorporate the best available demonstrated technologies including process changes, in-plant control, dry air pollution control devices and end-of-pipe treatment technologies, and to use plant site selection to ensure adequate treatment system installation. Therefore, the Agency is considering PSNS that are based upon the same considerations as used for NSPS. Pretreatment standards for existing and new sources are being considered because the toxic metals present in foundry wastewaters would pass through POTWs.

EPA is proposing PSNS for 17 of the 19 process segments of all six subcategories. For the 15 process segments where proposed NSPS limitations and standards are no discharge of process wastewater pollutants the Agency is proposing the equivalent of NSPS as the basis for proposed PSNS. EPA is proposing PSNS equivalent to BAT for aluminum die casting. For lead continuous strip casting EPA is proposing PSNS equivalent to PSES.

For the two process segments, aluminum investment casting and melting furnace scrubber, EPA is not proposing PSNS because at the levels of total suspended solids and oil and grease discharged from these processess these pollutants are considered compatible with treatment by POTWs. The toxic metals present in the raw wastewaters of these process segments are below the treatability levels of lime, settle and filter technologies.

XIII. Best Conventional Technology (BCT) Effluent Limitations

The 1977 amendments added Section 301(b)(4)(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(b)(4)—biological oxygen demanding pollutants (BOD5), 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 BAT 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-reasonableness 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). On July 28, 1981, the Fourth Circuit Court of Appeals remanded certain regulations employing the Agency's methodology for determining the "best conventional technology" and directed EPA to conduct an additional cost test and to correct data errors. *American Paper Institute* v. *EPA*, 660 F.2d 954 (4th Cir. 1981).

On October 29, 1982, the Agency proposed a revised BCT methodology. We are deferring proposal of BCT limitations for this category until we can apply the revised methodology to the technologies available for the control of conventional pollutants in this category.

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, X, XII and XIII of the Development Document. The pollutants proposed for specific regulation are listed in Appendix B to this notice. 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 regulated by the BPT limitations are lead, zinc, phenols (4AAP), TSS, oil and grease and pH. Not all of these pollutants are controlled in all subcategories and process segments; regulation is established only where the pollutant appears in treatable concentrations in the raw waste. For subcategories with allowable discharge the discharge is controlled by maximum daily and monthly average mass effluent limitations stated in kilograms (kg) of each pollutant per thousand kilogram (kkg) of production normalizing parameter per process.

B. BAT

The pollutants specifically limited by BAT are lead, zinc, acenaphthene, 2,4,6-trichlorophenol, parachloro-metacresol chloroform, phenol, butyl benzyl phthalate, chrysene, tetrachloroethylene and phenols (4AAP). Not all of these pollutants are controlled in each of the subcategories; regulation is established only where the pollutant appears in treatable concentrations in the raw waste.

C. NSPS

The pollutants specifically limited by NSPS are total suspended solids, oil and grease, pH, lead, zinc, acenaphthene, 2,4,6-trichlorophenol, parachloro-metacresol parachloro-metacresol chloroform, phenol, butyl benzyl phthalate, chrysene, tetrachloroethylene and phenols (4AAP). Not all of these pollutants are controlled in each of the subcategories; regulation is established only where the pollutant appears in treatable concentrations in the raw waste.

D. PSES and PSNS

The pollutants regulated a PSES and PSNS are the same as those limited by BAT. For lead continuous strip casting the pollutants regulated at PSES and PSNS are the same as those limited by NSPS. Not all of the pollutants are controlled in all subcategories; regulation is established only where subcategories will be regulated and the pollutant appears in treatable concentrations in the raw waste.

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 toxic pollutants not detectable by Section 304(h) analytical methods or other state-of-the-art methods. The toxic pollutants not detected and therefore, excluded from consideration for regulation are listed also in Appendix C to this notice.

Appendix D to this notice lists the toxic pollutants in each subcategory that were detected in the effluent in trace amounts, at or below the nominal limit of analytical quantification and are therefore excluded from regulation.

Appendix E to this notice lists for each subcategory the toxic pollutants which were detected in the effluents of only one plant; are uniquely related to only that plant; are not treatable using technologies considered and are therefore excluded from regulation.

Paragraph 8(a)(i) of the Revised Settlement Agreement allows the Administrator to exclude from regulation specific pollutants for which equally or more stringent protection is already provided by regulation. The toxic pollutants excluded from regulation because adequate control is now provided by regulation of other specific pollutants are listed for each subcategory in Appendix F of this notice.

Paragraph 8(a)(i) and 8(b)(ii) of the Revised Settlement Agreement authorizes the Administrator to exclude from regulation subcategories for which the amount and toxicity of pollutants in the discharge does not justify developing national regulations.

Some subcategories and process segments of other subcategories meet this provision and are excluded from BPT, BAT, NSPS, PSES and PSNS. These subcategories are listed in Appendix G of this notice. The nickel casting, tin casting and titanium casting subcategories are excluded because there is no process water associated with the casting of these metals and as a consequence there are no pollutants in the discharge.

In addition, aluminum investment casting and melting furnace scrubber processes are excluded from BAT for this regulation. The toxic pollutants discharged are below treatability levels. Lead continuous strip casting is excluded from BPT and BAT regulation because there are no direct discharging plants. Magnesium dust collection and grinding scrubbers are excluded from PSES because there are no indirect discharging plants.

XVI. Monitoring Requirements

The monthly average limitations and standards in this proposed regulation were 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 the statistically based curve relating one-day and 30-day average values, and it approximates the most frequent monitory requirement of direct discharge permits. The monthly average figures shown in the regulation are to be used by plants with combined waste streams that use the "combined waste stream formula" set forth at 40 CFR 403.6(e) and by permit writers in writing direct discharge permits.

XVII. Costs, Effluent Reduction Benefits, and Economic Impacts

A. Cost and Economic Impacts

The economic impact assesment for this proposed regulation is presented in the *Economic Impact Analysis of Proposed Effluent Standards and Limitations for the Foundry Industry,* EPA 440/2-082—016. This report details the investment and annual costs for the industry and for each metal type covered by the proposed regulation. Compliance costs are based on engineering estimates of incremental capital requirements above the water pollution control equipment already in-place. The report assesses the impact of effluent control costs 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 options.

Executive Order 12291 requires EPA and other agencies to perform regulatory impact analyses of major rules. Major rules impose an annual cost to the economy of $100 million or more, cause major price increases to the consumer and cause significant adverse effects on competition employment investment, productivity and the balance of trade. The proposed regulation for the foundry industry is not a major rule and therefore does not require a formal regulatory impact analysis.

Regulatory Flexibility: Public Law 96-354 requires that a Regulatory Flexibility Analysis (RFA) be prepared for regulations that have a significant impact on a substantial number of small entities. An RFA for this regulation is included as part of the economic impact analysis. The Agency has concluded that this regulation will not have a significant impact on a substantial number of small entities.

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 then if a less toxic pollutant is removed. This analysis, entitled "Cost Effectiveness Analysis for the Foundry Industry," is included in the record of this rulemaking. EPA invites comments on the methodology used in this analysis.

In the course of developing this proposed regulation the Agency considered less stringent requirements applicable to small plants than to large plants (see below). While this proposal does not differentiate between large and small plants, public comment is solicited on the issue and the final regulations may impose less stringent requirements on small plants.

The Agency predicts that in 1984 there will be 946 foundries (27 percent of all plants) producing a process wastewater ("wet plants") of which 281 plants will discharge into navigable waters, 315 plants will discharge into publicly owned treatment works (POTWs), and 344 plants will have eliminated their discharge of process wastewater.

The economic analysis projects that total capital costs needed for existing plants to comply with this regulation will be about $92.7 million in capital costs, with annual costs of approximately $22.2 million, including depreciation and interest. These costs are expressed in 1982 dollars. As a result of compliance with this regulation 25 plant closures (10 direct dischargers and 15 indirect dischargers) with total unemployment of approximately 484 workers may result. These figures for closures and unemployment represent less than one percent of the total population of plants and employment anticipated to be in the foundry industry in 1984. These closures are expected to occur at the BPT and PSES levels of control. No additional closures are expected as a result of compliance with recommended BAT technologies. Price increases and balance of trade effects are not expected.

As a result of compliance with BPT requirements, the Agency expects that the equivalent of 343 jobs will be temporarily created for the construction and installation of the required treatment systems.

To measure the economic impacts it was necessary to subcategorize foundries by similar market and financial characteristics. Eight metal types were used: Gray iron, ductile iron, malleable iron, steel, aluminum, copper based, zinc, magnesium, and lead. Each metal type was then divided into employment size groups. This was used as a proxy for the determination of their production because data necessary for the analysis were reported in this manner by industry in their major trade journal. Model plant financial profiles representing affected foundries in each economic subcategory were developed to estimate the income that could be generated by foundries and used to pay for pollution control equipment.

The financial profiles developed represent the balance sheets and income statements for a "typical" foundry in each employment size segment and metal type. These profiles were developed exclusively from job shop financial data, which represent the most complete picture of job shop or "stand-alone" operations available. For the purpose of the analysis, captive operations were assumed to have the same financial characteristics as job shop operations. compliance costs estimates were based on the costs of additional treatment required by each firm to meet the proposed effluent limitations and standards. If compliance costs exceeded the plant's ability to generate capital and income at a specific level a closure was predicted. These plant closures were then extrapolated from the model plant results to the full population of foundries. The compliance costs that were used considered all foundry production processes discharging wastewater in the estimated 1984 population and reflect the level of treatment in place, which is assumed to be proportionally similar to what foundries had in 1976 and updated in 1981.

BPT: BPT regulations are proposed for direct dischargers in all economic subcategories. By 1984 the Agency projects that there will be two hundred-eighty-one direct dischargers and these plants will have to install and operate additional equipment to comply with BPT limitations. Investment costs for BPT are $44.6 million; total annual costs are $10.7 million including interest and depreciation. As a result of compliance with this regulation 10 plant closures and loss of employment for approximately 168 workers may result. Price increases and balance of trade effects are not expected.

The largest proportion of impacts resulting from compliance with BPT occurs in the less-than-fifty employee category. The less-than-fifty employee category includes 8 of the 10 predicted plant closures. It would be possible to eliminate these closures for small direct dischargers by basing BPT limitations for the aluminum, copper and iron and steel (specifically gray iron, ductile iron and malleable iron) subcategories upon present discharge levels.

The Agency is seeking comment on this issue (See Section XXIV of this preamble).

The Agency considered basing BPT limitations for fourteen process segments on 90 percent, rather than 100 percent recycle. Investment costs for this option would be $44.3 million; total annual costs would be $10.6 million, including interest and depreciation. Adoption of this option would result in 10 plant closures with loss of employment of approximately 168 workers. Price increases and balance of trade effects would not be expected.

The Agency also considered basing BPT limitations for fourteen process segments on 50 percent, rather than 100 percent, recycle. Investment costs for this option would be $43.3 million; total annual costs would be $10.5 million, including interest and depreciation. Adoption of this option would result in 10 plant closures and the loss of employment for approximately 168 workers. Price increases and balance of trade effects would not be expected.

BAT: BAT regulations are proposed for direct dischargers in the same eight economic subcategories. Six aluminum facilities will incur additional investment costs of $53,600 and annual costs of $10,720. No further closures or unemployment are expected to occur as a result of compliance with these regulations. No price increases or balance of trade effects are expected.

PSES: Pretreatment standards are proposed for indirect dischargers in all economic subcategories. Investment costs for the 315 facilities affected in 1984 are $48.1 million with annual costs of $11.5 million including interest and depreciation. As a result of compliance with this regulation 15 plant closures and a loss of 316 jobs may be expected. No price increases or balance of trade effects are expected.

The largest proportion (75%) of impacts resulting from compliance with PSES occurs in the less-than-fifty employee category. The Agency considered the option which will exclude from categorical pretreatment standards foundries in the aluminum, copper and iron and steel (specifically gray iron, ductile iron, and malleable iron) subcategories with fewer than 50 employees. (Indirect dischargers would remain subject to the general pretreatment regulations found at 40 CFR 403.) Adoption of this option would reduce PSES plant closures to approximately 3 plants and would control 99.8 percent of the toxic pollutants discharged to POTW. The Agency is seeking comments on this approach for providing regulatory relief for small dischargers.

The Agency considered basing PSES standards for thirteen process segments based on 90 percent, rather than 100 percent, recycle. Investment costs for this option would be $47.8 million; total annual costs would be $11.5 million, including depreciation and interest. Adoption of this option would result in 15 plant closures and a loss of 316 jobs. Price increases and balance of trade effects would not be expected.

The Agency also considered basing PSES standards for thirteen process segments on 50 percent, rather than 100 percent, recycle. Investment costs for this option would be $47.6 million; total annual costs would be $11.5 million, including interest on depreciation. Adoption of this option would result in 15 plant closures and the loss of employment for approximately 316 workers. Price increases and balance of trade effects would not be expected.

NSPS, PSNS: The Agency's most recent survey of the industry indicates a continuing trend toward 100% recycle. New plants are using "dry" processses which do not generate any effluent discharge. For the 2 metal categories with discharge allowances, the cost for implementing their requirements in a new source or major modification are not considered sufficiently significant to inhibit investment in new plants or major modifications. For those metal categories with no discharge at BAT or PSEE there will be no incremental costs for NSPS or PSNS. The Agency believes that it is unlikely that the incremental costs of NSPS or PSNS will retard significantly the investment in major modifications or retrofits, the rate of entry into the foundry industry or its rate of growth in any subcategory.

B. SBA Loans

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

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

The Section 503 Program, as amended in July 1981, allows long-term loans to small and medium-sized businesses. These loans are made by SBA approved local development companies. For the first time, these companies are authorized to issue Government backed debentures that are bought by the Federal Financing Bank, an arm of the U.S. Treasury.

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

For additional information on the Regular Guarantee and Section 503 Programs contact your district or local SBA Office. The coordinator at EPA Headquarters is Ms. Frances Desselle who may be reached at (202) 426-7874. For further information and specifics on the Guaranteed Pollution Control Bond Program contact: U.S. Small Business Administration, Office of Pollution Control Financing, 4040 North Fairfax Drive, Rosslyn, Virginia 22203, (703) 235-2902.

XVIII. Non-Water Quality Impacts of Pollution Control

The elimination or reduction of one form of pollution may aggravate other environmental problems. Sections 304(b) and 306 of the Act require EPA to consider the non-water quality environmental impacts (including energy requirements) of certain regulations. In compliance with these provisions, EPA has considered the effect of this regulation on air pollution, solid waste generation, water scarcity, and energy consumption. This proposal was circulated to and reviewed by EPA personnel responsible for non-water quality 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.

A detailed discussion of these impacts is provided in Section VIII of the Development Document. Following is a summary of the non-water quality environmental impacts associated with the proposed regulations:

A. *Air Pollution*—Imposition of the BPT, BAT, NSPS, PSES, and PSNS will not create any substantial air pollution problems. Minor very localized air pollution emissions currently exist in the ferrous casting subcategory where wastewaters are used to quench the hot slag generated in the melting process. Also water vapor containing some particulate matter is released from the cooling tower systems used in the two casting quench and mold cooling process segments. However, none of these conditions is currently considered significant and no significant future impacts are expected as the result of this regulation.

B. *Solid Waste*—EPA estimates that foundries generate a total of 6.1 million kkg (13.4 million tons) of solid wastes per year from all operations on a dry basis. EPA estimates that 9.03 million kkg (9.9 million tons) per year at 25% solids will be the result of BPT wastewater treatment. Wastewater treatment sludges contain the toxic metals chromium, copper, lead, nickel, and zinc. An additional 1.2 million liters (0.32 million gallons) of waste oils and greases (with an estimated density of 85 percent that of water) will be generated as a result of BPT wastewater treatment. EPA estimates the BAT will increase this volume of sludge by less than 0.1 percent of BPT.

EPA estimates that 3.67 million kkg (4.05 million tons) per year at 25 percent solids will be the result of PSES wastewater treatment. An additional 1.37 million liters (0.36 million gallons) per year of waste oils and greases will be generated as a result of PSES wastewater treatment.

The data gathered for this proposed regulation demonstrate that in presently installed wastewater treatment systems, most of the solid wastes are already collected and disposed. Consequently, the industry is now incurring costs of solid waste disposal and locating acceptable disposal sites. The Agency has estimated the disposal costs of the wastewater treatment sludges and waste oil and greases and included them in the treatment model cost estimates, presented in Section VIII of the Development Document, for compliance with the proposed regulations. The estimated average cost of disposal of these sludges is $5.00 per ton (on the basis of July 1978 dollars). The average cost of waste oils disposal was determined to be 7 cents (basis, July 1978 dollars) per gallon. The sludge disposal costs agree with the median sludge disposal cost of $4.70 (1980 dollars) per ton determined on the basis of the EPA phone survey conducted in 1981.

Some of these wastewater treatment sludges may in the future be identified as 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 if the wastes meet any of the characteristics of hazardous waste (see 40 CFR 262.11, 45 FR at 12732–12733 (Feb. 26, 1980)). The Agency may also list these sludges as hazardous pursuant to 40 CFR 261.11 (45 FR at 33121 (May 19, 1980)).

If these wastes are identified as hazardous, they will come within the scope of RCRA's "cradle to grave" hazardous waste management program, requiring regulation from the point of generation to point of final disposition.

Even if these wastes are not identified as hazardous, they still must be disposed of in compliance with the subtitle D open dumping standards, implementing § 4004 of RCRA. See 44 FR 53438 (Sept. 13, 1979).

EPA has assessed the chemistry of foundry wastewater treatment sludges to determine which sludges may potentially be hazardous. Currently there are no metal casting wastes specifically listed as hazardous. EPA has compared foundry waste treatment sludges and waste oils to wastes specifically listed as hazardous together with those wastes which have been delisted. In addition, EPA has applied the hazardous waste criteria; ignitability, corrosivity, reactivity and EP toxicity to foundry wastes. EPA believes that foundry waste sludges and waste oils are generally not ignitable, corrosive or reactive. EPA's analysis of waste treatment sludges from lime and settle treatment systems indicates that toxic metals present in these sludges pass the Extraction Procedure (EP) toxicity test. However, for those sludges associated with the treatment of copper and ferrous dust collection scrubbers, and ferrous sand washing, the toxic metals present in these sludges may exhibit toxicity as measured by the Extraction Procedure (EP) toxicity test. These sludges would be generated from simple settling and recycle treatment systems; these treatment systems do not use lime. However, these sludges may be rendered nonhazardous if they are mixed with lime. Thus, the cost of compliance with RCRA is the cost of lime that must be added to simple settling systems. EPA has estimated the cost of lime to treat these sludges after removal from the settling tanks. EPA estimates that an additional cost of $3.14 per ton of sludge to treat the sludges. The Foundry wastewater treatment sludges considered as potentially hazardous are those associated with the treatment of wastewaters from copper dust collection scrubbers, ferrous dust collection scrubbers, and ferrous sand washing. Total cost to industry is $9,040 per year (first quarter 1982 dollars). This cost only includes the cost of lime. Plants currently producing sludge from these systems are assumed to have existing sludge handling and holding equipment.

C. *Water Scarcity*—Water loss is an issue to be evaluated in considering regulations for proposal. EPA estimates that the evaporative water loss from the cooling towers used in the recycle treatment systems of the copper and ferrous mold cooling and casting quench processes is less than one tenth of one percent of the water loss in the air pollution control scrubbers used extensively throughout this industry. As discussed in detail in Section VIII of the Development Document, the Agency concludes that the benefits derived from compliance with this proposed regulation justify only the minimal water loss associated with the cooling towers. The Agency has reached this conclusion after considering this issue on both an industry-wide basis and on a water-scarce regional basis.

D. *Energy Requirements*—EPA estimates that compliance with this proposal regulation will result in a total electrical energy consumption at the BPT and BAT/BCT levels of treatment as shown below:

Treatment level	Net energy consumption (kilowatt-hours)
BPT	60.6×10^6
BAT	2.6×10^3

The Agency estimates that proposed PSES will result in a net increase in electrical energy consumption of approximately 29.2 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. It is estimated that new plants will design, wherever possible, production techniques and air pollution control devices that either require less water than current practices or require no water such as dry air pollution control devices.

Industry compliance with the proposed BPT, BAT, and PSES limitations will require 0.29 percent increase over the 31.3 billion kilowatt-hours used in 1978. EPA also considered the non-water quality impacts of pollution control on new sources. EPA estimates that a new medium size gray iron foundry with dust collection scrubbers installing a complete recycle system would not create any substantial air pollution problems. EPA estimates that 13,391 kkg per year of sludge (at 25 percent solids) would be generated with a disposal costs of $112 thousand per year (including RCRA disposal costs). EPA estimates energy costs of $1,120 per year.

XIX. Best Management Practices (BMPs)

Section 304(e) of the Clean Water Act authorizes the Administrator to prescribe "best management practices" ("BMPs"), described under **Authority and Background.** EPA is not proposing BMP's at this time.

XX. 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 based upon 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 and upset 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 these provisions are included in the NPDES regulations that include upset and bypass permit provisions. (See 40 CFR 122.60). 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 the foundry industry will be entitled to the general upset and bypass provisions in NPDES permits. Thus these proposed regulations do not address these issues.

XXI. Variances and Modifications

Upon the promulgation of the final regulation, the numerical effluent limitations for the appropriate process segment must be included in all federal and state NPDES permits thereafter issued to foundry industry direct dischargers. In addition, the pretreatment standards are directly applicable, upon promulgation, 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 deNemours and Co.* v. *Train*, 430 U.S. 112 (1977); *Weyerhaeuser Co.* v. *Costle, supra.* This variance recognizes that there may be factors concerning a particular discharger which are fundamentally different from the factors considered in this proposed rulemaking. This variance clause was originally set forth in EPA's 1973–1976 industry regulations. It is now included in the general NPDES regulations and will not be included in the foundry or other specific industry regulations. See the NPDES regulations at 40 CFR 125.30.

The BAT limitations in this proposal regulation are subject to EPA's "fundamentally different factors" variance. In addition, BAT limitations *for nontoxic and nonconventional pollutants* are subject to modification under Section 301(c) and 301(g) of the Act. According to Section 301(j)(1)(B), applications for these modifications must be filed within 270 days after promulgation of final effluent limitations guidelines. See 43 Fr 40859 (September 13, 1978).

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; 46 FR 9404 (January 28, 1981). 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 *E.I. duPont deNemours* v. *Train, supra).*

XXII. Relationship to NPDES Permits

The BPT, BAT, and NSPS limitations and standards will be applied to individual foundries through NPDES permits issued by EPA or approved States 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 currently applicable EPA regulations, States and EPA Regions that issue NPDES permits before promulgation of regulations must do so on a case-by-case basis. This regulation provides a technical and legal basis for new permits.

Another issue to how the regulation affects the powers of NPDES permit-issuing authorities. EPA has developed the limitations and standards in this regulation to cover the typical facility for this point source category. 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* 2nd. *485*, 5th Circ. 1977). EPA has exercised and intends to exercise that discretion in a manner that recognizes and promotes good faith compliance efforts.

XXIII. Summary of Public Participation

In April 1980, EPA circulated a draft technical development document for the foundry industry to a number of interested parties, including the Cast Metals Federation, the American Foundrymen's Society and several member firms. This document did not include recommendations for effluent limitations and standards, but rather presented a draft technical report. A meeting was held in Washington, D.C. on July 14, 1980 for public discussion of comments on this document.

The major issues and technical considerations raised by the industry after their review of the draft development document are summarized below. The Agency's responses to these comments are a part of the public record for this rulemaking.

A. Technical Concerns

Many of the comments received on the April 1980 draft development document addressed the applicability of 100 percent recycle. Specific issues raised by these commentors included: (1) Many questionnaire respondents to the EPA 1976 survey may have misunderstood the questions asked and therefore mistakenly reported that their plant was achieving 100 percent recycle when in fact the plant did have a discharge; (2) Achieving zero discharge would require the disposal of a very wet sludge (to effect a blowdown and the removal of dissolved solids) and this wet sludge would increase the volume and costs of sludge disposal at a time when sludge disposal costs are increasing due to RCRA requirements, (3) A zero discharge limitation would cause some plants increased production downtime due to scaling and plugging of equipment, pipes and pumps; and (4) The treatment costs the Agency estimates for zero discharge are too low.

The technical basis and supporting information upon which the Agency is proposing 100 percent recycle is summarized in this preamble and is presented in detail in Sections III, V, XI, and X of the Development Document.

The Agency has reviewed its data base to determine if plants that have achieved 100 percent recycle are doing so through the disposal of a very wet sludge. EPA has compared the sludge characteristics of no discharge plants with plants that discharge. Many no discharge plants, like plants with a discharge, de-water the waste treatment sludge by vacuum filtration or by centrifuge. These plants have achieved no discharge through 100 percent recycle of process wastewater including the recycle of the water removed from the sludge.

Wastewater treatment sludge data was collected as part of the 1981 phone survey. The survey data show a range in the solids content of sludges from 10% (a very wet sludge) to 90% (a very dry sludge). Several of the plants in the survey had achieved 100 percent recycle. The phone survey data shows that the median solids content of the sludges of no discharge plants is 60%, a moderately dry sludge. For all plants in the survey the median solids content is 47%. The Agency concludes that wet sludges are not a necessary consequence of zero discharge treatment systems.

The Agency has no data to indicate any discrete unscheduled production downtime directly attributable to zero discharge. In addition, no data were received that demonstrated product quality problems as a result of complete recycle of process wastewater. The Agency, however, has attempted to identify the effects of 100 percent and the build up of total dissolved solids within recycle loops on manufacturing processes, air pollution control equipment, pipes, valves and pumps.

The Agency is soliciting data with respect to practical problems associated with 100% recycle, See Section XXIV of this preamble.

B. Costs

A number of comments questioned the accuracy of EPA's estimates of the cost of 100 percent recycle for existing facilities.

The Agency has based its cost estimates on information furnished by equipment manufacturers, vendors, standard costing practices and reference handbooks, and costs provided by several plants, including plants that have achieved zero discharge. In addition, the Agency has evaluated the costing methodolgy used to estimate foundry costs through comparisons with several other costing methodologies. The Agency has found costs generated by the methodology used in estimating foundry costs in good agreement with costs provided by other sources. For example, this costing methodology was used to estimate control costs for the iron and steel category where the estimate control costs were greater by 10 to 20 percent than the costs reported by the industry. The Agency has also compared its foundry model costs with those reported by several foundries. This comparison is detailed in Section VIII of the Development Document and shows that overall the Agency's costs are 36% higher than industry reported costs. Based on these comparisons, the Agency believes that the estimated foundry control costs are not underestimated.

The Agency received a comment questioning whether the increased handling costs of sludge are included in the calculation of total costs for this regulation. The costs for handling sludge is included in the annual cost calculation for this regulation at an average cost of $5.00 per pound.

A commentor has also questioned the Agency's 1984 employment population as being overstated. The Agency bases its 1984 employment projection on an historical trend analysis of foundry openings and closures taken from Census and Industry data since 1972. This projection is further supported by data obtained from the 1980 Agency survey of the foundry industry which looked at closures and openings between 1977–1980.

XXIV. Solicitation of Comments

EPA invites and encourages public participation in this notice. EPA is particularly interested in receiving additional comments and information on the following issues:

1. The Agency is concerned about the few plants projected to close as a result of a final regulation. The majority of projected closures are plants with small numbers of employees. Reductions in closures among small indirect dischargers could be accomplished by excluding, from the categorical PSES

standards this proposed regulation would establish, plants in one or several subcategories or process segments that employ fewer than 50 employees. For direct dischargers, BPT limitations for small plants in selected categories or process segments could be based upon present discharge levels.

The Agency invites data, comment and recommendations on the impacts of treating small plants in this manner and on appropriate measures to distinguish small foundries from all other foundries if the Agency determines that such treatment of small plants is desirable.

The Agency desires data which is specifically related to levels of production and employment in small foundries. Specific information pertaining to the level of annual sales, revenues and capitalization are also requested. Comments and recommendations concerning the financial profiles developed in the economic methodology for small plants is also requested.

2. The Agency is also concerned that specific plants may not be able to achieve 100 percent recycle on a continuing basis. The Agency has received comments that for a few specific processes and air pollution control devices it would be exceedingly difficult because of equipment design peculiarities to operate this equipment at 100 percent recycle on a continuing basis. The Agency has not received technical support documentation accompanying these comments. The Agency has also not received reports or case histories identifying the conditions and likely causes of failures in achieving zero discharge on a continuing basis.

The Agency solicits specific comments together with the technical support documentation identifying process equipment, air pollution control devices and site specific factors such as sludge disposal, process water quality, and plant layout, that because of design characteristics or peculiarities may not be able to be operated properly at 100% recycle. In addition, the Agency solicits plant data and information on the circumstances and conditions in which 100% recycle has been attempted but not routinely achieved. Engineering reports, equipment design specifications or configurations, and case studies are requested.

3. The Agency also solicits long term raw and treated effluent analytical data from monitoring records or other sources from plants with well operated lime and settle treatment systems with 90 recycle of treated process wastewater from casting processes with proposed limitations of no discharge of process wastewater pollutants.

4. The Agency also solicits specific comments on the comparisons between 100 percent recycle and the two discharge alternatives of 90 percent and 50 percent recycle for fifteen process segments.

5. The Agency seeks comments on the practical substitution of process chemicals containing toxic organic pollutions such as phenolic sand binders and die lubricants with other non toxic metal molding and casting process chemicals.

The Agency seeks data describing the availability, applicability and cost of the use of process chemicals which do not contain or would not add toxic chemicals to foundry process wastewaters.

6. To determine the economic impact of this regulation, the Agency has calculated the cost of installing BPT, BAT, PSES, NSPS and PSNS for the Metal Molding and Casting facilities for which data were 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 25 plants closures and/or 484 employment losses as a result of this regulation. The Agency invites comments on these analyses and projections. We particularly seek comments on whether casting manufacturers, especially small or less profitable plants, can withstand the estimated compliance costs. The commenters should focus not 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 costs, the ability to finance non-environmental investments, product prices, profitability, the need for additional employees to operate and maintain the required pollution control equipment, international competitiveness, and the availability of less costly control technology.

XXV—OMB Review

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

List of Subjects in 40 CFR Part 464

Iron and steel foundries, Nonferrous foundries, Waste treatment and disposal, Water pollution control.

Dated: October 29, 1982.

Anne M. Gorsuch,

Administrator.

XXVI—Appendices

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

Act—The Clean Water Act

Agency—The U.S. Environmental Protection Agency

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

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

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

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

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

Indirect Discharger—A facility which introduces or may introduce pollutants into a publicly owned treatment works

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

POTW—Publicly owned treatment works

NSPS—New source performance standards under Section 306 of the Act

PSES—Pretreatment standards for existing sources of indirect discharges under Section 307(b) of the Act

PSNS—Pretreatment standards for new sources of indirect discharges under Section 307(b) and (c) of the Act

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

Appendix B—Pollutants Proposed for Specific Regulation

Subpart A—Aluminum Casting Subcategory

(1) Investment Casting Operations
- Oil and Grease
- TSS
- pH

(2) Melting Furnace Scrubber Operations
- Oil and Grease
- TSS
- pH

(3) Casting Quench Operations
- 2,4,6-trichlorophenol
- 2,4-Dichlorophenol
- Fluoranthene
- Butyl benzyl phthalate
- Pyrene
- Tetrachloroethylene
- Copper
- Zinc
- Xylene
- Sulfide
- Oil and Grease
- TSS
- pH

(4) Die Casting Operations
- Acenaphthene

2,4,6-trichlorophenol
Parachlorometacresol
Chloroform
Phenol
Butyl benzyl phthalate
Chrysene
Tetrachloroethylene
Lead
Zinc
Phenols (4AAP)
Oil and Grease
TSS
pH
(5) Die Lube Operations
Benzidine
Carbon tetrachloride
Chlorobenzene
1,2-dichloroethane
1,1,1-trichloroethane
1,1-dichloroethane
2,4,6-trichlorophenol
Chloroform
Fluoranthene
Methylene chloride
Naphthalene
4-nitrophenol
Pentachlorophenol
Phenol
bis(2-ethylhexyl)phthalate
Butyl benzyl phthalate
Benzo (a) anthracene
Acenaphthylene
Anthracene
Fluorene
Phenanthrene
Pyrene
Tetrachloroethylene
Trichloroethylene
Chlordane
Copper
Lead
Zinc
Xylene
Ammonia
Phenols (4AAP)
Sulfide
Oil and Grease
TSS
pH

Subpart B—Copper Casting Subcategory

(1) Dust Collection Operations
Butyl benzyl phthalate
3,4-benzofluoranthene
Benzo(k)fluoranthanae
Pyrene
Copper
Lead
Nickel
Zinc
Manganese
Phenols (4AAP)
Oil and Grease
TSS
pH
(2) Mold Cooling and Casting Quench Operations
Copper
Zinc
Oil and Grease
TSS
pH

Subpart C—Ferrous Casting Subcategory

(1) Dust Collection Operations
Acenaphthene
2,4-dichlorophenol
2,4-dimethylphenol
Fluoranthene
N-nitrosodiphenylamine
Pentachlorophenol
Phenol
Butyl benzyl phthalate
Benzo (a) anthracene
Chrysene
Acenaphthylene
Fluorene
Phenanthrene
Pyrene
Tetrachloroethylene
Copper
Lead
Nickel
Zinc
Ammonia
Iron
Manganese
Phenols (4AAP)
Sulfide
Oil and Grease
TSS
pH
(2) Melting Furnace Scrubber Operations
2-chlorophenol
2,4-dichlorophenol
2,4-dimethylphenol
Fluoranthene
2,4-dinitrophenol
4,6-dinitro-o-cresol
N-nitrosodiphenylamine
Pentachlorophenol
Phenol
Butyl benzyl phthalate
Benzo (a) anthracene
Chrysene
Acenaphthylene
Fluorene
Phenanthrene
Pyrene
Tetrachloroethylene
Antimony
Arsenic
Cadmium
Chromium
Copper
Lead
Nickel
Zinc
Ammonia
Fluoride
Iron
Manganese
Phenols (4AAP)
Sulfide
Oil and Grease
TSS
pH
(3) Slag Quench Operations
2,4-dimethylphenol
N-nitrosodiphenylamine
Phenol
Tetrachloroethylene
Cadmium
Chromium
Copper
Lead
Nickel
Zinc
Ammonia
Fluoride
Iron
Manganese
Phenols (4AAP)
Sulfide
Oil and Grease
TSS
pH
(4) Casting Quench and Mold Cooling Operations
Iron
Oil and Grease
TSS
pH
(5) Sand Washing Operations
Acenaphthene
Phenol
Acenaphthylene
Pyrene
Chromium
Copper
Lead
Nickel
Zinc
Ammonia
Iron
Manganese
Phenols (4AAP)
Sulfide
Oil and Grease
TSS
pH

Subpart D—Lead Casting Subcategory

(1) Continuous Strip Casting Operations
Lead
Oil and Grease
TSS
pH
(2) Grid Casting Operations
Copper
Lead
Zinc
Oil and Grease
TSS
pH
(3) Melting Furnace Scrubber Operations
Copper
Lead
Zinc
Oil and Grease
TSS
pH

Subpart E—Magnesium Casting Subcategory

(1) Grinding Scrubber Operations
Zinc
Manganese
Oil and Grease
TSS
pH
(2) Dust Collection Operations
Zinc
Phenols (4AAP)
Sulfide
Oil and Grease
TSS
pH

Subpart F—Zinc Casting Subcategory

(1) Die Casting and Casting Quench Operations
2,4,6-trichlorophenol
Parachlorometacresol
Pyrene
Tetrachloroethylene
Lead
Zinc Manganese
Phenols (4AAP)

Sulfide
Oil and Grease
TSS
pH
(2) Melting Furnace Scrubber Operations
Zinc
Phenols (4AAP)
Oil and Grease
TSS
pH

Appendix C—Toxic Pollutants Not Detected

(a) Subpart A—Aluminum Casting Subcategory

002 Acrolein
003 Acrylonitrile
008 1,2,4-trichlorobenzene
009 Hexachlorobenzene
012 Hexachloroethane
016 Chloroethane
017 Bis (chloromethyl) ether
019 2-chloroethyl vinyl ether
020 2-chloronaphthalene
025 1,2-dichlorobenzene
026 1,3-dichlorobenzene
027 1,4-dichlorobenzene
028 3,3′-dichlorobenzidine
029 1,1-dichloroethylene
032 1,2-dichloropropane
033 1,3-dichloropropylene
035 2,4-dinitrotoluene
037 1,2-diphenylhydrazine
040 4-chlorophenyl phenyl ether
041 4-bromophenyl phenyl ether
042 Bis(2-chloroisopropyl) ether
043 Bis(2-chloroethoxy) methane
045 Methyl chloride
046 Methyl bromide
049 Trichlorofluoromethane
050 Dichlorodifluoromethane
052 Hexachlorobutadiene
053 Hexachlorocyclopentadiene
054 Isophorone
056 Nitrobenzene
061 N-nitrosodimethylamine
062 N-nitrosodimethylamine
079 Benzo(g,h,i)perylene
082 Dibenzo(a,h)anthracene
083 Indeno(1,2,4-cd)pyrene
088 Vinyl chloride
113 Toxaphene
114 Antimony
117 Beryllium
118 Cadmium

(b) Subpart B—Copper Casting Subcategory

002 Acrolein
003 Acrylonitrile
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
020 2-chloronaphthalene
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 1,3-dichloropropylene
035 2,4-dinitrotoluene
038 Ethylbenzene
040 4-chlorophenyl phenyl ether
041 4-bromophenyl phenyl ether
042 Bis(2-chloroisopropyl) ether
043 Bis(2-chloroethoxy) methane
046 Methyl bromide
048 Dichlorobromomethane
049 Trichlorofluoromethane
050 Dichlorodifluoromethane
051 Chlorodibromomethane
052 Hexachlorobutadiene
053 Hexachlorocyclopentadiene
056 Nitrobenzene
061 N-nitrosodimethylamine
062 N-nitrosodiphenylamine
063 N-nitrosodi-n-propylamine
079 Benzo(g,h,i)perylene
082 Dibenzo(a,h)anthracene
083 Indeno(1,2,4-dc) pyrene
088 Vinyl chloride
094 4,4′-DDD
095 Alpha-endosulfan
096 Beta-endosulfan
098 Endrin
114 Antimony
130 Xylene

(c) Subpart C—Ferrous Casting Subcategory

002 Acrolein
003 Acrylonitrile
012 Hexachloroethane
013 1,1-dichloroethane
015 1,1,2,2-tetrachloroethane
016 Chloroethane
017 Bis(chloromethyl) ether
019 2-chloroethyl vinyl ether
025 1,2-dichlorobenzene
027 1,4-dichlorobenzene
028 3,3-dicholorobenzidine
029 1,1-dicholoethylene
032 1,2-dichoropropane
040 4-chlorophenyl phenyl ether
041 4-bromophenyl phenyl ether
042 Bis(2-chloroisopropyl) ether
046 Methyl bromide
050 Dichlorodifluoromethane
052 Hexachlorobutadiene
053 Hexachlorocyclopentadiene
061 N-nitrosodimethylamine
063 N-nitrosodi-n-propylamine
079 Benzo(g,h,i,)Perylene
082 Dibenzo(a,h)anthracene
083 Indeno(1,2,3-cd) pyrene
088 Vinyl chloride

(d) Subport D-Lead Casting Subcategory

002 Acrolein
003 Acrylonitrile
005 Benzidine
006 Carbon tetrachloride
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
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 1,3-dichloropropylene
034 2,4-dimethylphenol
035 2,4-dinitrotoluene
036 2,6-dinitrotoluene
037 1,2-diphenylhydrazine
040 4-chlorophenyl phenyl ether
041 4-bromophenyl phenyl ehter
042 Bis(2-chloroisopropyl) ether
043 Bis(2-chloroethoxy) methane
045 Methyl cholride
046 Methyl bromide
047 Bromoform
049 Trichlorofluoromethane
050 Dichlorodifluoromethane
052 Hexachlorobutadiene
053 Hexachlorocyclopentadiene
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
064 Pentachlorophenol
070 Diethyl phthalate
071 Dimethyl pyhthalate
077 Acenaphthylene
079 Benzo(G,h,i)perylene
082 Dibenzo(a,h)anthracene
083 Indeno(1,2,-cd) pyrene
085 Tetrachloroethylene
088 Aldrin
090 Dieldrin
091 Chlordane
092 4,4′-DDT
093 4,4′-DDE
094 4,4′-DDD
095 Alpha-endosulfan
096 Beta-endosulfan
097 Endosulfan sulfate
098 Endrin
099 Endrin aldehyde
100 Heptachalor
102 Alpha-BHC
103 Beta-BHC
104 Gamma-BHC
105 Delta-BHC
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
130 Xylene

(e) Subpart E—Magnesium Casting Subcategory

002 Acrolein
003 Acrylonitrile
005 Benzidine
006 Carbon tetrachloride
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-chloroethy) ether
019 2-chloroethyl vinyl ether
022 Parachlorometa cresol
025 2,2-dichlorobenzene
028 3,3'-dichlorobenzidine
029 1,1-dichloroethylene
030 1,2-trans-dichloroethylene
031 2,4-dichlorophenyl
032 1,2-dichloropropane
033 1,3-dichloropropylene
035 2,4-dinitrotoluene
036 2,6-dinitrotoluene
037 1,2-diphenylhydrazine
038 Ethylbenzene
040 4-chlorophenyl phenyl ether
041 4-bromophenyl phenyl ether
042 Bis(2-chloroisopropyl) ether
043 Bis(2-chloroethoxy) methane
045 Methyl chloride
046 Methyl bromide
047 Bromoform
049 Trichlorofluoromethane
050 Dichlorodifluoromethane
051 Chlorodibromomethane
052 Hexachlorobutadiene
053 Hexachlorocyclopentadiene
054 Isophorone
056 Nitrobenzene
058 4-nitrophenol
059 2,4-dinitrophenol
060 4,6-dinitro-o-cresol
061 N-nitrosodimethylamine
062 N-nitrosodiphenylamine
063 N-nitrosodi-n-propylamine
069 Di-n-octyl phthalate
074 3,4-Benzofluoranthene
079 Benzo(g,h,i)perylene
082 Dibenzo(a,h)anthracene
083 Indeno(1,2,3-cd) pyrene
087 Trichloroethylene
088 Vinyl chloride
089 Aldrin
091 Chlordane
093 4,4'-DDE
096 Beta-endosulfan
097 Endosulfan sulfate
098 Enddrin
100 Heptachlor
103 Beta-BHC
105 Delta-BHC
113 Toxaphene
114 Antimony
117 Beryllium
118 Cadmium
119 Chromium
124 Nickel

(f) Subpart F—Zinc Casting Subcategory

002 Acrolein
003 Acrylonitrile
005 Benzidine
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
020 2-chloronaphthalene
026 1,3-dichlorobenzene
027 1,4-dichlorobenzene
028 3,3'-dichlorobenzidine
029 1,1-dichloroethylene
032 1,2-dichloropropane
033 1,3-dichloropropylene
040 4-chlorophenyl phenyl ether
041 4-bromophenyl phenyl ether
042 Bis(2-chloroisopropyl) ether
043 Bis(2-chloroethoxy) methane
045 Methyl chloride
046 Methyl bromide
047 Bromoform
048 Dichlorobromomethane
049 Trichlorofluoromethane
050 Dichlorodifluoromethane
051 Chlorodibromomethane
052 Hexachlorobutadiene
053 Hexachlorocyclopentadiene
057 2-nitrophenol
060 4,6-dinitro-o-cresol
061 N-nitrosodimethylamine
062 N-nitrosodiphenylamine
063 N-nitrosodi-n-propylamine
073 Benzo(a)pyrene
074 3,4-Benzofluoranthene
075 Benzo(k)fluoranthene
079 Benzo(g,h,i)perylene
082 Dibenzo(a,h)anthracene
083 Indeno(1,2,3-cd) pyrene
088 Vinyl chloride
090 Dielddrin
105 Delta-BHC
113 Toxaphene
114 Antimony
117 Beryllium
118 Cadmium

Appendix D—Toxic Pollutants Detected Below the Nominal Quantification Limit

(a) Subpart A—Aluminum Casting Subcategory

014 1,1,2-trichloroethane
030 1,2-trans-dichloroethylene
036 2,6-dinitrotoluene
047 Bromoform
051 Chlorodibromomethane
069 Di-n-octyl phthalate
074 3,4-Benzofluoranthene
075 Benzo(k)fluoranthene
090 Dieldrin
094 4,4'-DDD
095 Alpha-endosulfan
096 Beta-endosulfan
097 Endosulfan sulfate
098 Endrin
099 Endrin aldehyde
100 Heptachlor
125 Selenium
126 Silver
127 Thallium

(b) Subpart B—Copper Casting Subcategory

004 Benzene
005 Benzidine
021 2,4,6-trichlorophenol
022 Parachlorometa cresol
037 1,2-diphenylhydrazine
039 Fluoranthene
047 Bromoform
055 Naphthalene
057 2-nitrophenol
059 2,4-dinitrophenol
060 4,6-dinitro-o-cresol
069 Di-n-octyl phthalate
080 Fluorene
086 Toluene
089 Aldrin
090 Dieldrin
091 Chlordane
092 4,4'-DDT
093 4,4'-DDE
097 Endosulfan Sulfate
099 Endrin aldehyde
100 Heptachlor
101 Heptachlor epoxide
102 Alpha-BHC
103 Beta-BHC
104 Gamma-BHC
105 Delta-BHC
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
117 Berylium
119 Chromium
125 Selenium
126 Silver
127 Thallium

(c) Subpart C—Ferrous Casting Subcategory

005 Benzidine
007 Chlorobenzene
009 Hexachlorobenzene
010 1,2-dichloroethane
014 1,1,2-trichloroethane
020 2-chloronaphthalene
026 1,3-dichlorobenzene
035 2,4-dinitrotoluene
036 2,6-dinitrotoluene
037 1,2-diphenylhydrazine
038 Ethylbenzene
048 Dichlorobromomethane
073 Benzo(a)pyrene
078 Anthracene
089 Aldrin
090 Dieldrin
091 Chlordane
092 4,4'-DDT
093 4,4'-DDE
094 4,4'-DDD
095 Alpha-endosulfan
096 Beta-endosulfan
097 Endosulfan sulfate
098 Endrin
100 Heptachlor
101 Heptachlor epoxide
102 Alpha-BHC
104 Gamma-BHC
105 Delta-BHC
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 PX
113 PCB-1016 (Arochlor 1016)
113 Toxaphene

(d) Subpart D—Lead Casting Subcategory

001 Acenaphthene
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
048 Dichlorobromomethane
051 Chlorodibromomethane
065 Phenol
072 Benzo(a)anthracene
073 Benzo(a)pyrene
074 3,4-Benzofluoranthene
075 Benzo(k)fluoranthene
076 Chrysene
080 Fluorene
086 Toluene
087 Trichloroethylene
101 Heptachlor epoxide
115 Arsenic
117 Beryllium
119 Chromium
121 Cyanide, Total
123 Mercury
124 Nickel
125 Selenium
126 Silver
127 Thallium

(e) Subpart E—Magnesium Casting Subcategory

020 2-chloronaphthalene
021 2,4,6-trichlorophenol
024 2-chlorophenol
026 1,3-dichlorobenzene
027 1,4-dichlorobenzene
039 Fluoranthene
048 Dichlorobromomethane
055 Naphthalene
057 2-nitrophenol
072 Benzo(a)anthracene
073 Benzo(a)pyrene
075 Benzo(k)fluoranthene
080 Fluorene
085 Tetrachloroethylene
090 Dieldrin
092 4,4'-DDT
094 4,4'-DDD
095 Alpha-endosulfan
099 Endrin aldehyde
101 Heptachlor epoxide
102 Alpha-BHC
104 Gamma-BHC
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)
115 Arsenic
123 Mercury
125 Selenium
126 Silver
127 Thallium
130 Xylene

(f) Subpart F—Zinc Casting Subcategory

007 Chlorobenzene
015 1,1,2,2-tetrachloroethane
025 1,2-dichlorobenzene
037 1,2-diphenylhydrazine
054 Isophrone
064 Pentachlorophenol
078 Anthracene
081 Phenanthrene
089 Aldrin
091 Chlordane
092 4,4'-DDT
093 4,4'-DDE
094 4,4'DD
095 Alpha-endosulfan
096 Beta-endosulfan
097 Endosulfan sulfate
098 Endrin
099 Endrin aldehyde
100 Heptachlor
101 Heptachlor epoxide
102 Alpha-BHC
103 Beta-BHC
104 Gamma-BHC
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)
115 Arsenic
119 Chromium
125 Selenium
126 Silver
127 Thallium

Appendix E—Toxic Pollutants Not Treatable by End-of-Pipe Technologies Considered

(a) Subpart A—Aluminum Casting Subcategory

004 Benzene
015 1,1,2,2,-tetrachloroethane
018 bis(2-chloroethyl) ether
024 2-chlorophenol
034 2,4-dimethylphenol
038 Ethylbenzene
048 Dichlorobromomethane
057 2-nitrophenol
059 2,4-dinitrophenol
060 4,6-dinitro-o-cresol
068 D-n-butyl phthalate
070 Diethyl phthalate
071 Dimethyl phthalate
086 Toluene
089 Aldrin
092 4,4'-DDT
093 4,4'-DDE
101 Heptachlor epoxide
102 Alpha-BHC
103 Beta-BHC
104 Gamma-BHC
105 Delta-BHC
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)
115 Arsenic
119 Chromium
121 Cyanide
123 Mercury
124 Nickel

(b) Subpart B—Copper Casting Subcategory

001 Acenaphthene
006 Carbon tetrachloride
011 1,1,1-trichloroethane
014 1,1,2-trichloroethane
023 Chloroform
034 2,4-dimethylphenol
036 2,6-dinitrotoluene
044 Methylene chloride
045 Methyl chloride
054 Isophorone
058 4-nitrophenol
064 Pentachlorophenol
065 Phenol
066 bis(2-ethylhexyl) phthalate
068 Di-n-butyl phthalate
070 Diethyl phthalate
071 Dimethyl phthalate
072 Benzo (a) anthracene
073 Benzo (a) pyrene
076 Chrysene
077 Acenaphthylene
078 Anthracene
081 Phenanthrene
085 Tetrachloroethylene
087 Trichloroethylene
115 Arsenic
118 Cadmium
121 Cyanide
123 Mercury

(c) Subpart C—Ferrous Casting Subcategory

004 Benzene
006 Carbon tetrachloride
008 1,2,4-trichlorobenzene
011 1,1,1-trichloroethane
018 bis(2-chloroethyl) ether
021 2,4,6-trichlorophenol
022 Parachlorometalcresol
023 Chloroform
030 1,2-trans-dichloroethylene
033 1,3-dichloroprophylene
043 bis(2-chloroethoxy) methane
044 Methylene chloride
045 Methyl chloride
047 Bromoform
049 Trichlorofluoromethane
051 Chlorodibromomethane
054 Isophorone
055 Naphthalene
056 Nitrobenzene
057 2-nitrophenol
058 4-nitrophenol
066 Bis(2-ethylhexyl) phthalate
068 Di-n-butyl phthalate
069 Di-n-octyl phthalate
070 Diethyl phthalate
071 Dimethyl phthalate
074 3,4-Benzofluoranthene
075 Benzo (k) fluoranthene
086 Toluene
087 Trichloroethylene
099 Endrin aldehyde
103 Beta-BHC
117 Beryllium
121 Cyanide
123 Mercury
125 Selenium
126 Silver
127 Thallium
130 Xylene

(d) Subpart D—Lead Casting Subcategory

011 1,1,1-trichloroethane
023 Chloroform
055 Naphthalene
066 Bis(2-ethylhexyl) phthalate
067 Butyl benzyl phthalate
068 Di-n-butyl phthalate
069 Di-n-octyl phthalate
078 Anthracene
081 Phenanthrene
084 Pyrene
114 Antimony
118 Cadmium

(e) Subpart E—Magnesium Casting Subcategory

001 Acenaphthene
004 Benzene
023 Chloroform
034 2,4-dimethylphenol
044 Methylene chloride
064 Pentachlorophenol
065 Phenol
066 bis(2-ethylhexyl)phthalate
067 Butyl benzyl phthalate
068 Di-n-butyl phthalate
070 Diethyl phthalate
071 Dimethyl phthalate
076 Chrysene
077 Acenaphthylene
078 Anthracene
081 Phenanthrene
084 Pyrene
085 Tetrachloroethylene
120 Copper
121 Cyanide
122 Lead

(f) Subpart F—Zinc Casting Subcategory

001 Acenaphthene
004 Benzene
006 Carbon tetrachloride
008 1,2,4-trichlorobenzene
011 1,1,1-trichloroethane
023 Chloroform
024 2-chlorophenol
030 1,2-trans-dichloroethylene
035 2,4-dinitrotoluene
036 2,6-dinitrotoluene
038 Ethylbenzene
039 Fluoranthene
044 Methylene chloride
056 Nitrobenzene
058 4-nitrophenol
059 2,4-dinitrophenol
066 bis(2-ethylhexyl)phthalate
068 Di-n-butyl phthalate
069 Di-n-octyl phthalate
070 Diethyl phthalate
071 Dimethyl phthalate
072 Benzo(a)anthracene
076 Chrysene
077 Acenaphthylene
080 Fluorene
086 Toluene
087 Trichloroethylene
120 Copper
121 Cyanide
123 Mercury
124 Nickel
130 Xylene

Appendix F—Toxic Pollutants Controlled But Not Specifically Regulated

Subpart A—Aluminum Casting Subcategory

063 N-nitrosodi-n-propylamine
073 Benzo(a)pyrene

Subpart B—Copper Casting Subcategory

The proposed limitations and standards for the process segments in this subcategory are no discharge of process wastewater pollutants to navigable waters or POTWs.

Subpart C—Ferrous Casting Subcategory

The proposed limitations and standards for the process segments in this subcategory are no discharge of process wastewater pollutants to navigable waters or POTWs.

Subpart D—Lead Casting Subcategory

The proposed limitations and standards for two of the process segments in this subcategory are no discharge of process wastewater pollutants to navigable waters or POTWs.

Subpart E—Magnesium Casting Subcategory

The proposed limitations and standards for the process segments in this subcategory are no discharge of process wastewater pollutants to navigable waters or POTWs.

Subpart F—Zinc Casting Subcategory

031 2,4-dichlorophenol
034 2,4-dimethylphenol
055 Naphthalene
065 Phenol
067 Butyl benzyl phthalate

Appendix G—Subcategories and Process Segments Not Regulated

Subpart A—Aluminum Casting

Investment Casting—BAT, PSES, PSNS
Melting Furnace Scrubber—BAT, PSES, PSNS

Subpart D—Lead Casting

Continuous Strip Casting—BPT, BAT

Subpart E—Magnesium Casting

Grinding Scrubber Operations—PSES
Dust Collection Operations—PSES

Subpart G—Nickel Casting—BPT, BAT, BCT, NSPS, PSES, PSNS

Subpart H—Tin Casting—BPT, BAT, BCT, NSPS, PSES, PSNS

Subpart I—Titanium Casting—BPT, BAT, BCT, NSPS, PSES, PSNS

EPA proposes to establish a new Part 464 to read as follows:

PART 464—METAL MOLDING AND CASTING POINT SOURCE CATEGORY

General Provisions

Authority: Secs. 301, 304(b), (c), (e), and (g), 306(b) and (c), 307, and 501, Clean Water Act (Federal Water Pollution Control Act Amendments of 1972, as amended by Clean Water Act of 1977) (the "Act"); 33 United States 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

§ 464.01 Applicability.

The provisions of this regulation apply to discharges and to the introduction of pollutants into a publicly owned treatment works resulting from production in the Metal Molding and Casting Point Source Category.

§ 464.02 General definitions.

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

(a) *Aluminum Casting.* The remelting of aluminum or an aluminum alloy to form a cast intermediate or final product by pouring or forcing the molten metal into a mold, except for ingots, pigs, or other cast shapes related to primary metal smelting.

(b) *Copper Casting.* The remelting of copper or a copper alloy to form a cast intermediate or final product by pouring or forcing the molten metal into a mold, except for ingots, pigs, or other cast shapes related to primary metal smelting.

(c) *Ferrous Casting.* The remelting of ferrous metals to form a cast intermediate or finished product by pouring the molten metal into a mold.

(d) *Lead Casting.* The remelting of lead to form a cast intermediate or final product by pouring or forcing the molten metal into a mold, except for ingots, pigs, or other cast shapes related to primary metal smelting.

(e) *Magnesium Casting.* The remelting of magnesium to form a cast intermediate or final product by pouring or forcing the molten metal into a mold, except for ingots, pigs, or other cast shapes related to primary metal smelting.

(f) *Zinc Casting.* The remelting of zinc to form a cast intermediate or final product by pouring or forcing the molten metal into a mold, except for ingots, pigs, or other cast shapes related to primary metal smelting.

§ 464.03 Monitoring 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.

§ 464.04 Compliance date for PSES.

Two years after promulgation of the regulation.

Subpart A—Aluminum Casting Subcategory

§ 464.10 Applicability; description of the aluminum casting subcategory.

The provisions of this subpart are applicable to discharges and to the introduction of pollutants into publicly owned treatment works resulting from aluminum casting operations.

§ 464.11 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 125.30–125.32, 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) *Investment Casting Operations.*

SUBPART A

Pollutant or pollutant property	BPT effluent limitations	
	Maximum for any 1 day	Maximum for monthly average
	Kg/kkg (pounds per 1,000 lb) of metal poured	
TSS	1.103	0.538
Oil and grease	.538	.323
pH	(1)	(1)

[1] Within the range of 7.5 to 10.

(b) *Melting Furnace Scrubber Operations.*

SUBPART A

Pollutant or pollutant property	BPT effluent limitations	
	Maximum for any 1 day	Maximum for monthly average
	Kg/kkg (pounds per 1,000 lb) of metal poured	
TSS	0.0166	0.00809
Oil and Grease	.00809	.00486
pH	(1)	(1)

[1] Within the range of 7.5 to 10.

(c) *Casting Quench Operations.* No discharge of process wastewater pollutants to navigable waters.

(d) *Die Casting Operations.*

SUBPART A

Pollutant or pollutant property	BPT effluent limitations	
	Maximum for any 1 day	Maximum for monthly average
	Kg/kkg (pounds per 1,000 lb) of metal poured	
TSS	0.0109	0.00799
Oil and grease	.00726	.00726
Lead	.0000726	.0000653
Zinc	.000740	.000305
Phenols (4AAP)	.000322	.000161
pH	(1)	(1)

[1] Within the range of 7.5 to 10.

(e) *Die Lube Operations.* No discharge of process wastewater pollutants to navigable waters.

§ 464.12 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 125.30–125.32, 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 available technology economically achievable.

(a) *Casting Quench Operations.* No dicharge of process wastewater pollutants to navigable waters.

(b) *Die Casting operations.*

SUBPART A

Pollutant or pollutant property	BAT effluent limitations	
	Maximum for any 1 day	Maximum for monthly average
	Kg/kkg (pounds per 1,000 lb) of metal poured	
Acenaphthene	0.0000092	0.0000046
2,4,6-trichlorophenol	.0000305	.0000152
Parachlorometacresol	.0000281	.0000140
Chloroform	.0000668	.0000334
Phenol	.0000063	.0000031
Butyl benzyl phthalate	.000104	.0000518
Chrysene	.0000019	.0000010
Tetrachloroetylene	.0000261	.0000131
Lead	.0000242	.0000218
Zinc	.000247	.000102
Phenols (4AAP)	.000107	.0000537

(c) *Die Lube Operations.* No discharge of process wastewater pollutants to navigable waters.

§ 464.13 New source performance standards.

The discharge of wastewater pollutants from any new source subject to this subpart shall not exceed the values set forth below.

(a) *Investment Casting Operations.*

SUBPART A

Pollutant or pollutant property	NSPS	
	Maximum for any 1 day	Maximun for monthly average
	Kg/kkg (pounds per 1,000 lb) of metal poured	
TSS	1.103	0.538
Oil and grease	.538	.323
pH	(1)	(1)

[1] Within the range of 7.5 to 10.

(b) *Melting Furnace Scrubber Operations.*

SUBPART A

Pollutant or pollutant property	NSPS	
	Maximum for any 1 day	Maximum for monthly average
	Kg/kkg (pounds per 1,000 lb) of metal poured	
TSS	0.0166	0.00809
Oil and grease	.00809	.00486
pH	(1)	(1)

[1] Within the range of 7.5 to 10.

(c) *Casting Quench Operations.* No discharge of process wastewater pollutants to navigable waters.

(d) *Die Casting Operations.*

SUBPART A

Pollutant or pollutant property	NSPS	
	Maximum for any 1 day	Maximum for monthly average
	Kg/kkg (pounds per 1,000 lb) of metal poured	
TSS	0.00363	0.00266
Oil and grease	.00242	.00242
Acenaphthene	.000092	.0000046
2,4,6-trichlorophenol	.0000305	.0000152
Parachlorometacresol	.0000281	.0000140
Chloroform	.0000668	.0000334
Phenol	.0000063	.0000031
Butyl benzyl phthalate	.000104	.0000518
Chrysene	.0000019	.0000010
Tetrachloroethylene	.0000261	.0000131
Lead	.0000242	.0000218
Zinc	.000247	.000102
Phenols (4AAP)	.000107	.0000537
pH	(1)	(1)

[1] Within the range of 7.5 to 10.

(e) *Die Lube Operations.* No discharge of process wastewater pollutants to navigable waters.

§ 464.14 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 following pretreatment standards for existing sources.

(a) *Casting Quench Operations.* No discharge of process wastewater pollutants to a POTW.

(b) *Die Casting Operations.*

SUBPART A

Pollutant or pollutant property	PSES	
	Maximum for any 1 day	Maximum for monthly average
	Kg/kkg (pounds per 1,000 lb) of metal poured	
Acenaphthene	0.0000092	0.0000046
2,4,6-trichlorophenol	.0000305	.0000152
Parachlorometacresol	.0000281	.0000140
Chloroform	.0000668	.0000334
Phenol	.0000063	.0000031
Butyl benzyl phthalate	.000104	.0000518
Chrysene	.0000019	.0000010
Tetrachloroethylene	.0000261	.0000131
Lead	.0000242	.0000218
Zinc	.000247	.000102
Phenols (4AAP)	.000107	.0000537

(c) *Die Lube Operations.* No discharge of process wastewater pollutants to a POTW.

§ 464.15 Pretreatment standards for new sources.

Except as provided in 40 CFR 403.7, any new source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for new sources.

(a) *Casting Quench Operations.* No discharge of process wastewater pollutants to a POTW.

(b) *Die Casting Operations.*

SUBPART A

Pollutant or pollutant property	PSNS	
	Maximum for any 1 day	Maximum for monthly average
	Kg/kkg (pounds per 1,000 lb) of metal poured	
Acenaphthen	0.0000092	0.0000046
2,4,6-trichlorophenol	.0000305	.0000152
Parachlorometacresol	.0000281	.0000140
Chloroform	.0000668	.0000334
Phenol	.0000063	.0000031
Butyl benzyl phthalate	.000104	.0000518
Chrysene	.0000019	.0000010
Tetrachloroethylene	.0000261	.0000131
Lead	.0000242	.0000218
Zinc	.000247	.000102
Phenols (4AAP)	.000107	.0000537

(c) *Die Lube Operations.* No discharge of process wastewater pollutants to a POTW.

§ 464.16 [Reserved]

Subpart B—Copper Casting Subcategory

§ 464.20 Applicability; description of the copper casting subcategory.

The provisions of this subpart are applicable to discharges and to the introduction of pollutants into publicly owned treatment works resulting from copper casting operations.

§ 464.21 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) *Dust Collection Operations.* No discharge of process wastewater pollutants to navigable waters.

(b) *Mold Cooling and Casting Quench Operations.* No discharge of process wastewater pollutants to navigable waters.

§ 464.22 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 125.30–125.32, 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 available technology economically achievable.

(a) *Dust Collection Operations.* No discharge of process wastewater pollutants to navigable waters.

(b) *Mold Cooling and Casting Quench Operations.* No discharge of process wastewater pollutants to navigable waters.

§ 464.23 New source performance standards.

The discharge of wastewater pollutants from any new source subject to this subpart shall not exceed the values set forth below.

(a) *Dust Collection Operations.* No discharge of process wastewater pollutants to navigable waters.

(b) *Mold Cooling and Casting Quench Operations.* No discharge of process wastewater pollutants to navigable waters.

§ 464.24 Pretreatment standards for existing sources.

Except as provided in 40 CFR 403.7 and 403.13, any existing source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for existing sources.

(a) *Dust Collection Operations.* No discharge of process wastewater pollutants to a POTW.

(b) *Mold Cooling and Casting Quench Operations.* No discharge of process wastewater pollutants to a POTW.

§ 464.25 Pretreatment standards for new sources.

Except as provided in 40 CFR 403.7, any new source subject to this subpart which introduces pollutants in to a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for new sources.

(a) *Dust Collection Operations.* No discharge of process wastewater pollutants to a POTW.

(b) *Mold Cooling and Casting Quench Operations.* No discharge of process wastewater pollutants to a POTW.

§ 464.26 [Reserved]

Subpart C—Ferrous Casting Subcategory

§ 464.30 Applicability; description of the ferrous casting subcategory.

The provisions of this subpart are applicable to discharges and to the introduction of pollutants into publicly owned treatment works resulting from ferrous casting operations.

§ 464.31 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 125.30–125.32, 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) *Dust Collection Operations.* No discharge of process wastewater pollutants to navigable waters.

(b) *Melting Furnace Scrubber Operations.* No discharge of process wastewater pollutants to navigable waters.

(c) *Slag Quench Operations.* No discharge of process wastewater pollutants to navigable waters.

(d) *Casting Quench and Mold Cooling Operations.* No discharge of process wastewater pollutants to navigable waters.

(e) *Sand Washing Operations.* No discharge of process wastewater pollutants to navigable waters.

§ 464.32 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 125.30–125.32, 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 available technology economically achievable.

(a) *Dust Collection Operations.* No discharge of process wastewater pollutants to navigable waters.

(b) *Melting Furnace Scrubber Operations.* No discharge of process wastewater pollutants to navigable waters.

(c) *Slag Quench Operations.* No discharge of process wastewater pollutants to navigable waters.

(d) *Casting Quench and Mold Cooling Operations.* No discharge of process wastewater pollutants to navigable waters.

(e) *Sand Washing Operations.* No discharge of process wastewater pollutants to navigable waters.

§ 464.33 New source performance standards.

The discharge of wastewater pollutants from any new source subject to this subpart shall not exceed the values set forth below.

(a) *Dust Collection Operations.* No discharge of process wastewater pollutants to navigable waters.

(b) *Melting Furnace Scrubber Operations.* No discharge of process wastewater pollutants to navigable waters.

(c) *Slug Quench Operations.* No discharge of process wastewater pollutants to navigable waters.

(d) *Casting Quench and Mold Cooling Operations.* No discharge of process wastewater pollutants to navigable waters.

(e) *Sand Washing Operations.* No discharge of process wastewater pollutants to navigable waters.

§ 464.34 Pretreatment standards for existing sources.

Except as provided in 40 CFR 403.7 and 403.13, any existing source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for existing sources.

(a) *Dust Collection Operations.* No discharge of process wastewater pollutants to a POTW.

(b) *Melting Furnace Scrubber Operations.* No discharge of process wastewater pollutants to a POTW.

(c) *Slag Quench Operations.* No discharge of process wastewater pollutants to a POTW.

(d) *Casting Quench and Mold Cooling Operations.* No discharge of process wastewater pollutants to a POTW.

(e) *Sand Washing Operations.* No discharge of process wastewater pollutants to a POTW.

§ 464.35 Pretreatment standards for new sources.

Except as provided in 40 CFR 403.7, any new source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for new sources.

(a) *Dust Collection Operations.* No discharge of process wastewater pollutants to a POTW.

(b) *Melting Furnace Scrubber Operations.* No discharge of process wastewater pollutants to a POTW.

(c) *Slat Quench Operations.* No discharge of process wastewater pollutants to a POTW.

(d) *Casting Quench and Mold Cooling Operations.* No discharge of process wastewater pollutants to a POTW.

(e) *Sand Washing Operations.* No discharge of process wastewater pollutants to a POTW.

§ 464.36 [Reserved]

Subpart D—Lead Casting Subcategory

§ 464.40 Applicability; description of the lead casting subcategory.

The provisions of this subpart are applicable to discharges and to the introduction of pollutants into publicly owned treatment works resulting from lead casting operations.

§ 464.41 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) *Grid Casting Operations.* No discharge of process wastewater pollutants to navigable waters.

(b) *Melting Furnace Scrubber Operations.* No discharge of process wastewater pollutants to navigable waters.

§ 464.42 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 125.30–125.32, 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 available technology economically achievable.

(a) *Grid Casting Operations.* No discharge of process wastewater pollutants to navigable waters.

(b) *Melting Furnace Scrubber Operations.* No discharge of process wastewater pollutants to navigable waters.

§ 464.43 New source performance standards.

The discharge of wastewater pollutants from any new source subject to this subpart shall not exceed the values set forth below.

(a) *Continuous Strip Casting Operations.*

SUBPART D

Pollutant of pollutant property	NSPS	
	Maximum for any 1 day	Maximum for monthly average
	Kg/kkg (pounds per 1,000 lb) of metal poured	
TSS	0.00340	0.00250
Oil and grease	0.00227	0.00227
Lead	0.0000227	0.0000204
pH	(1)	(1)

[1] Within the range of 7.5 to 10.

(b) *Grid Casting Operations.* No discharge of process wastewater pollutants to navigable waters.

(c) *Melting Furnace Scrubber Operations.* No discharge of process wastewater pollutants to navigable waters.

§ 464.44 Pretreatment standards for existing sources.

Except as provided in 40 CFR 403.07 and 403.13, any existing source subject to this subpart which introduces pollutants into a publicly owned treatment workers must comply with 40 CFR Part 403 and achieve the following pretreatment standards for existing sources.

(a) *Continuous Strip Casting Operations.*

SUBPART D

Pollutant or pollutant property	PSES	
	Maximum for any 1 day	Maximum for monthly average
	Kg/kkg (pounds per 1,000 lb) of metal poured	
Lead	0.0000227	0.0000204

(b) *Grid Casting Operations.* No discharge of process wastewater pollutants to a POTW.

(c) *Melting Furnace Scrubber Operations.* No discharge of process wastewater pollutants to a POTW.

§ 464.45 Pretreatment standards for new sources.

Except as provided in 40 CFR 403.7, any new source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for new sources.

(a) *Continuous Strip Casting Operations.*

SUBPART D

Pollutant or pollutant property	PSNS	
	Maximum for any 1 day	Maximum for monthly average
	Kg/kkg (pounds per 1,000 lb) of metal poured	
Lead	0.0000227	0.0000204

(b) *Grid Casting Operations.* No discharge of process wastewater pollutants to a POTW.

(c) *Melting Furnace Scrubber Operations.* No discharge of process wastewater pollutants to a POTW.

§ 464.46 [Reserved]

Subpart E—Magnesium Casting Subcategory

§ 464.50 Applicability; description of the magnesium casting subcategory.

The provisions of this subpart are applicable to discharges and to the introduction of pollutants into publicly owned treatment works resulting from magnesium casting operations.

§ 464.51 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) *Grinding Scrubber Operations.* No discharge of process wastewater pollutants to navigable waters.

(b) *Dust Collection Operations.* No discharge of process wastewater pollutants to navigable waters.

§ 464.52 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 125.30–125.32, 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 available technology economically achievable.

(a) *Grinding Scrubber Operations.* No discharge of process wastewater pollutants to navigable waters.

(b) *Dust Collection Operations.* No discharge of process wastewater pollutants to navigable waters.

§ 464.53 New source performance standards.

The discharge of wastewater pollutants from any new source subject to this subpart shall not exceed the values set forth below.

(a) *Grinding Scrubber Operations.* No discharge of process wastewater pollutants to navigable waters.

(b) *Dust Collection Operations.* No discharge of process wastewater pollutants to navigable waters.

§ 464.54 Pretreatment standards for new sources.

Except as provided in 40 CFR 403.07, any new source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for new sources.

(a) *Grinding Scrubber Operations.* No discharge of process wastewater pollutants to a POTW.

(b) *Dust Collection Operations.* No discharge of process wastewater pollutants to a POTW.

§ 464.55 [Reserved]

Subpart F—Zinc Casting Subcategory

§ 464.60 Applicability; description of the zinc casting subcategory.

The provisions of this subpart are applicable to discharges and to the introduction of pollutants into publicly owned treatment works resulting from zinc casting operations.

§ 464.61 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 techology currently available.

(a) *Die Casting and Casting Quench Operations.* No discharge of process wastewater pollutants to navigable waters.

(b) *Melting Furnance Scrubber Operations.*

SUBPART F

Pollutant or pollutant property	BPT effluent limitations: Maximum for any 1 day	BPT effluent limitations: Maximum for monthly average
	Kg/kkg (Pounds per 1,000 lb) of metal poured	
TSS	0.129	0.0630
Oil and grease	.0630	.0378
Zinc	.00419	.00176
Phenols (4AAP)	.0315	.0157
pH	[1]	[1]

[1] Within the range of 7.5 to 10.

§464.62 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 125.30–125.32, 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 available technology economically achievable.

(a) *Die Casting and Casting Quench Operations.* No discharge of process wastewater pollutants to navigable waters.

(b) *Melting Furnance Scrubber Operations.* No discharge of process wastewater pollutants to navigable waters.

§464.63 New source performance standards.

The discharge of wastewater pollutants from any new source subject to this subpart shall not exceed the values set fourth below.

(a) *Die Casting and Casting Quench Operations.* No discharge of process wastewater pollutants to navigable waters.

(b) *Melting Furnace Scrubber Operations.* No discharge of process wastewater pollutants to navigable waters.

§ 464.64 Pretreatment standards for existing sources.

Except as provided in 40 CFR 403.07 and 403.13, any existing source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for existing sources.

(a) *Die Casting and Casting Quench Operations.* No discharge of process wastewater pollutants to a POTW.

(b) *Melting Furnace Scrubber Operations.* No discharge of process wastewater pollutants to a POTW.

§ 464.65 Pretreatment standards for new sources.

Except as provided in 40 CFR 403.07, any new source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for new sources.

(a) *Die Casting and Casting Quench Operations.* No discharge of process wastewater pollutants to a POTW.

(b) *Melting Furnace Scrubber Operations.* No discharge of process wastewater pollutants to a POTW.

§ 464.66 [Reserved]

[FR Doc. 82-30313 Filed 11-12-82; 8:45 am]
BILLING CODE 6560-50-M