ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 413 and 433

[WH-FRL 2152-6]

Electroplating and Metal Finishing Point Source Categories; Effluent Limitations Guidelines, Pretreatment Standards, and New Source Performance Standards

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed regulation.

SUMMARY: EPA proposes a regulation to limit the effluent that metal finishing facilities may discharge to waters of the United States or to publicly owned treatment works (POTW). This proposal provides effluent limitations based on "best practicable technology" and "best available technology," and establishes now 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.

The preamble contains the legal authority and background, the technical and economic bases, and other aspects of the proposed regulation as well as a summary of comments on a draft technical document circulated in June 1980 and a request for comments on specific issues. The abbreviations, acronyms, and other terms used in the preamble are defined in Appendix A. (See Supplementary Information below for complete table of contents).

The proposed regulation is supported by EPA's technical conclusions detailed in the *Development Document for Effluent Limitations Guidelines, and Standards for the Metal Finishing Point Source Category.* The Agency's economic analysis is found in *Economic Analysis of Proposed Effluent Standards and Limitations for the Metal Finishing Industry.*

DATES: Comments on this proposal must be submitted by November 1, 1982.

ADDRESS: Send comments to: Mr. Richard Kinch, Effluent Guidelines Division (WH-552), Environmental Protection Agency, 401 M St., S.W., Washington, D.C. 20460, Attention: Metal Finishing Rules. The record for this rulemaking and all comments on this proposal will be available for inspection and copying at EPA Public Information Reference Unit, Room 2404 (Rear) PM-213 (EPA Library). The EPA public information regulation (40 CFR Part 2) provides that a reasonable fee may be charged for copying.

FOR FURTHER INFORMATION CONTACT: Technical information may be obtained by writing to Mr. Richard Kinch, Effluent Guidelines Division (WH-553), EPA, 401 M Street, S.W., Washington, D.C. 20460, or by calling (202) 426-2582. Copies of the technical document may be obtained from the National Technical Information Service, Springfield, Virginia 22161 (703/487-6000). Copies of the economic analysis will be available for review in the public record at EPA headquarters and regional libraries. Economic information, including copies of the economic analysis document, may be obtained by writing Ms. Kathleen Ehrensberger, Economics Branch (WH-586), Environmental Protection Agency, 401 M St. S.W., Washington, D.C. 20460, or by calling (202) 382-5397.

SUPPLEMENTARY INFORMATION:

Organization of This Notice

I. Legal Authority

EPA is proposing the regulation described in this preamble under authority of Sections 301, 304, 306, 307, 308, and 501 of the Clean Water Act (the Federal Water Pollution Control Act Amendments of 1972, 33 USC 1251 *et seq.*, as amended by the Clean Water Act of 1977, Pub. L. 95-217) (the "Act"). This regulation is also proposed in response to the Settlement Agreement in *Natural Resources Defense Council, Inc.* v. *Train,* 8 ERC 2120 (D.D.C. 1976), as modified, 12 ERC 1833 (D.D.C. 1979).

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)(A) 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 demonstrated technology.
- Sections 307 (b) and (c) 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

reflecting the ability of BPT and BAT to reduce effluent discharge.

- 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 plaintiffs executed a "Settlement Agreement"which was approved by the Court. This agreement required EPA to develop a program and meet a schedule for controlling 65 "priority" pollutants and classes of pollutants. In carrying out this program EPA must promulgate BAT effluent limitations guidelines, pretreatment standards, and new source performance standards for 21 major industries. See *Natural Resources Defense Council, Inc.* v. *Train*, 8 ERC 2120 (D.D.C. 1976), modified, 12 ERC 1833 (D.D.C. 1979).

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 standards 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" ("BNPs"). 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 comparison of the cost and level of reduction of such pollutants by publically owned treatment works and industrial sources. For non-toxic, nonconventional pollutants, Sections 301(b)(2)(A) and (b)(2)(F) require achievement of BAT effluent limitations within three years after their establishment or by July 1, 1984, whichever is later, but not later than July 1, 1987.

The purpose of tis proposed regulation is to establish BPT, BAT, NSPS, PSES, and PSNS for the Metal Finishing Point Source Category, and, to amend the electroplating PSES for job shops and independent printed circuit board manufacturers.

B. Prior EPA Regulations

On March 28, 1974, EPA promulgated BPT limitations for the electroplating industry but suspended them on December 3, 1976. Interim final Electroplating pretreatment standards for the electroplating industry were issued on July 12, 1977, and suspended on May 14, 1979. On September 7, 1979, EPA promulgated PSES for the electroplating industry. Amended PSES were promulgated on January 28, 1981 (40 FR 9462).

As of now, only the PSES for the electroplating industry are in effect. A September 2, 1981 correction (40 FR 43972) to the final amendments requires compliance with these standards by January 28, 1984 for nonintegrated facilities. A non-integrated facility is one which discharges process wastewater only from electroplating operations through a treatment system (or proposed treatment system). Many of the General Pretreatment amendments of January 28, 1981 complement the implementation of categorical standards. Most of these amendments became effective on January 31, 1982 (47 FR 4518, February 1, 1982).

Indirect discharging integrated facilities are currently covered by the electroplating PSES. They must comply with its provisions no later than three years after the effective date of the combined waste stream formula contained in S403.6(e) of the General Pretreatment Regulations. The United States Court of Appeals for the Third Circuit recently ruled that this formula was effective as of March 30, 1981. *NRDC v. EPA*, No. 81-2068 (3d Cir. 1982).

C. Overview of the Industry

Thirteen thousand facilities in the Electroplating and Metal Finishing Categories would be subject to the limitations on discharge of toxic metals, organics, and cyanide contained in these regulations. They can be divided into the sectors indicated on Table I. These facilities are either "captives" (those which own the material they process); or "job shops" (those which treat metal as service and do not own the material they process). Captives are further divided by two definitions: "integrated" plants are those which, prior to discharge, combine electroplating waste streams with significent process waste streams from other operations; "non-integrated" facilities are those which have significant wastewater discharges only from operations addressed by the electroplating category. Many captive (50%) are "integrated" facilities. Whereas captives often have a complex range of operations, job shops usually perform fewer operations. In theory job shops can be divided like captives; in actuality, however, approximately 97% of all job shops in this industry are "non-integrated". Finally, the entire industry can be divided into "direct" and "indirect" dischargers. "Directs" discharge wastewaters to waters of the United States and are subject to NPDES permits incorporating BPT, BAT, BCT, or NSPS limitations. "Indirects" discharge to POTWs and are subject to PSES or PSNS limitations.

As discussed above, the Electroplating Category is currently covered by PSES promulgated on September 7, 1979, and amended on January 28, 1981. The effect of today's amendments would be to create a new category—Metal Finishing—and to shift *most* electroplaters to it, replacing their current PSES with new limits which apply uniformly to discharges from their electroplating and other metal finishing operations. This meets industries' requests for equivalent limits for process lines often found together and reduces the need to rely on the Combined Waste Stream Formula for integrated metal

finishing facilities. All direct dischargers and new sources would also be covered by the metal finishing regulations.

Indirect discharging job shop electroplaters and independent printed circuit board manufacturers, however, would be left under the existing PSES for Electroplating, pursuant to a 1980 Settlement Agreement with the National Association of Metal Finishers (NAMF), and the Institute for Interconnecting and Packaging Electronic Circuits (IIPEC). In addition to creating the Metal Finishing Category this package proposes to amend the current Electroplating PSES to reflect this change in applicability, and to set a limit on Total Toxic Organics (TTO). The TTO limit can be met by "housekeeping" control of solvent disposal; as discussed below it requires no significant capital expenditures. Compliance is required by January 28, 1948; this will be possible because the control technique is in-house and operational, requiring no significant capital installation or investment for treatment of wastewater.

TABLE I.—BREAKDOWN OF THE ELECTROPLATING /METAL FINISHING INDUSTRY

[Number of plants per sector 13,470]

Job shops and IPCBM * (3470)	Captive facilities (10,000)	
	Nonintegrated	Integrated
Indirect dischargers (10,561):		
3061	3,750	3,750
Job & IPCBM	Nonintegrated	Integrated
Indirect	Captive	Captive
Direct Dischargers (2,909):		
409	2,500	
Job & IPCMB	Captive	
Directs	Directs	

*Independent Printed Circuit Board Manufacturers.

The processes covered by the Metal Finishing Category are listed in Appendix C. The industries in this category perform one or more combinations of the 45 manufacturing unit operations listed there, including at least one of the following: electroplating, electroless plating, anodizing, coating, chemical etching and milling, or printed circuit board manufacture. While process operations vary, control of wastewater pollutants is similar throughout the category.

EPA is excluding some operations similar to metal finishing from this regulation. These include: (1) Electroplating and electrorefining conducted as a part of nonferrous metal smelting and refining (40 CFR 421); (2) metal surface preparation and conversion coating conducted as a part of coil coating (40 CFR 465); (3) metal surface preparation and immersion plating or electroless plating conducted as a part of porcelain enameling (40 CFR 466); (4) Electrodeposition of active electrode materials, electroimpregnation, and electroforming conducted as a part of battery manufacturing (40 CFR 461); (5) Metallic platemaking and gravure cylinder preparation conducted within printing and publishing facilities; and (6) facilities which do not perform at least one of the following: electroplating, electroless plating, anodizing, coating, chemical etching and milling, or printed circuit board manufacture.

The most important pollutants of concern found in metal finishing industry wastewaters are: (1) Toxic metals (cadmium, copper, chromium, nickel, lead, and zinc); (2) cyanide; (3) toxic organics (lumped together as total toxic organics); and, (4) conventional pollutants (TSS and oil and grease). These and other chemical constituents degrade water quality, endanger aquatic life and human health, and in addition corrode equipment, generate hazardous gas, and cause treatment plant malfunctions and problems in disposing of sludges containing toxic metals.

These plants manufacture a variety of products that are constructed primarily of metals. The operations, which involve materials that begin as raw stock (rods, bars, sheet, castings, forgings, etc.), can include the most sophisticated surface finishing technologies. These facilities include both "captives" (which own the goods they process) and "job shops" (which process others' goods, as a service). They vary greatly in size, age, number of employees, and number and type of operations performed. They range from very small job shops with less than 10 employees to large facilities employing thousands of production workers. Because of differences in size and processes, production facilities are custom tailored to the individual plant. Some complex products may require the use of nearly all 45 unit operations, while a simple product may require only one.

Many different raw materials are used by these plants. Basis materials (or "workpieces") are almost exclusively metals, from common copper and steel to extremely expensive high-grade alloys and precious metals. The solutions used in unit operations can contain acids, bases, cyanide, metals, complexing agents, organic additives, oils, and detergents. All these materials may enter waste streams during production.

Water use within the metal finishing industry is discussed fully in Section V of the development document (see summary above). Plating and cleaning operations are typically the biggest water users. While most metal finishing operations use water, some may use none at all. Water use depends heavily on the type—and the flow rate—of the rinsing used. Product quality requirements often dictate the amount of rinsing needed for specific parts. Parts involving extensive surface preparation will generally require larger amounts of water in rinsing.

III. Scope of This Rulemaking and Summary of Methodology

This proposed regulation establishes BPT, BAT, NSPS PSES, and PSNS for the Metal Finishing Point Source Category and amends PSES for the Electroplating Point Source Category. The BAT goal is to achieve, by July 1, 1984, the best available technology economically achievable that will result in reasonable further progress toward the national goal of eliminating the discharge of all pollutants. This regulation, as proposed, does not alter the existing metal and cyanide standards for job shop electroplaters and printed circuit board manufacturers discharging to POTW's.

EPA first studied the metal finishing industry to determine whether differences in raw materials, final products, manufacturing processes, equipment, age and size of plants, water use, wastewater constituents, or other factors required separate effluent limitations and standards for different industry subcategories. This study involved a detailed analysis of wastewater discharge and treated effluent characteristics, including, (a) the sources and volume of water, the processes, and the sources of pollutants and wastewater in the plant and (b) the constituents of wastewaters, including toxic pollutants. This analysis enabled the Agency to determine the presence and concentrations of toxic pollutants in the major wastewater discharges.

EPA also identified several distinct control and treatment technologies (both in-plant and end-of-process), including those with potential use in the metal finishing industry. The Agency analyzed both historical and newly generated data on the performance of these technologies, including their non-water quality environmental impacts on air quality, solid waste generation, water scarcity, and energy requirements.

We used unit cost curves to estimate the cost of each control and treatment technology. These cost curves were developed by applying standard engineering analysis to metal finishing wastewater characteristics. We then derived the unit process costs by applying model plant characteristics (production and flow) to the unit cost

curve of each treatment process. These unit process costs were added together to yield the total cost at each treatment level.

By considering these factors, EPA was able to characterize the various control and treatment technologies used as the bases for effluent limitations, new source and pretreatment standards. However, the proposed regulations do not require any particular technology. Rather, they require plants to achieve effluent limitations (mg/l) which reflect the proper operation of these technologies or equivalent technologies. Some facilities are already using technologies other than these relied on by the Agency, such as dragout control, recycle, and recovery, to achieve these values.

IV. Data Gathering Efforts

To develop the proposed regulation, EPA began with a review of previous work on the metal finishing industry. The major source of information on this is the *Draft Development Document for Effluent Limitations and Standards for the Metal Finishing Point Source Category* (June 1980). Several studies completed before this development document was published also contributed technical information to the metal finishing data base for the following categories:

- Machinery and Mechanical Products Manufacturing.
- Electroplating.
- Electroless Plating and Printed Circuit Board Manufacturing (Segments of the Electroplating Category).
- Mechanical and Electrical Products.

We also gathered data on the metal finishing industry from literature surveys, inquiries to professional contacts, seminars and meetings, and the survey and evaluation of manufacturing facilities.

We contacted all Federal EPA regions, several State environmental agencies, and numerous suppliers and manufacturers for the metal finishing industry to collect information on: (1) Permits and monitoring data, (2) the use and properties of materials, (3) process chemical constituents, (4) waste treatment equipment, (5) waste transport, (6) and various process modifications to minimize pollutant generation.

Under the authority of Section 308 of the Clean Water Act, the Agency sent three different data collection portfolios (DCPs) to various industries within the Metal Finishing Point Source Category. The first DCP obtained data from 339 of 1,422 plants originally contacted from the machinery and mechanical products industry. The data included general plant data and data on raw materials consumed, specific processes used, composition of effluent streams, and wastewater treatment. The second DCP obtained data from 365 of 900 plants originally contacted in the mechanical and electrical products industries. This data covered general plant characteristics, unit operations performed, plating type operations, wastewater treatment facilities, and waste transport. We sent the third DCP to 1,883 companies involved in electroplating. Approximately 970 plants sent back economic analysis data and information on general plant characteristics, production history, manufacturing processes, process and waste treatment, wastewater characteristics, and treatment costs.

EPA and its contractors also visited 198 manufacturing facilities to collect pertinent technical information on manufacturing processes, treatment techniques, and collection of wastewater samples.

V. Sampling and Analytical Program

EPA focused its sampling and analysis on the toxic pollutants designated in the Clean Water Act. However, we also sampled and analyzed conventional and nonconventional pollutants. We have explained our analysis methods for toxic organic pollutants in the preamble to the proposed regulation for the Leather Tanning Point Source Category, 40 CFR 425, 44 FR 38749, July 2, 1979. Before proceeding to analyze metal finishing wastes, we had to isolate specific toxic pollutants for analysis. The list of 65 pollutants and classes of pollutants potentially includes thousands of specific pollutants; analyses for all of them would overwhelm private and government laboratory resources. To make the task more manageable, therefore, EPA selected 129 specific toxic pollutants for study in this rulemaking and other industry 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 pollutants, EPA checked for the presence, frequency, and concentration of xylenes, alkyl epoxides, gold, fluoride, phosphorus, oil and grease, TSS, pH, aluminum, barium, iridium, magnesium, molybdenum, osmium, palladium, platinum, rhodium, ruthenium, sodium, tin, titanium, vanadium, yttrium, and total phenols.

To be sampled, a plant had to be representative of (a) the manufacturing processes, (b) the prevalent mix of production among plants, and (c) the current treatment technology in the industry. EPA sampled 198 facilities to identify pollutants in plant wastewaters. Before visiting a plant, EPA reviewed all available data on manufacturing processes and waste treatment. We selected representative points to sample the raw wastewater entering the treatment systems and to sample the final treated effluents. Finally, we prepared, reviewed, and approved a detailed sampling plan showing the selected sample points and the overall sampling procedure.

Based on this sampling plan, we then took composite samples (24-hour composites) at each sample point for 2 or 3 consecutive days. The samples were divided into two analysis groups. Within each group the samples were subjected to various analyses, depending on the stability of the pollutants to be analyzed. The various levels of analysis were conducted at: (1) local laboratories, (2) Chicago EPA laboratory, (3) contracted gas chromatography/mass spectrometry (GC/MS) laboratories and, (4) the sampling contractor's central laboratory. The sampling and analysis methods are outlined in the Development Document.

The acquisition, preservation, and analysis of the water samples followed the relevant methods set forth in 40 CFR 136. The Agency has not promulgated analytical methods for many organic toxic pollutants under Section 304(h) of the Act, a number of these methods have been proposed for 40 CFR 136 (44 FR 69464, December 3, 1979; 44 FR 75028, December 18, 1979).

VI. Industry Subcategorization

In developing this regulation, the Agency considered whether different effluent limitations and standards are appropriate for different segments of the metal finishing industry. The Act requires EPA consider a number of factors to determine if subcategorization is needed. These factors include raw materials, final products, manufacturing processes, geographical location, plant size and age, wastewater characteristics, non-water-quality environmental impacts, treatment costs, energy costs, and solid waste generation.

The metal finishing industry comprises 45 unit operations. These processes generate wastewater that falls into five waste groups, each requiring different treatment to reduce the discharge of pollutants. The five groups are metals, cyanide, hexavalent chromium, oils, and solvents, with

significant toxic organics pollutants potentially present in the last two.

These wastes occur in a wide variety of combinations, and while the treatment may differ for each type of waste, the combined treatment system has components, i.e., precipitation and clarification, that are used for all waste types (except solvents, which are contract hauled or reclaimed). After isolated treatment of hexavalent chromium, cyanide, and oil and grease, pollutants in these waste streams are further reduced through the precipitation-clarification system for metal-bearing wastes. Because of the interconnecting nature of the combined waste treatment system, setting concentration limits on the effluent from the combined system appropriately characterizes the concentration limited capabilities of the technology.

For these reasons, the Agency has determined that the Metal Finishing Point Source Category need not be subcategorized for regulation. A set of concentration based limitations can be applied to all metal finishing process effluents. However, under today's proposal the current PSES for job shops and independent printed circuit board manufacturers would not be amended to equal the metal finishing limitations. This is pursuant to the 1980 Settlement agreement in which the National Association of Metal Finishers promised to withdraw its legal challenge to those PSES if EPA did not make them more stringent than the limits proposed on July 3, 1980 and promulgated on Janurary 28, 1981.

The Agency considered, but decided against production based standards. With the wide range of operations, product quality requirements, existing process configurations, and difficulties in measuring production, no consistent production normalizing relationship could be found. Concentration based limits, however, can be consistently attained throughout the industry.

VII. Available Wastewater Control and Treatment Technology

A. Status of In-Place Technology

Installed control and treatment technologies in the metal finishing industry generally consist of some form of alkaline precipitation and clarification to remove metals. When cyanide or hexavalent chromium wastes are present, these wastewaters are generally segregated and treated upstream.

B. Control Treatment Options

We examined the following control treatment options:

Option 1: Precipitation and clarification. Stream segregation for cyanide, hexavalent chromium and concentrated oily wastes followed by cyanide destruction, chromium reduction and emulsion breaking and skimming as necessary. Solvent waste segregation and removal by hauling.

Option 2: Option 1 plus filtration.

Option 3: Option 1 plus in-plant control for cadmium.

VIII. General Criteria for Effluent Limitations

A. BPT Effluent limitations

The factors considered in defining best practicable control technology currently available (BPT) include: (1) the total cost of applying the technology relative to the effluent reductions that result, (2) the age of equipment and facilities involved, (3) the processes used, (4) engineering aspects of the control technology, (5) process changes, (6) non-water-quality environmental impacts (including energy requirements), (7) and other factors, as the Administrator considers appropriate. In general, the BPT level represents the average of the best existing preformances of plants within the industry of various ages, sizes, processes, or other common characteristics. When existing performance is uniformly inadequate, BPT may be transferred in from a different subcategory or category, BPT focuses on end-of-process treatment rather than process changes or internal controls, except when these technologies are common industry practice.

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

B. BAT Effluent limitations

The factors considered in defining best available technology economically achievable (BAT) include the age of the equipment and facilities involved, the processes used, engineering aspects of the central technology process changes, non-water-quality environmental impacts (including energy requirements), and the costs of applying such technology (Section 304(b)(2)(B)). At a minimum, the BAT level represents the best economically achievable performance of plants of various ages, sizes, processes, or other shared characteristics. As with BPT, uniformly inadequate performance within a category or subcategory may require transfer of BAT from a different subcategory or category. Unlike BPT, however, BAT may include process changes or internal controls, even when these technologies are not common industry practice.

The statutory assessment of BAT "considers" costs, but does not require a balancing of costs against effluent reduction benefits (see *Weyerhaeuser* v. *Costle, supra*). In developing the proposed BAT, however, EPA has given substantial weight to the reasonableness of costs. 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 the required pollution control levels.

Despite this expanded consideration of costs, the primary factor for determining BAT is the effluent reduction capability of the control technology. The Clean Water Act of 1977, establishes the achievement of BAT as the principal national means of controlling toxic water pollution from direct discharging plants.

C. BCT Effluent Limitations

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

BCT is not an additional limitation but replaces BAT for the control of conventional pollutants. In addition to other factors specified in section 304(b)(4)(B), the Act requires that BCT

limitations be assessed in light of a two part "cost-reasonableness" test. *American Paper Institute* v. *EPA*, 660 F.2d 954 (4th Cir. 1981). The first test compares the cost for private industry to reduce its conventional pollutants with the costs to publicly owned treatment works for similar levels of reduction in their discharge of these pollutants. The second test examines the cost-effectiveness of additional industrial treatment beyond BPT. EPA must find that limitations are "reasonable" under both tests before establishing them as BCT. In no case may BCT be less stringent than BPT.

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

EPA will soon propose its revised and corrected BCT methodology. The BCT proposal will include proposed BCT limitations for the metal finishing category. Comments on the proposed BCT limitations for metal finishing may be submitted throughout the comment periods either of the BCT proposal, or of this metal finishing proposal.

D. New Source Performance Standards

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

E. Pretreatment Standards for Existing Sources

Section 307(b) of the Act requires EPA to promulgate pretreatment standards for existing sources (PSES), which industry must achieve within three years of promulgation. PSES are designed to prevent the discharge of pollutants which pass through, interfere with, or are otherwise incompatible with the operation of POTWs.

The legislative history of the 1977 Act indicates that pretreatment standards are to be technology-based, analogous to the best available technology for removal of toxic pollutants. The General Pretreatment Regulations which serve as the framework for the proposed pretreatment standards are in 40 CFR Part 403, 46 FR 9404 (January 28, 1981).

EPA has generally determined that there is pass through of pollutants if the percent of pullutants removed by a well-operated POTW achieving secondary treatment is less than the percent removal by the BAT model treatment system. A study of 40 well-operated POTWs with biological treatment and meeting secondary treatment criteria showed that regulated metals are typically removed at rates varying from 20 to 70%. POTWs with only primary treatment have even lower rates of removal. In contrast, BAT level treatment by metal finishing industrial facilities can achieve removals of approximately 97% or more. Thus it is evident that metals from this industry do pass through POTWs. As for toxic organics, data from the same POTWs illustrates a wide range of removal, from 0 to greater than 99%. Overall POTW's have removal rates of toxic organics which are less effective than the metal finishing TTO technology basis of no dumping of toxic organic wastes. The POTW's effluent discharge of specific toxic pollutants ranged from 0 to 4.3 milligrams/liter. Many of the pullutants present in metal finishing wastes, at sufficiently high concentrations, can inhibit biodegradation in POTW operations. In addition, a high concentration of toxic pollutants in the sludge can limit POTW use of sludge management alternatives, including the beneficial use of sludges on agricultural lands.

Section 307 of the Clean Water Act provides that POTW's may grant credit to indirect dischargers, based on the degree of removal actually achieved at the POTW. EPA has General Pretreatment Regulations regulating POTW's authority to grant such credits. The recent study of 40 well-operated POTW's suggests that national removal credits could be established for such plants at the following levels:

Pollutant	National removal rate (percent)
Cadmium	38
Chromium	65
Copper	58
Lead	48
Nickel	19
Silver	66
Zinc	65
Total Regulated Metals (Cr+Cu+Ni+Zn)	62
Cyanide	52

A separate **Federal Register** notice will explain EPA's latest data and conclusions on the removal credit issue. If the national removal credits are adopted by a POTW, PSES for Metal Finishing can be modified as follows:

METAL FINISHING PSES PLUS NATIONAL REMOVAL CREDITS

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed
	Milligrams per liter (mg/1)	
Cadmium (T)	2.08	0.44
Chromium (T)	8.20	2.29
Copper (T)	8.86	2.60
Lead (T)	1.29	0.44
Nickel (T)	4.33	1.56
Silver (T)	1.29	0.36
Zinc (T)	7.54	2.29
Cyanide (T)	2.71	0.58
TTO	0.58	

F. Pretreatment Standards for New Sources

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 controls, and end-of-process treatment technologies—and to select plant sites that ensure the treatment system will be adequately installed. Therefore, the Agency sets PSNS after considering the same criteria considered for NSPS. PSNS will have effluent reduction benefits similar to NSPS.

IX. Selection of Treatment Options and Effluent Limitations

The treatment option selected for each effluent limitation and pretreatment standard is based on the criteria specified in the Clean Water Act. The technologies are discussed in more detail in the Development Document for this rulemaking.

For BPT, EPA is proposing results achievable by technology based on precipitation and clarification for all metal finishing effluents. In addition, for cyanide or hexavalent chromium the technology basis incorporate techniques to destroy cyanide and reduce hexavalent chromium to its trivalent state. These effluent limitations reflect the average of the best existing control technologies widely used in the industry. The technology is consistent with that used as a basis for PSES for the electroplating industry (January 28, 1981, FR 9462) and the March 28, 1974,

suspended, BPT limitations. The limitations are more stringent than found in currently effective electroplating pretreatment regulations, because EPA is now using an expanded data base. The pollutants proposed for regulation under BPT limitations are silver, cadmium, copper, chromium, nickel, lead, zinc, total cyanide, TSS, oil and grease.

Total toxic organics (TTO) is also proposed for limitation. Compliance with TTO basically involves not dumping concentrated toxic organic wastes, i.e., solvent degreasers and paint strippers. These wastes can profitably be recovered and some waste haulers, which pay for waste solvents, have been identified, and are cited in the public record. Approximately 73% of the facilities which utilize solvent degreasers already properly dispose of this waste. Monitoring for toxic organics could be expensive. Accordingly the Agency is proposing an alternative to self-monitoring. Facilities can identify the toxic organics used and certify that the resultant wastes are being properly disposed, i.e., recovered or contract hauled.

For BAT, EPA is proposing limitations equivalent to BPT. The Agency seriously considered proposing limitations based on BPT level technology plus, filtration, but rejected it because of its high cost compared with the limited additional removal that would result. We did not select in-plant cadmium control because that technology is more appropriate in the design and construction of new facilities. The pollutants proposed for regulation under BAT limitations are the same as those proposed for regulations under BPT limitations. The compliance date for BAT is no later than July 1, 1984, the maximum time allowed by the Act.

For NSPS, EPA is proposing limitations based on BPT/BAT technology plus in-plant control of cadmium. This additional control takes advantage of a new plant's ability to achieve effluent reductions beyond BAT levels. The pollutants regulated under NSPS are the same as those regulated under BPT limitations.

For PSES in the Metal Finishing Category, EPA is proposing technology equivalent to BAT and BPT. The pollutants regulated under this PSES are the same as the toxic pollutants regulated under BPT (BAT) limitations. As previously stated, these toxic pollutants can pass through or interfere with the POTW's operations. In addition, the removal of these pollutants from the waste stream by the POTW could affect sludge disposal alternatives. The compliance date for the metal finishing PSES is proposed as March 30, 1984, the same as the compliance date for the pretreatment standards for integrated electroplaters. Because Metal Finishing's PSES is based on a reassessment of the same technology basis used for Electroplating PSES, captive non-integrated facilities should be capable of complying with Metal Finishing at the same time all integrated facilities comply with the Electroplating PSES, i.e., three years from the promulgation of the Combined Wastestream Formula. Agency analysis indicates that facilities can install the necessary equipment in 14 to 20 months, which will be allowed by the specified compliance date.

Indirect discharging job shop and independent printed circuit board manufacturers would continue to be regulated under the existing PSES for Electroplating, pursuant to a 1980 Settlement Agreement with the National Association of Metal Finishers and the Institute for Interconnecting and Packaging Electronic Circuits. However, the proposed amendment to the current electroplating PSES would set a limit on total toxic organics based upon in-house management of organics, not additional end-of-pipe treatment. Compliance date for this TTO limit is January 28, 1984.

For PSNS, EPA is proposing technology equivalent to NSPS. The pollutants regulated under PSNS are the same as the toxics regulated under NSPS.

X. Pollutants and Subcategories Not Regulated

Paragraph 8 of the Settlement Agreement contains provisions authorizing EPA to exclude toxic pollutants and industry categories and subcategories from regulation under certain circumstances.

A. Exclusion of Pollutants

Paragraph 8(a)(iii) of the Settlement Agreement authorizes the Administrator to exclude from regulation toxic pollutants:

- Not detectable by Section 304(h) analytical methods or other state-of-the-art methods; or
- Present in amounts too small to be effectively reduced by available technologies; or
- Present only in trace amounts and neither causing nor likely to cause toxic effects; or
- Detected in the effluent from only a small number of sources within a subcategory and uniquely related to those sources; or
- That will be effectively controlled by technologies on which other effluent limitations and standards are based.

Appendix B to this notice lists the toxic pollutants excluded from regulation on this basis.

B. Exclusion of Subcategories

In selecting effluent limitations for the Metal Finishing category as a whole, EPA has not established subcategories and, therefore, has not excluded any subcategories.

XI. Costs, Effluent Reduction Benefits, and Economic Impact

A. Estimated Costs and Economic Impacts

In order to estimate the economic impacts of today's proposal, EPA reviewed its incremental effect on each of the sectors of the industry, (described above in the "Overview of the Industry," and Table I). This analysis is set forth in *Economic Impact Analysis of Proposed Effluent Limitations and Standards for the Metal Finishing Industry,* and its results are summarized below, beginning with those sectors which will incur no significant incremental costs, and followed by the sector which will incur costs and for which the impacts of those costs were analyzed. Our conclusion is that this proposal, if promulgated, would lead to a total initial capital investment (in 1982 dollars) of $308 million, with an annual cost, including interest and depreciation, of $92 million. No significant adverse economic impacts are projected.

The first two sectors which EPA determined would not be subject to further costs are direct-discharging captive shops and direct-discharging job and independent printed circuit board shops. These are already covered by NPDES permits which set BPT limits based on case-by-case best engineering judgement. A 1981 survey of randomly selected permits indicates that all, or nearly all, existing permits specify limits equal to, or more stringent than, those proposed today. As a result, this proposal should have no negative economic affects on direct discharging plants subject to these guidelines.

The third sector that EPA determined would not be subject to significant costs is that composed of indirect discharging job shops and independent printed circuit board manufacturers. Pursuant to a March 1980 Settlement Agreement in which the relevant trade associations agreed to withdraw their petitions for judical review, EPA is not proposing concentration limits more stringent than those specified in the existing applicable pretreatment standards. The Agency is, however, proposing to supplement those standards with a limit on Total Toxic Organics. That provision can be met by

"house-keeping" control of solvents, without significant expense. Thus today's proposal should have no adverse economic effects on indirect discharging job shops or independent printed circuit board manufacturers.

A fourth sector, non-integrated captive indirect dischargers, will also incur no significant additional costs due to today's proposal. This is because the necessary capital investments are already required by the currently effective electroplating regulations. The standards proposed today are more stringent than those in the currently effective electroplating regulations. However, they can be met through use of the same pollution control equipment relied on to meet the current electroplating pretreatment standards. Thus, those plants should incur no significant capital expenditures or increased operating costs.

The final sector, integrated captive shops that are indirect dischargers, would incur costs because of today's proposal. This is because EPA anticipates that they would comply with these standards with combined treatment systems that would be more costly than those required solely to treat electroplating wastewaters. After estimating the costs of this compliance, EPA analyzed the economic impacts projected from those costs. Integrated shops perform metal finishing operations in addition to electroplating processes. Thus they are affected by the existing electroplating standards as well as by today's proposal. To determine the impact of today's proposal, EPA's primary analysis treated the electroplating pretreatment standards as a baseline and found that the further costs required to meet today's proposal would have no significant adverse economic effects.

EPA's estimates of the effects of these regulations are based on a sample of approximately 1,100 plants. The results have been extrapolated to the full population of 3,750 plants in this sector. The analysis assumes that compliance costs are passed on as price increases and postulates an average price increase for each model plant. If a plant's compliance costs, relative to sales, are high, the analysis projects metal finishing process line divestitures or possible plant closures.

In determining the baseline costs to this segment of the industry required to comply with the electroplating pretreatment standards, EPA has revised its earlier estimates, based on updated surveys of treatment in place, improved estimates of the population of affected captive shops, and deletion of the costs attributed to the electroplating flow of integrated captive indirect dischargers. The revised estimate (in 1982 dollars) indicates that this sector's costs for compliance with the electroplating pretreatment standards are $516 million in capital costs and $155 million in annual costs, including interest and depreciation. EPA now estimates that the economic impacts of that regulation would be 24 plant closures and six electroplating divestitures which could result in 896 job losses and 84 job transfers.

In estimating the economic impact of today's proposed metal finishing regulation, EPA assessed the costs of treating the additional flows covered by today's proposal at the model plants used in the electroplating analysis. These costs were then extrapolated to the relevant metal finishing universe. Additional impacts would be those due to today's proposed metal finishing regulation. These costs came to an investment cost of approximately $308 million, with an annual cost of approximately $92 million, including interest and depreciation. The annual costs are approximately 0.15 percent of the $60 billion annual value of shipments from integrated indirect captive plants. EPA's analysis projects that this would lead to no plant closures or process line divestitures, and that no employment disruption would result.

Finally, EPA assessed the combined impact of today's proposal and the electroplating pretreatment regulations on the captive integrated indirect discharging sector of the industry. This analysis, like those for electroplating and metal finishing alone, was conservative because it assumed that each plant would build a full conventional treatment system, ignoring the potential savings of available alternative treatments such as one-or two-stage drag out rinses, or from more lenient standards based on removal credits received from local POTWs. The analysis does provide an outer bound for possible impacts, given that deferred compliance dates for integrated facilities have made it possible for plants to make both investments at once. This final analysis indicated a combined investment cost for *both* regulations of $824 million, with an annual cost of $247 million, including interest and depreciation. Thirty plants (out of 3,750) may divest their electroplating lines or close, and 980 jobs (out of 450,000) could be lost or displaced. These impacts are the same as those due to the electroplating pretreatment standards alone. No additional closures, divestitures, or unemployment are expected from the more stringent standards proposed today.

In sum, EPA has concluded that the industry can bear the costs of compliance with today's proposal with minimal effects. Finally, the standards for new sources are the same as those for existing sources, except that cadmium must be controlled more stringently. Because cadmium plating occurs at less than 20% of the facilities and economical in-plant controls can be designed into new facilities, there are expected to be no competitive disadvantage for new sources seeking to enter the industry.

B. Executive Order 12291

Executive Order 12291 requires EPA and other agencies to perform regulatory impact analyses of major regulations. The primary purpose of the Executive Order is to ensure that regulatory agencies carefully evaluate the need for taking the regulatory action. Major rules are those which impose a cost on the economy of $100 million a year or more or have certain other economic impacts. This regulation is not a major regulation because its annualized cost of $92 million is less than $100 million and it meets none of the other criteria specified in paragraph (b) of the E.O.

EPA has developed and analyzed detailed alternatives in the technical and economic development documents, and in an environmental consequence analysis. The technical development document presents and analyzes the alternative technologies on which effluent limitations and standards could be based. The economic development document discusses the economic consequences of the effluent limitations and standards proposed in this regulation. The environmental analysis assessed the national loadings levels, and modelled the water quality effect of these effluent limitation and pretreatment standards. These analyses confirmed the appropriateness of the decisions that the Agency made on the basis of the criteria in the Clean Water Act.

C. Regulatory Flexibility Analysis

Pub. L. 96–354 requires EPA to prepare an Initial Regulatory Flexibility Analysis for all proposed regulations that have a significant impact on a substantial number of small entities. This analysis may be done in conjunction with or as a part of any other analysis conducted by the Agency. The economic impact analysis described above indicates that there will not be a significant impact on any segment of the regulated population, large or small. Therefore, a formal regulatory flexibility analysis is not required.

D. SBA Loans

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

The Section 503 Program, as amended in July 1980, allows long-term loans to small- and medium-sized businesses. These loans are made by SBA-approved local development companies. 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) 382–5373. 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.

XII. Non-Water-Quality Environmental Impacts

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. To comply, EPA considered the effect of this regulation on air, noise, radiation, and solid waste generation. While balancing pollution problems against each other and against energy use is difficult, EPA believes that the proposed regulation best serves overall national goals.

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

A. Air Pollution

Compliance with the proposed BPT, BAT, NSPS, PSES and PSNS will not create any substantial air pollution problems. Alkaline chlorination for cyanide destruction and chromium reduction using sulfur dioxide may produce some emissions to the atmosphere. Precipitation and clarification, the major portion of the technology basis, should not result in any air pollution problems. In addition, control of total toxic organics, at the source, will result in a decrease in the volatilization of solvents from streams and POTWs.

B. Noise

None of the wastewater treatment processes cause significant objectionable noise.

C. Radiation

None of the treatment processes pose any potential radiation hazards.

D. Solid Waste

EPA has considered the effect these proposed regulations would have on the accumulation of hazardous waste, as defined under Section 3001 of the Resource Conservation and Recovery Act (RCRA). EPA estimates that the proposed BPT and BAT limitations will not contribute to additional solid wastes. However, proposed PSES will increase the solid wastes by approximately 165,000 metric tons per year. This sludge will necessarily contain additional quantities (and concentrations) of toxic metal pollutants.

EPA's Office of Solid Waste has analyzed the solid waste management and disposal costs required by the industry's compliance with RCRA requirements and has published some results in 45 CFR 33066 (May 19, 1980). In addition, RCRA costs have been included in the costs and economic impact analysis during the development of this proposed regulation.

E. Energy Requirements

EPA estimates that achieving the proposed BPT and BAT effluent limitations will not increase electrical energy consumption.

The Agency estimates that proposed PSES will increase electrical energy consumption by approximately 142 million kilowatt-hours per year. For a typical existing indirect discharger, this will increase energy consumption less than one percent of the total energy consumed for production.

The energy requirements for NSPS and PSNS are estimated to be similar to the energy requirement for BAT. However, this can only be quantified in kwh/year after projections are made for new plant construction.

XIII. Best Management Practices (BMPs)

Section 304(e) of the Clean Water Act authorizes the Administrator to prescribe "best management practices" ("BMPs"). EPA may develop BMPs that apply to all industrial sites or to a designated industrial category, and may offer guidance to permit authorities in establishing management practices required by unique circumstances at a given plant.

Although EPA is not proposing them at this time, future BMPs could require dikes, curbs, or other measures to contain leaks and spills, and could require the treatment of toxic pollutants in these wastes.

XIV. Upset and Bypass Provisions

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

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

EPA has both upset and bypass provisions in NPDES permits, and the NPDES portions of the Consolidated Permit regulations include upset and bypass permit provisions. See 40 CFR Part 122.60, 44 FR 32854, 32862–3 (June 7, 1979). The upset provision establishes an upset as an affirmative defense to prosecution for violation of technology-

based effluent limitations. The bypass provision authorizes bypassing to prevent loss of life, personal injury, or severe property damage. Since permittees in the metal finishing industry are entitled to the upset and bypass provisions in NPDES permits, this proposed regulation does not repeat these provisions.

XV. Variances and Modifications

When the final regulation for a point source category is promulgated, subsequent Federal and State NPDES permits to direct dischargers must enforce the effluent standards. Also, the pretreatment limitations apply directly to indirect dischargers.

The only exception to the BPT effluent limitations is EPA's "fundamentally different factors" variance. See *E. I. duPont de Nemours and Co.* v. *Train, supra; Weyerhaeuser Co.* v. *Costle, supra.* This variance recognizes characteristics of a particular discharger in the category regulated that are fundamentally different from the characteristics considered in this rulemaking. Although this variance clause was set forth in EPA's 1973–1976 industry regulations, it now is not necessary to include in this proposed regulation. See 40 CFR Part 125.30.

Dischargers subject to the BAT limitations are also eligible for EPA's "fundamentally different factors" variance. BAT limitations *for nonconventional pollutants* may be modified under Sections 301(c) and 301(g) of the Act. These statutory modifications do not apply to toxic or conventional pollutants. According to Section 301(j)(1)(B), applications for these modifications must be filed within 270 days after promulgation of final effluent limitations and standards. See 43 FR 40859 (Sept. 13, 1978).

Indirect dischargers subject to PSES are eligible for the "fundamentally different factors" variance and for credits for toxic pollutants removed by POTW. See 40 CFR 403.7; 403.13; 46 FR 9404 (January 28, 1981). Indirect dischargers subject to PSNS are only eligible for the credits provided for in 40 CFR 403.7. New sources subject to NSPS are not eligible for EPA's "fundamentally different factors" variance or any statutory or regulatory modifications. See *E. I. duPont de Nemours* v. *Train, supra.*

XVI. Relation to NPDES Permits

The BPT, BAT and NSPS in this regulation will be applied to individual metal finishing plants through NPDES permits issued by EPA or approved State agencies under Section 402 of the Act. The preceding section of this preamble discussed the binding effect of this regulation on NPDES permits, except when variances and modifications are expressly authorized. This section adds more detail on the relation between this regulation and NPDES permits.

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

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

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

XVII. Summary of Public Participation

In June 1980, EPA circulated a draft technical document to a number of interested parties including the National Association of Metal Finishers, the Natural Resources Defense Council (NRDC), the Environmental Defense Fund, and Citizens for a Better Environment Romicon, 3M, OXY Metal Industries, Ford Motor Company, General Motors, Whirlpool, Olin, General Electric, and many other metal finishers and electroplaters.

This document did not include recommendations for effluent limitations, pretreatment standards, or new-source performance standards. Rather, it presented the technical basis for the proposed regulation. EPA's responses to these comments and additional written comments are summarized below:

(1) Comment. A firm that uses multistage precipitation preceding the sedimentation may have a better—but more costly—Option 1 system than a firm that does not use this.

Response: The selection or modification of a treatment system is the choice of the discharger. While multistage precipitation may achieve better effluent at a higher cost, the limitations can and are being met using single-stage precipitation. Consideration of additional costs for modified systems that may achieve better effluent quality is inappropriate. However, if specific site conditions—not considered in developing this regulation—make achieving the limits infeasible, the applicant may apply for a "fundamentally different factors" variance.

(2) Comment. Does the Option 2 system produce significantly better quality effluent than the Option 1 system?

Response: The difference between Options 1 and 2 is the use of filtration. Generally, adding filtration to precipitation—clarification increases the reduction in average effluent concentration of pollutants by approximately 29 percent. On the other hand, filtration does not remove very much relative to raw waste. Option 1 removes 97.6% of the raw waste, while Option 2 removes 98.3%. This very small additional removal was a significant factor in the Agency's decision to propose limits based on Option 1.

(3) Comment. Must the Option 1 treatment system for common metals use continuous process equipment?

Response: The discharger may select a batch or continuous treatment system. Generally, batch systems are more economical at low flow rates. In costing treatment systems for economic impact analysis, we chose the lower cost system.

(4) Comment. One commenter was concerned about analytical methods for determining oil and grease. The nonpolar materials, which do not readily biodegrade, cause visible sheens to surface water, affect color and taste,

and impair performance of biological treatment plants through sludge settling properties and equipment fouling. The polar materials are readily biodegradable and have proved desirable feed materials to POTW. If the POTW can provide the biological uptake, logically, the industrial standard should be applicable only to the polar fraction of oil and grease.

Response: For indirect dischargers, this nonpolar/polar distinction is not a relevant issue. Oil and grease is not regulated for pretreatment, since, at the levels generally discharged by this industry, it is considered compatible with treatment by POTWs. For direct dischargers this proposed regulation does limit oil and grease. Direct dischargers do not have the benefit of further biological treatment by a POTW, therefore both the polar and nonpolar components of oil and grease are regulated. Because both components must be controlled, separate regulation of both components would only burden industry with additional monitoring requirements.

(5) Comment. According to the draft development document, a large percentage (40 percent or more) of the hot dip galvanizers have zero discharge—an obviously wrong conclusion. However, if the data in the tables refer to the discharge from only the part of the operation that includes the actual coating and quenching (i.e., excluding cleaning and prefluxing), the numbers are realistic.

Response: The Agency has modified the development document to clarify that the "Determination of Zero Discharge Operations" table for hot dip coating does not include cleaning and prefluxing before coating.

(6) Comment. The discussion of Zero Discharge would be clearer if it was entitled, "Percentage Recycle of Process Water Used." When the metal finisher thinks of zero discharge, he thinks of zero discharge to air, water, and land.

Response: "Zero discharge" refers to pollutant discharge to navigable waters. We have modified sections of the development document to clarify this point. The Agency understands that zero discharge to waters of the United States does not imply zero discharge of pollutants to the total environment.

(7) Comment. Raw waste characteristics were selected as the basis for categorization, yet they were neglected in the data analysis. The data presented in the draft development document show that the raw waste load affects the effluent concentration for copper, chromium, and zinc. A technology-based standard must include a discussion of efficiencies, treatment process, mass loading, and flow patterns on flow-proportioned effluent concentration data.

Response: The effect of raw waste concentration on effluent levels is not clear in cases involving chromium, copper, and zinc effluent data. In all three cases, numerous points with raw waste loads greater than 10 mg/1 had effluent values that were less than the respective means. EPA sampled several zinc coating plants with properly operated treatment facilities and found that 35 data points complied with the zinc daily maximum, while long-term self-monitoring data for such plants showed a 99.7% compliance (1,211 of 1,222 days of monitoring.) Similarly, for copper, EPA's sampling data showed 46 points of 48 in compliance while long-term data showed a 99.1% compliance (2,642 of 2,665 days of monitoring.) The chromium numbers were 37 of 37 and 99.7% long-term compliance (3,561 out of 3,570 monitoring days). The most important criterion to be used in assessing a technology-based standard is the ability of the technology to consistently achieve the calculated performance levels. Analysis of the available data indicates that except for plants whose treatment operations demonstrated poor control of pH and effluent TSS, all plants can meet the indicated performance levels.

(8) Comment. The total toxic organics parameter (TTO) is meaningless and unusable, because:

- Individual toxic organic pollutants can require different unit processes for removal; and
- It does not correlate with toxic effects on a water body. (1 mg/l of dioxin and 1 mg/l of benzene both have the same TTO value, but they differ considerably in degree of danger); and
- It does not simplify the analysis; all individual contributors must be checked. While an additive figure may simplify recordkeeping, this is not worth sacrificing meaningful data.

Response: We believe that plants should not dump waste solvent degreasers such as trichloroethylene; 1,1,1, trichloroethane; tetrachloroethylene; methylene chloride; benzene; and toluene into effluent wastewaters. Analyses of raw waste streams in the metal finishing industry showed concentrations of 34 different toxic organics at levels greater than 1 mg/1, as well as measurable concentrations of other toxic organics. Because of the disparate and infrequent presence in waste streams of many of the 34 toxic organics, EPA decided that statistically supportable individual concentration limits were inappropriate. Consequently, we investigated the total toxic organic limitation approach. The Agency found that:

- Toxic organics in metal finishing wastewaters can be controlled by plant procedures and by the treatment system for metals removal—additional unit treatment processes for specific organics are unnecessary; and
- Statistically verifiable limitations for TTO could be derived from the available 70 samples of influent and effluent data obtained at plants with precipitation clarification treatment.

Althought the TTO limitation does not simplify the analysis, we do propose procedures to minimize the monitoring requirements. The Agency has noted that toxic organics in metal finishing effluents occur not by reaction but because the plant uses them in process operations. For metal finishing plants, a toxic organic must be monitored only if it is in the solvent degreasers, the oil formulations, or other process solutions and the facility does not certify these toxics are not being dumped into the wastewater. This criterion may totally eliminate the need for monitoring toxic organics at many facilities.

(9) Comment. Does any analytical methodology exist for determining total toxic organics, or is the value derived by analyzing for all toxic organics and then summing the concentrations? The total organics concept is not really developed nor is its use as an "indicator" parameter supported.

Response: The value for TTO is determined by analyzing for all appropriate toxic organics and summing the concentrations. It is not used as an indicator but, rather, as a direct measurement of the pollutants of concern.

(10) Comment. The draft development document does not adequately consider the solid waste aspects of pretreatment—especially the cost of sludge disposal and treatment. Many firms are finding that they must go out of State or long distances (frequently greater than 300 miles) to dispose of their solid wastes generated by the pretreatment requirements in effect in many localities. A more complete description of the requirements of the RCRA regulations and their applicability to the metal finishing industry is recommended.

Response: The Agency is aware that sludge disposal problems arise directly from treating wastewater for metals, and we dealt with this in depth after the June 1980 draft report was issued. The draft report did include costs for sludge disposal. We further evaluated the RCRA aspects of metal hydroxide sludges and calculated the incremental

cost of compliance with RCRA. This cost is included in the economic impact analysis.

The Agency agrees that landfills for sludge disposal may not be readily available in all regions of the country. An EPA study entitled "Hazardous Waste Generation and Commercial Hazardous Waste Management Capacity—An Assessment" describes the availability of hazardous waste storage in the various regions of the country. We anticipate that, over time, market forces will cause a more convenient distribution of hazardous waste sites. Copies of this EPA study may be obtained by requesting publication number SW–894 from Mr. Curtis Haymore, Office of Management, Information and Analysis (WH–562) U.S. EPA; 401 M. St., S.W., Washington, D.C. 20460.

(11) Comment. The development document relies entirely on one-day samples, although the proposal is to control a plant's limits for 30 days.

Response: The Agency recognized a need for long-term data and requested 1 year of self-monitoring data from over 100 facilities. These data were not available for the contractor's draft report but have now been incorporated in the proposed development document.

We calculated limitations for 30-day averages using variability factors derived from long-term self-monitoring data. These data sets contained up to 359 days of sampling for a single plant.

(12a) Comment. The daily maximum limit for cadmium was taken at the 50th percentile. These data do not represent cadmium users. Trace amounts of cadmium are expected even though the manufacturer does not use cadmium. These data should be reexamined and the limit reset at the 90th percentile.

Response: The Agency agrees that the cadmium values in the draft report do not accurately reflect the effluent streams of significant cadmium platers. To correct this deficiency, the Agency requested facilities plating cadmium to supply long-term self-monitoring data. On the basis of this new data, we adjusted the daily maximum for cadmium from 0.04 mg/l in the contractor's report to 1.29 mg/l in this proposed regulation.

(12b) Comment. According to the metal hydroxide solubility curves, lead is not effectively removed by hydroxide precipitation. The only way to meet effluent limits is to prevent it from entering the system, rely on dilution effects, or use recovery. The percentage of lead in the effluent will be a function of both the types of process solutions and the materials handled. The lead data should be examined and the limit reset at the 90 percentile.

Response: Along with our reevaluation of cadmium data (Comment 12a), we similarly reevaluted the effluent lead concentrations. On the basis of industry supplied self-monitoring data, we adjusted the effluent concentrations from a daily maximum of 0.15 mg/l (in the contractor's report) to 0.67 mg/l.

(13) Comment. Sodium borohydride and sodium bicarbonate have been shown to be effective in removing cadmium and lead from wastewaters. Final metal concentrations that are lower than concentrations achievable by conventional hydroxide precipitation have been found.

Response: Although the limitations are based on results from plants using hydroxide precipitation, the choice of treatment technology is left to the discharger. Although the technologies examined in the development document are extensive, they are not meant to represent all feasible technologies.

XVIII. Solicitation of Comments

EPA invites and encourages public participation in this rulemaking. The Agency asks that comments address specific deficiencies in the record of this proposal and that suggested revisions or corrections be supported by data.

EPA particularly solicits additional comments and information on the following issues:

(1) To regulate the broad array of toxic organics, TTO has been selected as the control parameter. However, self-monitoring for TTO is expensive. To minimize the costs, EPA is allowing an alternative to self-monitoring. Plants can identify toxic organics used and certify proper disposal. If monitoring is conducted, it may be limited to only those toxic organics used by the facility. Is this a proper approach to control toxic organics?

(2) Most metal finishing facilities currently do not dump waste toxic organics, i.e., solvent degreasers, into wastewater. With the profitability of reclaim and the availability of compliance by certification, the Agency does not consider the cost of TTO control to be significant. Does any evidence indicate that the cost of this control is significant?

(3) EPA requests data on the performance capability of the new source technology basis for controlling the discharge of cadmium.

(4) The maximum permissible average for thirty consecutive days is based on the 99 percentile for the average of thirty values. A thirty day maximum is consistent with most Effluent Guidelines and Standards, and provides a measure of the long-term treatment performance. However, the Electroplating pretreatment standards are based on four day averages. Should EPA retain the thirty day maximums? Why or why not?

(5) EPA requests comments on whether it should rescind the applicability of the Electroplating PSES (40 CFR Part 413) to captive electroplaters upon the compliance date of the Metal Finishing PSES (40 CFR Part 433).

(6) The compliance date for Electroplating PSES is March 30, 1984 for integrated facilities, and January 28, 1984 for non-integrated facilities. Both Metal Finishing and Electroplating are primarily based on the same technology; precipitation and clarification, with cyanide destruction and hexavalent chromium reduction. Thus today's Metal Finishing Standards should not require extensive modification of treatment equipment installed to meet the Electroplating PSES. Do facilities have sufficient time to comply with Metal Finishing PSES by March 30, 1984?

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

List of Subjects

40 CFR Part 413

Electroplating, Metals, Water pollution control, Waste treatment and disposal.

40 CFR Part 433

Metals, Water pollution control.

(Sec. 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)

Dated: August 11, 1982.

John W. Hernandez, Jr.,
Acting Administrator

XIX. Appendixes

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

Act—The Clean Water Act.

Agency—The U.S. Environmental Protection Agency.

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

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

BMPS—Best management practices under Section 304(e) of the Act.

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

Captive—A facility which owns more than 50% (area basis) of the materials undergoing metal finishing.

Clean Water Act (also "the 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).

Development Document—*Development Document for Effluent Limitations, Guidelines, and Standards for the Metal Finishing Point Source Category*, EPA 440-1-80-091-A, June 1980.

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

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

Job Shop—A facility which owns not more than 50% (area basis) of the materials undergoing metal finishing.

Integrated facility—One that performs electroplating operations (including electroplating, electroless plating, chemical etching and milling, anodizing, coating, and printed circuit board manufacturing) as only one of several operations necessary for manufacture of a product at a single physical location, and has significant quantities of process wastewater from non-electroplating operations. In addition, to quality as "integrated," a facility must combine one or more plant electroplating process wastewater line before or at the point of treatment (or proposed treatment) with one or more plant sewers carrying process wastewater from nonelectroplating manufacturing operations.

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

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

POTW—Publicly owned treatment works.

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

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

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

TTO—Total Toxic Organics is the summation of all values greater than 10 micrograms per liter for each of the toxic organics.

Appendix B—Pollutants Excluded From Regulation

(1)Toxic Pollutants
Antimony
Arsenic
Asbestos
Beryllium
Mercury
Selenium
Thallium
(2) Conventional Pollutants
BOD
Fecal Coliform

Appendix C—Unit Operations in the Metal Finishing Industry

1. Electroplating
2. Electroless Plating
3. Anodizing
4. Conversion Coating
5. Etching (Chemical Milling)
6. Cleaning
7. Machining
8. Grinding
9. Polishing
10. Tumbling
11. Burnishing
12. Impact Deformation
13. Pressure Deformation
14. Shearing
15. Heat Treating
16. Thermal Cutting
17. Welding
18. Brazing
19. Soldering
20. Flame Spraying
21. Sand Blasting
22. Other Abrasive Jet Machining
23. Electric Discharge Machining
24. Electrochemical Machining
25. Electron Beam Machining
26. Laser Beam Machining
27. Plasma Arc Machining
28. Ultrasonic Machining
29. Sintering
30. Laminating
31. Hot Dip Coating
32. Sputtering
33. Vapor Plating
34. Thermal Infusion
35. Salt Bath Descaling
36. Solvent Degreasing
37. Paint Stripping
38. Painting
39. Electrostatic Painting
40. Electropainting
41. Vacuum Metalizing
42. Assembly
43. Calibration
44. Testing
45. Mechanical Plating

PART 413—ELECTROPLATING POINT SOURCE CATEGORY

For the reasons stated above, EPA proposes to amend Part 413 of 40 CFR, Chapter I as follows:

1. Section 413.01 is amended by revising paragraph (a), as follows:

§ 413.01 Applicability.

(a) This part shall apply to electroplating operations in which metal is electroplated on any basis material and to related metal finishing operations as set forth in the various subparts, whether such operations are conducted in conjunction with electroplating, independently or part of some other operation. The compliance deadline for metals and cyanide at integrated facilities shall be March 30, 1984. The compliance date for metals and cyanide at non-integrated facilities is January 28, 1984. Compliance with TTO for both integrated and non-integrated facilities shall be January 28, 1984.

* * * * *

2. Section 413.02 is amended by adding new paragraph (i), (j), and (k), as follows:

§ 413.02 General definitions.

* * * * *

(i) The term "TTO" shall mean total toxic organics, which is the summation of all values greater than 0.01 milligrams per liter for the following toxic organics:

Acenaphthene
Acrolein
Acrylonitrile
Benzene
Benzidine
Carbon tetrachloride (tetrachloromethane)
Chlorobenzene
1,2,4-trichlorobenzene
Hexachlorobenzene
1,2,-dichloroethane
1,1,1-trichloroethane
Hexachloroethane
1,1-dichloroethane
1,1,2-trichloroethane
1,1,2,2-tetrachloroethane
Chloroethane
Bis (2-chloroethyl) ether
2-chloroethyl vinyl ether (mixed)
2-chloronaphthalene
2,4,6-trichlorophenol
Parachlorometa cresol
Chloroform (trichloromethane)
2-chlorophenol
1,2-dichlorobenzene
N-nitrosodi-n-propylamine
Pentachlorophenol
Phenol
Bis (2-ethylhexyl) phthalate
Butyl benzyl phthalate
Di-n-butyl phthalate
Di-n-octyl phthalate
Diethyl phthalate
Dimethyl phthalate
1,2-benzanthracene (benzo(a)anthracene)
Benzo(a)pyrene (3,4-benzopyrene)
3,4-Benzofluoranthene (benzo(b)fluoranthene)
11,12-benzofluoranthene (benzo(k)fluoranthene)
Chrysene

Acenaphthylene
Anthracene
1,12-benzoperylene
(benzo(ghi)perylene)
Fluorene
Phenanthrene
1,2,5,6-dibenzanthracene
(dibenzo(a,h)anthracene)
Indeno(1,2,3-cd) pyrene
(2,3-o-phenylene pyrene)
Pyrene
Tetrachloroethylene
Toluene
1,3-dichlorobenzene
1,4-dichlorobenzene
3,3-dichlorobenzidine
1,1-dichloroethylene
1,2-trans-dichloroethylene
2,4-dichlorophenol
1,2-dichloropropane
(1,3-dichloropropene)
2,4-dimethylphenol
2,4-dinitrotoluene
2,6-dinitrotoluene
1,2-diphenylhydrazine
Ethylbenzene
Fluoranthene
4-chlorophenyl phenyl ether
4-bromophenyl phenyl ether
Bis (2-chloroisopropyl) ether
Bis (2-chloroethoxy) methane
Methylene chloride
(dichloromethane)
Methyl chloride
(chloromethane)
Methyl bromide (bromomethane)
Bromoform (tribromomethane)
Dichlorobromomethane
Chlorodibromomethane
Hexachlorobutadiene
Hexachlorocyclopentadiene
Isophorone
Naphthalene
Nitrobenzene
2-nitrophenol
4-nitrophenol
2,4-dinitrophenol
4,6-dinitro-o-cresol
N-nitrosodimethylamine
N-nitrosodiphenylamine
Trichloroethylene
Vinyl chloride (chloroethylene)
Aldrin
Dieldrin
Chlordane (technical mixture and
metabolites)
4,4-DDT
4,4-DDE (p,p-DDX)
4,4-DDD (p,p-TDE)
Alpha-endosulfan
Beta-endosulfan
Endosulfan sulfate
Endrin
Endrin aldehyde
Heptachlor
Heptachlor epoxide
(BHC-hexachlorocyclohexane)
Alpha-BHC
Beta-BHC
Gamma-BHC
Delta-BHC
(PCB-polychlorinated biphenyls)
PCB-1242 (Arochlor 1242)
PCB-1254 (Arochlor 1254)
PCB-1221 (Arochlor 1221)
PCB-1232 (Arochlor 1232)
PCB-1248 (Arochlor 1248)
PCB-1260 (Arochlor 1260)
PCB-1016 (Arochlor 1016)
Toxaphene
2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)

(j) The term "job shop" shall mean a facility which owns not more than 50% (area basis) of the materials undergoing metal finishing.

(k) The term "independent" printed circuit board manufacturer shall mean a facility which manufactures printed circuit boards principally for sale to other companies.

3. Part 413 is further amended by adding § 413.03 as follows:

§ 413.03 Monitoring requirements.

In lieu of monitoring for TTO, the control authority may allow industrial users to make the following certification as a "comment" to the periodic reports required by § 403.12(e): "I certify that, since filing the last periodic report, toxic organic compounds have not entered the wastewater in quantities that will exceed the discharge limits for TTO." In requesting this alternative procedure the industrial user shall specify the toxic organic compounds used; the purposes for which they are used, e.g., solvent degreasing, and paint stripping; and the procedures used (i.e., contract hauling of waste solvents) to prevent excessive wastewater discharge of toxic organics. If monitoring is necessary to measure compliance with the TTO standard, it may be limited to the specific compounds likely to be present.

4. Section 413.14 is amended by adding paragraph (f), as follows:

§ 413.14 Pretreatment standards for existing sources.

* * * * *

(f) In addition to paragraph (a), (b), (c), (d) and (e) the following limitation shall apply:

SUBPART A—COMMON METALS FACILITIES PSES (MILLIGRAMS PER LITER)

Pollutant or pollutant property	Maximum for any 1 day
TTO	0.58

5. Section 413.24 is amended by adding paragraph (f), as follows:

§ 413.24 Pretreatment standards for existing sources.

* * * * *

(f) In addition to paragraph (a), (b), (c), (d) and (e) the following limitation shall apply:

SUBPART B—PRECIOUS METAL FACILITIES PSES (MILLIGRAMS PER LITER)

Pollutant or pollutant property	Maximum for any 1 day
TTO	0.58

6. Section 413.44 is amended by adding paragraph (f), as follows:

§ 413.44 Pretreatment standards for existing sources.

* * * * *

(f) In addition to paragraph (a), (b), (c), (d), and (e) the following limitation shall apply:

SUBPART D—ANODIZING FACILITIES PSES (MILLIGRAMS PER LITER)

Pollutant of pollutant property	Maximum for any 1 day
TTO	0.58

7. Section 413.54 is amended by adding paragraph (f), as follows:

§ 413.54 Pretreatment standards for existing sources.

* * * * *

(f) In addition to paragraph (a), (b), (c), (d), and (e) the following limitation shall apply:

SUBPART E—COATING FACILITIES PSES (MILLIGRAMS PER LITER)

Pollutant of pollutant property	Maximum for any 1 day
TTO	0.58

8. Section 413.64 is amended by adding paragraph (f), as follows:

§ 413.64 Pretreatment standards for existing sources.

* * * * *

(f) In addition to paragraph (a), (b), (c), (d), and (e) the following limitation shall apply:

SUBPART F—CHEMICAL ETCHING AND MILLING FACILITIES PSES (MILLIGRAMS PER LITER)

Pollutant of pollutant property	Maximum for any 1 day
TTO	0.58

9. Section 413.74 is amended by adding paragraph (f), as follows:

§ 413.74 Pretreatment standards for existing sources.

* * * * *

(f) In addition to paragraph (a), (b), (c), (d), and (e) the following limitation shall apply:

SUBPART G—ELECTROLESS PLATING FACILITIES PSES (MILLIGRAMS PER LITER)

Pollutant or pollutant property	Maximum for any 1 day
TTO	0.58

10. Section 413.84 is amended by adding paragraph (f), as follows:

§ 413.84 Pretreatment standards for existing sources.

* * * * *

(f) In addition to paragraph (a), (b), (c), (d) and (e) the following limitation shall apply:

SUBPART H—PRINTED CIRCUIT BOARD FACILITIES PSES (MILLIGRAMS PER LITER 1)

Pollutant or pollutant property	Maximum for any 1 day
TTO	0.58

EPA proposes to add Part 433 to Title 40 of the Code of Federal Regulations to read as follows:

PART 433—METAL FINISHING POINT SOURCE CATEGORY

Subpart A—Metal Finishing Subcategory

Sec.

Authority: Secs. 301, 304 (b), (c), (e), and (g), 306 (b) and (c), 307 (b) and (c), and 501 of the Clean Water Act (the Federal Water Pollution Control Act Amendments of 1971, as amended by the Clean Water Act of 1977) (the "Act"); 33 U.S.C. 1311, 1314 (b), (c), (e), and (g), 1316 (b) and (c), 1317 (b) and (c), and 1361; 86 Stat. 816, Pub. L. 92-500; 91 Stat. 1567, Pub. L. 95-217.

Subpart A—Metal Finishing Subcategory

§ 433.10 Applicability; description of the metal finishing point source category.

(a) The provisions of this subpart apply to discharge from the following metal finishing operations: Electroplating, Electroless Plating, Anodizing, Conversion Coating, Etching (Chemical Milling), Cleaning, Machining, Grinding, Polishing, Tumbling, Burnishing, Impact Deformation, Pressure Deformation, Shearing, Heat Treating, Thermal Cutting, Welding, Brazing, Soldering, Flame Spraying, Sand Blasting, Other Abrasive Jet Machining, Electric Discharge Machining, Electrochemical Machining, Electron Beam Machining, Laser Beam Machining, Plasma Arc Machining, Ultrasonic Machining, Sintering, Laminating, Hot Dip Coating, Sputtering, Vapor Plating, Thermal Infusion, Salt Bath Descaling, Solvent Degreasing, Paint Stripping, Painting, Electrostatic Painting Electropainting, Vacuum Metalizing, Assembly, Calibration, Testing, and Mechanical Plating.

(b) Operations similar to metal finishing which are specifically excepted from coverage of this Part include: (1) Electrowinning and electrorefining conducted as a part of nonferrous metal smelting and refining (40 CFR 421); (2) Metal surface preparation and conversion coating conducted as a part of coil coating (40 CFR 465); (3) Metal surface preparation and immersion plating or electroless plating conducted as a part of procelain enameling (40 CFR Part 466); (4) electrodeposition of active electrode materials, electroimpregnation, and electroforming conducted as a part of battery manufacturing (40 CFR Part 461); (5) Metallic platemaking and gravure cylinder preparation conducted within printing and publishing facilities; (6) facilities which do not perform at least one of the following: electroplating, electroless plating, anodizing, coating, chemical etching and milling, or printed circuit board manufacture; and (7) existing source job shops and independent printed circuit board manufactures which introduce pollutants into a publically owned treatment works.

(c) The compliance date for BAT shall be no later than July 1, 1984. For PSES the compliance date shall be March 30, 1984. Compliance with the TTO provision of PSES is required by January 28, 1984.

§ 433.11 Specialized definitions.

The definitions set forth in 40 CFR 401 and the chemical analysis methods set forth in 40 CFR 136 are both incorporated here by reference. In addition, the following definitions apply to this part:

(a) The term "T," as in Cyanide, T, shall mean total.

(b) The term "captive" shall mean a facility which owns more than 50% (area basis) of the materials undergoing metal finishing.

(c) The term "job shop" shall mean a facility which owns not more than 50% (area basis) of the materials undergoing metal finishing.

(d) The term "integrated facility" shall mean one that (1) performs electroplating operations (including electroplating, electroless plating, chemical etching and milling, anodizing, coating, and printed circuit board manufacturing) as only one of several operations necessary for manufacture of a product at a single physical location and (2) has significant quantities of process wastewater from non-electroplating manufacturing operations. In addition, to qualify as "integrated" a facility must combine one or more plant electroplating process wastewater lines before or at the point of treatment (or proposed treatment) with one or more plant sewers carrying process wastewater from non-electroplating manufacturing operations.

(e) The term "TTO" shall mean total toxic organics, which is the summation of all values greater than 10 micrograms per liter for the following toxic organics:

Acenaphthene
Acrolein
Acrylonitrile
Benzene
Benzidine
Carbon tetrachloride (tetrachloromethane)
Chlorobenzene
1,2,4-trichlorobenzene
Hexachlorobenzene
1,2-dichloroethane
1,1,1-trichloroethane
Hexachloroethane
1,1-dichloroethane
1,1,2-trichloroethane
1,1,2,2-tetrachloroethane
Chloroethane
Bis (2-chlorethyl) ether
2-chloroethyl vinyl ether (mixed)
N-nitrosodi-n-propylamine
Pentachlorophenol
Phenol
Bis (2-ethylhexyl) phthalate
Butyl benzyl phthalate
Di-n-butyl phthalate
Di-n-octyl phthalate
Diethyl phthalate
Dimethyl phthalate
1,2-benzanthracene (benzo(a)anthracene)
Benzo(a)pyrene (3,4-benzopyrene)
3,4-Benzofluoranthene (benzo(b)fluoranthene)
11,12-benzofluoranthene (benzo(k)fluoranthene)
Chrysene

Acenaphthylene
Anthracene
1,12-benzoperylene (benzo(ghi)perylene)
Fluorene
2-chloronaphthalene
2,4,6-trichlorophenol
Parachlorometa cresol
Chloroform (trichloromethane)
2-chlorophenol
1,2-dichlorobenzene
1,3-dichlorobenzene
1,4-dichlorobenzene
3,3-dichlorobenzidine
1,1-dichloroethylene
1,2-trans-dichloroethylene
2,4-dichlorophenol
1,2-dichloropropane(1,3-dichloropropene)
2,4-dimethylphenol
2,4-dinitrotoluene
2,6-dinitrotoluene
1,2-diphenylhydrazine
Ethylbenzene
Fluoranthene
4-chlorophenyl phenyl ether
4-bromophenyl phenyl ether
Bis (2-chloroisopropyl) ether
Bis (2-chloroethoxy) methane
Methylene chloride (dichloromethane)
Methyl chloride (chloromethane)
Methyl bromide (bromomethane)
Bromoform (tribromomethane)
Dichlorobromomethane
Chlorodibromomethane
Hexachlorobutadiene
Hexachlorocyclopentadiene
Isophorone
Naphthalene
Nitrobenzene
2-nitrophenol
4-nitrophenol
2,4-dinitrophenol
4,6-dinitro-o-cresol
N-nitrosodimethylamine
N-nitrosodiphenylamine
Phenanthrene
1,2,5,6-dibenzanthracene (dibenzo(a,h) anthracene
Indeno (1,2,3-cd) pyrene (2,3-o-phenylene pyrene)
Pyrene
Tetrachloroethylene
Toluene
Trichloroethylene
Vinyl chloride (chloroethylene)
Aldrin
Dieldrin
Chlordane (technical mixture and metabolites)
4,4-DDT
4,4-DDE (p,p-DDX)
4,4-DDD (p,p-TDE)
Alpha-endosulfan
Beta-endosulfan
Endosulfan sulfate
Endrin
Endrin aldehyde
Heptachlor
Heptachlor epoxide (BHC-hexachlorocyclohexane)
Alpha-BHC
Beta-BHC
Gamma-BHC
Delta-BHC (PCB-polychlorinated biphenyls)
PCB-1242 (Arochlor 1242)
PCB-1254 (Arochlor 1254)
PCB-1221 (Arochlor 1221)
PCB-1232 (Arochlor 1232)
PCB-1248 (Arochlor 1248)
PCB-1260 (Arochlor 1260)
PCB-1016 (Arochlor 1016)
Toxaphene
2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)

§ 433.12 Monitoring requirements.

(a) In lieu of monitoring for TTO, the permit authority may allow direct dischargers to include the following certification as a "comment" on the discharge monitoring report required by § 122.62(i): "I certify that, since filing the last discharge monitoring report, toxic organic compounds have not entered the wastewater in quantities that will exceed the discharge limits for TTO." In requesting this alternative procedure the discharger shall specify the toxic organic compound used and the procedures used (i.e., contract hauling of waste solvents) to prevent excessive wastewater discharge of toxic organics. If monitoring is necessary to measure compliance with the TTO standard, it may be limited to the specific compounds likely to be present.

(b) In lieu of monitoring for TTO, the control authority may allow industrial users to make the following certification as a "comment" to the periodic reports required by § 403.12(e): "I certify that, since filing the last periodic report, toxic organic compounds have not entered the wastewater in quantities that will exceed the discharge limits for TTO." In requesting this alternative procedure the industrial user shall specify the toxic organic compounds used; the purposes for which they are used, e.g., solvent degreasing, and paint stripping; and the procedures used (i.e., contract hauling of waste solvents) to prevent excessive wastewater discharge of toxic organics. If monitoring is necessary to measure compliance with the TTO standard, it may be limited to the specific compounds likely to be present.

(c) Self-monitoring for cyanide must be conducted after cyanide treatment and before dilution with other streams. Alternatively, samples may be taken of the final effluent, if the plant limitations are adjusted based on the dilution ratio of the cyanide waste stream flow to the effluent flow.

§ 433.13 Effluent limitations representing the degree of effluent reduction attainable by applying the best practicable control technology currently available (BPT).

(a) Except as provided in 40 CFR 125.30–32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by applying the best practicable control technology currently available (BPT):

BPT EFFLUENT LIMITATIONS

[Milligrams per liter (mg/l)]

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed
Cadmium (T)	1.29	0.27
Chromium (T)	2.87	0.80
Copper (T)	3.72	1.09
Lead (T)	0.67	0.23
Nickel (T)	3.51	1.26
Silver (T)	0.44	0.13
Zinc (T)	2.64	0.80
Cyanide (T)	1.30	0.28
TTO	0.58	
Oil and grease	42	17
TSS	61	23
pH	(1)	

[1] Within 6.0 to 9.0.

(b) No user subject to the provisions of this subpart shall augment the use of process wastewater or otherwise dilute the wastewater as a partial or total substitute for adequate treatment to achieve compliance with this limitation.

§ 433.14 Effluent limitations representing the degree of effluent reduction attainable by applying the best available technology economically achievable (BAT).

(a) Except as provided in 40 CFR 125.30–32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by applying the best available technology economically achievable (BAT):

BAT EFFLUENT LIMITATIONS

[Milligrams per liter (mg/l)]

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed
Cadmium (T)	1.29	0.27
Chromium (T)	2.87	0.80
Copper (T)	3.72	1.09
Lead (T)	0.67	0.23
Nickel (T)	3.51	1.26
Silver (T)	0.44	0.13
Zinc (T)	2.64	0.80
Cyanide (T)	1.30	0.28
TTO	0.58	

(b) No user subject to the provisions of this subpart shall augment the use of process wastewater or otherwise dilute the wastewater as a partial or total substitute for adequate treatment to achieve compliance with this limitation.

§ 433.15 Pretreatment standards for existing sources (PSES).

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

PSES FOR ALL PLANTS EXCEPT JOB SHOPS AND PRINTED CIRCUIT BOARD MANUFACTURERS

[Milligrams per liter (mg/l)]

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed
Cadmium (T)	1.29	0.27
Chromium (T)	2.87	0.80
Copper (T)	3.72	1.09
Lead (T)	0.67	0.23
Nickel (T)	3.51	1.26
Silver (T)	0.44	0.13
Zinc (T)	2.64	0.80
Cyanide (T)	1.30	0.28
TTO	0.58	

(b) No user introducing wastewater pollutants into a publicly owned treatment works under the provisions of this subpart shall augment the use of process wastewater as a partial or total substitute for adequate treatment to achieve compliance with this standard.

§ 433.16 New source performance standards (NSPS).

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

NSPS

[Milligrams per liter (mg/l)]

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed
Cadmium (T)	0.064	0.018
Chromium (T)	2.87	0.80
Copper (T)	3.72	1.09
Lead (T)	0.67	0.23
Nickel (T)	3.51	1.26
Silver (T)	0.44	0.13
Zinc (T)	2.64	0.80
Cyanide (T)	1.30	0.28
TTO	0.58	
Oil and grease	42	17
TSS	61	23
pH	(1)	

[1] Within 6.0 to 9.00.

(b) No user subject to the provisions of this subpart shall augment the use of process wastewater or otherwise dilute the wastewater as a partial or total substitute for adequate treatment to achieve compliance with this limitation.

§433.17 Pretreatment standards for new sources (PSNS).

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

PSNS

[Milligrams per liter (mg/l)]

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed
Cadmium (T)	0.064	0.018
Chromium (T)	2.87	0.80
Copper (T)	3.72	1.09
Lead (T)	0.67	0.23
Nickel (T)	3.51	1.26
Silver (T)	0.44	0.13
Zinc (T)	2.64	0.80
Cyanide (T)	1.30	0.28
TTO	0.58	

(b) No user subject to the provisions of this subpart shall augment the use of process wastewater or otherwise dilute the wastewater as a partial or total substitute for adequate treatment to achieve compliance with this limitation.

§ 433.18 [Reserved]

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