

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 125 and 423

[WH-FRL 2238-2]

Steam Electric Power Generating Point Source Category; Effluent Limitations Guidelines, Pretreatment Standards and New Source Performance Standards

AGENCY: Environmental Protection
Agency (EPA).

ACTION: Final rule.

SUMMARY: This regulation limits the discharge of pollutants into navigable waters and into publicly owned treatment works by existing and new sources of steam electric power plants. The Clean Water Act and a Settlement Agreement require EPA to issue this regulation.

The purpose of this regulation is to revise and supplement effluent limitations for "best practicable technology" (BPT), "best available technology" (BAT), "new source performance standards" (NSPS) for direct dischargers, and pretreatment standards for new and existing indirect dischargers.

This regulation relates only to the discharge of toxic and other chemical pollutants; EPA is not issuing regulations for thermal discharges at this time. The Agency is also reserving coverage of "best conventional pollutant control technology" (BCT).

DATES: In accordance with 40 CFR 100.01 (45 FR 26048), the regulations developed in this rulemaking shall be considered issued for purposes of judicial review at 1:00 p.m. Eastern time on December 3, 1982. These regulations shall become effective on [44 days after publication date], except for: 40 CFR 423.13(d)(3) and 423.15(j)(3) which concern certification alternatives to monitoring requirements; 40 CFR 423.12(a) which concerns the fundamentally different factors variance for BPT, and the chlorination demonstration language appearing at 40 CFR 423.13(c)(2) and (d)(2), 423.15(h)(2), (i)(2), and (j)(2). These provisions will be submitted to the Office of Management and Budget for approval under the Paperwork Reduction Act. The compliance date for the newly issued PSNS and NSPS regulation is the date that the new source commences discharge. The compliance date for BAT and PSES is July 1, 1984.

Under Section 509(b)(1) of the Clean Water Act judicial review of this regulation can be made only by filing a

petition for review in the United States Court of Appeals within 90 days after these regulations are considered issued for purposes of judicial review. Under Section 509(b)(2) of the Clean Water Act, the requirements of the regulations may not be challenged later in civil or criminal proceedings brought by EPA to enforce these requirements.

ADDRESSES: The record for this rulemaking will be available for public review within four weeks after the date of publication in EPA's Public Information Reference Unit, Room 2004 (Rear) (EPA Library), 401 M Street, SW., Washington, D.C. The EPA information regulation (40 CFR Part 2) provides that a reasonable fee may be charged for copying.

Technical information may be obtained by writing to Dennis Ruddy, Effluent Guidelines Division (WH-552), EPA, 401 M Street, SW., Washington, D.C. 20460, or calling (202) 382-7165. Copies of the technical development and economic documents may be obtained from the National Technical Information Service, Springfield, Virginia 22161 (703) 487-6000.

FOR FURTHER INFORMATION CONTACT: For general and technical information contact Dennis Ruddy at (202) 382-7165. For information concerning the economic impact analysis contact Jeannie Austin at (202) 382-2724.

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I. Legal Authority

This regulation is being promulgated under the authority of Sections 301, 304, 306, 307, 308, and 501 of the Clean Water Act (the Federal Water Pollution Control Act Amendments of 1972, Pub. L. 92-500 as amended by the Clean Water Act of 1977, Pub. L. 95-217 (the "Act"). These regulations are also promulgated in compliance with the Settlement Agreement in *Natural Resources Defense Council v. Train*, 8 ERC 2120 (D.D. C. 1976), modified at 12 ERC 1833 (D.D.C. 1979).

II. Scope of this Rulemaking

The purpose of this rulemaking is to revise the effluent limitations for BAT, NSPS, pretreatment standards for existing sources (PSES), and pretreatment standards for new sources (PSNS), under Sections 301, 304, 306, 307, and 501 of the Clean Water Act.

These final regulations apply to processes used in the steam electric power generating industry. This industry is composed of facilities that are engaged in the generation of electricity for distribution and sale, and use either fossil-type fuel (coal, oil, or gas) or nuclear fuel in conjunction with a thermal cycle that has a steam/water thermodynamic medium. Together these processes make up the steam electric category (Standard Industrial Classification (SIC) Major Group 4900), and relate specifically to both the Electric Services (SIC 4911) and the Electric and Other Services Combined (SIC 4931) subgroups.

There are approximately 850 steam electric power plants in the United States representing a total of over 450 gigawatts (GW). A more detailed discussion of the industry is presented in the preamble to the proposed regulation of October 14, 1980 (45 FR 68330).

EPA's 1973 to 1976 rulemaking efforts emphasized the achievement of best practicable control technology currently available (BPT) by July 1, 1977. In general, BPT represents the average of the best existing performances of well-known technologies for control of traditional (i.e., "classical") pollutants.

In contrast, this round of rulemaking aims for the achievement by July 1, 1984, of the best available technology economically achievable (BAT) that will result in reasonable further progress toward the national goal of eliminating the discharge of all pollutants. At a minimum BAT represents the best economically achievable performance in any industrial category or subcategory. Moreover, as a result of the Clean Water

Act of 1977, the emphasis of EPA's program has shifted from "classical" pollutants to the control of a lengthy list of toxic pollutants.

Previously promulgated BAT, NSPS, PSES, and PSNS are amended by these final regulations. The regulations promulgated today establish new and revised limitations, standards, and prohibitions to control the 126 toxic pollutants, iron, total residual chlorine (total residual oxidants), free available chlorine, total suspended solids, oil and grease, and pH. In addition, the BPT limitations are amended to allow concentration based limitations to be included in permits. The coverage of today's rulemaking is for the following types of waste streams:

- (1) Once through cooling water
- (2) Cooling tower blowdown
- (3) Fly ash transport water
- (4) Bottom ash transport water
- (5) Chemical metal cleaning wastes
- (6) Low volume wastes
- (7) Coal pile runoff

EPA is reserving effluent limitations for four types of wastewaters for future rulemaking. These four waste streams are:

- (1) Non-chemical metal cleaning wastes
- (2) Flue gas desulfurization waters
- (3) Runoff from materials storage and construction areas (other than coal storage)
- (4) Thermal discharges.

Additionally, all best conventional technology (BCT) limitations will be repropoed for the reasons described in Sections III and V.

III. Summary of Legal Background

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)). To implement the Act, EPA was to issue effluent standards, pretreatment standards, and new source performance standards for industrial dischargers.

The Act included a timetable for issuing these standards. However, EPA was unable to meet many of the deadlines and, as a result, in 1976, it was sued by several environmental groups. In settling this lawsuit, EPA and the plaintiffs executed a court-approved "Settlement Agreement." This Agreement required EPA to develop a program and adhere to a schedule in promulgating effluent limitations guidelines, pretreatment standards, and new source performance standards for 65 "priority" pollutants and classes of pollutants 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).

Many of the basic elements of this Settlement Agreement program were incorporated into the Clean Water Act of 1977 ("the Act"). Like the Settlement Agreement, the Act stressed control of the "priority" pollutants. In addition, to strengthen the toxic control program, section 304(e) of the Act authorizes the Administrator to prescribe "best management practices" (BMP) to prevent the release of toxic and hazardous pollutants from plant site runoff, spillage or leaks, sludge or waste disposal, and drainage from raw material storage associated with, or ancillary to, the manufacturing or treatment process.

Under the Act, the EPA program is to set a number of different kinds of effluent limitations. These are discussed in detail in the preamble to the 1980 proposal and the technical development document supporting these regulations. The following is a brief summary:

1. *Best Practicable Control Technology Currently Available (BPT)*. BPT Limitations generally are based on the average of the best existing performance at plants of various sizes, ages, and unit processes within the industry or subcategory. In establishing BPT limitations, EPA considers the total cost of applying the technology in relation to the effluent reduction derived, the age of equipment and facilities involved, the process employed, the engineering aspects of the control technologies, process changes and non-water-quality environmental impacts (including energy requirements). The total cost of applying the technology is balanced against the effluent reduction.

2. *Best Available Technology Economically Achievable (BAT)*. BAT limitations, in general, represent the best existing performance in the industrial subcategory or category. The Act establishes BAT as the principal national means of controlling the direct discharge of toxic and nonconventional pollutants to navigable waters. In arriving at BAT, the Agency considers the age of the equipment and facilities involved, the process employed, the engineering aspects of the control technologies, process changes, the cost of achieving such effluent reduction, and non-water quality environmental impacts. The Administrator retains considerable discretion in assigning the weight to be accorded these factors.

3. *Best Conventional Pollutant Control Technology (BCT)*. The 1977 Amendments added section 301(b)(2)(E) to the Act establishing "best conventional pollutant control

technology" (BCT) for discharges of conventional pollutants from existing industrial point sources. Conventional pollutants are those defined in section 304(a)(4) (biochemical oxygen demanding pollutants (e.g., BOD₅), total suspended solids (TSS), fecal coliform and pH) and any additional pollutants defined by the Administrator as "conventional," i.e., oil and grease. See 44 FR 44501; July 30, 1979.

BCT is not an additional limitation but replaces BAT for the control of conventional pollutants. In addition to other factors specified in section 304(b)(4)(B), the Act requires that BCT limitations be assessed in light of a two part "cost-reasonableness" test. *American Paper Institute v. EPA*, 660 F.2d 954 (4th Cir. 1981). The first test compares the cost for private industry to reduce its conventional pollutants with the cost to publicly owned treatment works (POTWs) for similar levels of reduction in their discharge of these pollutants. The second test examines the cost-effectiveness of additional industrial treatment beyond BPT. EPA must find that limitations are "reasonable" under both tests before establishing them as BCT. In no case may BCT be less stringent than BPT.

EPA published its methodology for carrying out the BCT analysis on August 29, 1979 (44 FR 50732). In the case mentioned above, the Court of Appeals ordered EPA to correct data errors underlying EPA's calculation of the first test, and to apply the second cost test. (EPA had argued that a second cost test was not required). On October 29, 1982 the Agency proposed a revised BCT methodology. See 47 FR 49176. As discussed later, we are deferring promulgation of BCT limitations so that we can apply the revised methodology to the technologies available for control of conventional pollutants in this industry. However, comments on the BCT methodology must be submitted during the comment period for the October 29, 1982 BCT proposal.

4. *New Source Performance Standards (NSPS)*. NSPS are based on the best available demonstrated technology. New plants have the opportunity to install the best and most efficient production processes and wastewater treatment technologies.

5. *Pretreatment Standards for Existing Sources (PSES)*. PSES are designed to control the discharge of pollutants that pass through, interfere with, or are otherwise incompatible with the operation of a publicly owned treatment works (POTW). They must be achieved within three years of promulgation. The Clean Water Act of 1977 requires

pretreatment for pollutants that pass through the POTWs in amounts that would violate direct discharger effluent limitations or interfere with the POTW's treatment process or chosen sludge disposal method. The legislative history of the Act indicates that pretreatment standards are to be technology-based, analogous to the best available technology. EPA has generally determined that there is pass through of pollutants if the percent of pollutants removed by a well-operated POTW achieving secondary treatment is less than the percent removed by the BAT model treatment system. The general pretreatment regulations, which served as the framework for the categorical pretreatment regulations, are found at 40 CFR Part 403 (43 FR 27736, June 26, 1978; 46 FR 9462 January 28, 1981).

6. *Pretreatment Standards for New Sources (PSNS)*. Like PSES, PSNS are to control the discharge of pollutants to POTWs which pass through, interfere with, or are otherwise incompatible with the operation of the POTW. PSNS are to be issued at the same time as NSPS. New indirect dischargers, like new direct dischargers, have the opportunity to incorporate the best available demonstrated technologies. The Agency considers the same factors in promulgating PSNS as it considers in promulgating PSES.

IV. Prior Regulations and Methodology and Data Gathering Efforts

A. *Prior Steam Electric Regulations*. EPA promulgated BPT, BAT, NSPS, and PSNS for the steam electric point source category on October 8, 1974 (39 FR 36186, as amended at 40 FR 7095, February 19, 1975; 40 FR 23987, June 4, 1975) (the "1974 regulations"). The 1974 regulations covered two basic kinds of pollution from power plants: (1) Thermal pollution (discharges of heat) and (2) chemical pollution (e.g., discharges of chlorine, phosphorous, PCBs, suspended solids). Chemical limitations were written for the following waste streams: once-through cooling water, cooling tower blowdown, bottom ash transport water, fly ash transport water, boiler blowdown, metal cleaning wastes, low volume wastes, and material storage and construction runoff (including coal pile runoff).

On July 16, 1976, the U.S. Court of Appeals for the Fourth Circuit remanded the following provisions of the 1974 regulations: (1) The thermal limitations, (2) the NSPS for fly ash transport water, (3) the rainfall runoff limitations for material storage and construction site runoff, and (4) the BPT variance clause. All other provisions of the regulations were upheld. *Appalachian Power v.*

Train, 545 F.2d 1351 (4th Cir. 1976). EPA repromulgated the coal pile runoff regulations in 1980. 45 FR 37432 (June 3, 1980). See Section XII concerning the BPT variance clause).

EPA promulgated pretreatment standards for existing sources (PSES) on March 23, 1977 (42 FR 15695) in partial response to the Settlement Agreement. The PSES covered copper present in metal cleaning wastes, PCBs, and oil and grease.

Revised BAT, NSPS, PSES and PSNS, and new BCT regulations were proposed on October 14, 1980. (45 FR 68328) (the "1980 proposal"). At the same time, the Agency proposed to change the subcategorization scheme, style and format for all of the existing regulations including the applicable BPT effluent limitations. (See Section V of this preamble). Thus, the final regulations appearing today contain both the 1974 and 1977 limitations that EPA did not change and the revised limitations that are the subject of this rulemaking. The new format, however, does not affect the previously promulgated limitations that are not amended. Consequently, they are not subject to judicial review.

B. *Methodology and Data Gathering Efforts*. The methodology and data gathering efforts used in developing the proposed regulations were discussed in the preamble to the 1980 proposal. In summary, before proposal, the Agency conducted a data collection program at 36 steam electric power plants. This program stressed the acquisition of data on the presence and treatability of the toxic pollutants. Analytical methods are discussed in *Sampling and Analysis Procedures for Screening of Industrial Effluents for Priority Pollutants* (U.S. EPA, April 1977). Based on the results of that program, EPA identified several distinct treatment technologies, including both end-of-pipe and in-plant technologies, that are or can be used to treat steam electric wastewaters.

For each of these technologies, the Agency (i) compiled and analyzed historical and newly-generated data on effluent quality, (ii) identified its reliability and constraints, (iii) considered the non-water quality impacts (including impacts on air quality, solid waste generation and energy requirements), and (iv) estimated the costs and economic impacts of applying it industrywide. Costs and economic impacts of the technology options considered are discussed in detail in *Economic Analysis of Final Effluent Limitations Guidelines, New Source Performance Standards and Pretreatment Standards for the Steam Electric Power Generating Point Source*

Category. A more complete description of the Agency's study methodology, data gathering efforts and analytical procedures supporting the regulation can be found in the *Development Document for Final Effluent Limitations Guidelines, New Source Performance Standards, and Pretreatment Standards for the Steam Electric Point Source Category*. (EPA 440/1-82/029).

After proposal, EPA conducted a telephone survey on dechlorination and gathered data on the treatment costs of gas-side washes. EPA also gathered more data to verify the costs of controlling chlorine; these data are reflected in a draft report prepared for EPA titled *Costs of Chlorine Discharge Control Options for Once Through Cooling Systems at Steam Electric Power Plants* dated October 2, 1981, and the final Development Document. As the new information was collected to respond to comments and to confirm the accuracy of earlier analyses, EPA did not take public comment on it. In addition, to confirm its analysis of the cost for new source fly ash disposal, EPA examined two reports. The first report is titled *Coal Ash Disposal Manual*, Electric Power Research Institute, Report #C52049, 1981. The second report is titled *Economics of Ash Disposal at Coal-Fired Power Plants*, EPA and TVA, Report #EPA 600/7-81-170, 1981.

V. Summary of Final Regulations and Changes From Proposal

A. *Subcategorization*

The 1974 regulations treated the steam electric industry as three subcategories: (1) Generating units; (2) small units; and (3) old units. This subcategorization scheme was based on considerations that related to thermal discharges. As discussed in the preamble to the 1980 proposal, the subcategorization scheme was changed to treat the entire industry as a single subcategory, with separate limitations for each type of waste stream. This was done because the Agency determined that: (1) Since the 1974 subcategorization scheme was based primarily upon thermal considerations, it was inappropriate to retain that scheme as no thermal limitations are being adopted at this time; and (2) the basic differences within and between plants can be accommodated by addressing individual types of waste streams within a single subcategory. A complete description and rationale for the new subcategorization scheme is presented in the Technical Development Document. No comments were received

opposing the changes; therefore, the final subcategorization scheme is the same as proposed.

B. Summary of Final Regulations and Changes From Proposal

This section first discusses requirements or issues pertaining to all wastestreams. Each regulated wastestream is then discussed in the following order: Once-through cooling water, cooling tower blowdown, fly ash transport water, bottom ash transport water, low volume wastes, metal cleaning wastes, and coal pile runoff. For each wastestream, a brief background is presented along with a discussion of the existing, proposed, and final limitations and an explanation of the changes from proposal. The discussion covers those previously promulgated limitations which are retained and the revisions being promulgated today.

1. *All Wastewater Streams.* (a) *Best Conventional Technology (BCT).* EPA proposed BCT limitations for TSS and oil and grease based on the "cost-reasonableness" test that was rejected in part in the *American Paper Institute v. EPA* case mentioned previously. Therefore, before promulgating BCT limitations, EPA must repropose them based on the revised BCT methodology proposed on October 29, 1982. See 47 FR 49176. In the interim, EPA is reserving BCT for the entire steam electric power industry. The Agency is also withdrawing the BAT limitations now in the Code of Federal Regulations for TSS and oil and grease since these pollutants are now regulated under BCT, not BAT.

(b) *Polychlorinated Biphenyl Compounds (PCBs).* The discharge of PCBs in any type of wastewaters from this industry is prohibited. This limitation was promulgated in 1974 and 1977 for BAT, NSPS, and PSES and EPA did not propose any changes in 1980 with the exception of adding PCB coverage for PSNS.

(c) *Commingling of Waste Streams.* Where two or more different types of waste streams are combined for treatment or discharge, the total allowable discharge quantity of each pollutant may not exceed the sum of the allowable amounts for each individual type of wastewater. This requirement was promulgated in 1974 and EPA did not propose any changes in 1980.

(d) *Mass Limitations and Concentration Limitations.* The existing and proposed regulations specified that permits were to be based on mass limitations to be calculated by multiplying flow by concentration. The final rule allows the permitting authority to establish either concentration or mass

limits for any effluent limitation or standard, based on the concentrations specified in the regulations. See Section IX of the preamble, "Response to Major Comments on the Proposed Regulation."

(e) *Pretreatment Standards for Existing Sources (PSES).* EPA is withdrawing the 1977 PSES requirement from oil and grease for all waste streams, as proposed in 1980. There was no PSS for oil and grease. The 1977 PSES limited oil and grease based upon a maximum concentration of 100 mg/l. The Agency has determined that, for this industry, this level is no longer appropriate because oil and grease levels in raw waste streams are most typically less than 100 mg/l. No lower level of control for oil and grease is being established for PSES because the Agency found that oil and grease at levels less than 100 mg/l does not interfere with or pass through POTWs.

2. *Once-Through Cooling Water.* (a) *Background.* In plants using once-through cooling systems, heated water passes through condensers before being discharged into the receiving water. The thermal efficiency of the steam cycle can be greatly reduced if biological growth (biofouling) occurs in the condenser. This is not a problem at all plants; however, 71 percent of the once-through cooling water generating capacity uses chlorine to control biofouling. Plants using chlorine have the potential to discharge total residual chlorine (TRC) and chlorinated compounds to receiving waters.

The two primary treatment options employed to reduce TRC discharges are "chlorine minimization" and dechlorination. Chlorine minimization, in essence, is a program designed to assure the most efficient use of chlorine to reduce the amount of TRC discharged. In such a program, plant personnel conduct certain tests to determine the minimum amount of chlorine necessary to control biofouling. Chlorination practices can then be adjusted in accordance with the test results. Continued monitoring and inspection of the condensers on a periodic basis is conducted to assure minimum chlorine use and proper operation.

Many power plants that undertake some form of chlorine minimization program find that they do not need to use additional chlorine removal technologies such as dechlorination. Their current chlorine usage can be reduced sufficiently to comply with effluent limitations without other methods or technologies for chlorine removal.

Dechlorination, the second technology option, entails the use of chemical

treatment devices that remove a significant amount of TRC from the cooling water before it is discharged from the plant. Most of the dechlorination processes use sulfur dioxide or sodium thiosulfate to accomplish TRC reduction.

The 1974 BPT, BAT, and NSPS limited free available chlorine (FAC) with mass limitations based upon 0.2 mg/l daily average concentration and 0.5 mg/l daily maximum concentration. Neither FAC nor TRC could be discharged from any single unit for more than two hours per day and multi-unit chlorination was prohibited. There was an exception from the latter requirements if the utility could demonstrate to the permitting authority that the units in a particular location could not operate at or below this level of chlorination.

(b) *Final Limitations. BAT and NSPS.* EPA is promulgating a daily maximum limitation for total residual chlorine (TRC) (also called total residual oxidants (TRO)) based upon a concentration of 0.20 mg/l, applied at the final discharge point to the receiving body of water. Each individual generating unit is not allowed to discharge chlorine for more than two hours per day, unless the discharger demonstrates to the permitting authority that a longer duration discharge is required for macroinvertebrate control. Simultaneous multi-unit chlorination or more than one generating unit is allowed.

The above limitation does not apply to plants with a total rated generating capacity of less than 25 megawatts. EPA is establishing BAT and NSPS equal to BPT for those plants.

PSES and PSNS. There are no categorical pretreatment standards for once through boiling water for PSES and PSNS, with the exception of the PCB prohibition. The PSES for oil and grease is withdrawn.

(c) *Changes From Proposal and Rationale.* (i) *BAT and NSPS.* For BAT and NSPS, EPA proposed to prohibit the discharge of total residual chlorine (TRC) unless facilities could demonstrate a need for chlorine to control condenser biofouling. Where such demonstrations were made, EPA proposed to limit the discharge to the minimum amount of TRC necessary to control biofouling, as determined by a chlorine minimization program. However, a maximum TRC limitation based upon a concentration of 0.14 mg/l at the point of discharge would have been established to be achieved either through chlorine minimization or dechlorination. In addition, EPA proposed to prohibit the discharge of TRC for more than two hours a day

unless the plant could show that chlorination for a longer period was necessary for crustacean control. Finally, the existing prohibition (1974) on simultaneous dechlorination of generating units would have been withdrawn.

Commenters raised a variety of issues, leading EPA to change the proposal substantially with respect to the TRC limitation, the two hour a day discharge requirement, and other requirements. These comments and the changes are discussed below.

Chlorine Limitation. Commenters stated that EPA has no authority to prohibit the use of chlorine or to require dischargers to conduct a chlorine minimization program. They also stated that the 0.14 mg/l maximum TRC limitation was not achievable by all sources. Some comments indicated a maximum 0.2 mg/l TRC concentration would be achievable; other comments said that BAT should equal BPT.

Under the proposed regulations all plants would have been required to reduce chlorine discharges to the maximum extent feasible. However, in reviewing the comments, the Agency concluded that the proposed approach deprived power plants of any flexibility in controlling chlorine discharges. Because it is the Agency's intent in the development of effluent limitations guidelines not to require reliance on only one technology where it can be reasonably avoided, the requirement that all plants institute chlorine minimization programs was deleted in the final regulation to provide more flexible alternatives to control chlorine discharges.

In assessing alternative approaches, the Agency initially considered requiring the maximum 0.14 mg/l TRC level but without requiring a mandatory chlorine minimization program. Based on the public comments, however, it appeared that the 0.14 mg/l limit would discourage use of chlorine minimization in favor of dechlorination. Industry commenters explained that many plants would still have to dechlorinate to meet the proposed limit even if they first minimized chlorine usage. If that were the case, it was stated the plants would rely on dechlorination exclusively to achieve the limits and not devote resources to a chlorine minimization program. However, if the final effluent limitations were based on 0.2 mg/l, the commenters generally believed that most plants could achieve the limit solely by chlorine minimization.

The Agency is establishing a 0.20 mg/l based limit because we think it is better, in the circumstances presented here, to establish a limitation that generally can

be met without chemical treatment rather than one which entails both the addition of chlorine and its subsequent removal by the addition of other chemicals used to dechlorinate. Consequently, the Agency concluded that a mass limitation based on 0.20 mg/l TRC concentration would allow plants flexibility while encouraging reliance on the preferable technology option—chlorine minimization.

We rejected the suggestion to promulgate BAT and NSPS to equal BPT. As described in Sections VI and IX and in the Development Document, the use of chlorine minimization and/or dechlorination is technically and economically achievable. Compliance with the final regulations will remove 13.5 million pounds of chlorine annually, beginning in 1985. Further, the new limitations will control total residual chlorine in this wastewater, as discussed in Section IX, TRC is a better measure of chlorine toxicity than free available chlorine (FAC). In view of all these factors and the absence of any significant economic impact, we have concluded that more stringent regulations are warranted under the Act.

Two Hour Chlorine Discharge Limit. The final rule also differs from the proposed rule on the two hour chlorine discharge limit. The Agency proposed to limit the discharge of chlorine to two hours per day per plant. We also proposed to relax the prohibition in the 1974 regulations on simultaneous chlorination of generating units because of our concern that some plants would not be able to adequately control biological growth on the condensers when limited to chlorine discharges to two hours per day for the entire facility.

The final regulations limit the duration of chlorine discharge to two hours per generating unit. For example, a plant with four units is allowed to discharge chlorine for a maximum of eight hours per day. This change is consistent with the BPT requirement and was made in response to comments that the proposed change would have disrupted the established chlorination operating procedures required by BPT and that significant expenditure of resources would have been required to comply with the proposed BAT requirement. Many plants installed chlorination systems capable of chlorinating only one unit at a time to comply with the 1974 BPT chlorine requirements. The proposed new BAT may have required those plants with single discharge points serving multiple units to significantly enlarge their existing chlorination facilities. The Agency believes there are no compelling reasons to require this

change for BAT or to set different limits for new sources.

Comments on the 1980 proposal supported the proposal to allow simultaneous chlorination. While we have deleted the proposed prohibition on the discharge of chlorine for more than two hours a day per plant, we have also decided to retain the proposal to allow simultaneous chlorination. The option to chlorinate generating units simultaneously will provide more operational flexibility to the discharger while maintaining the more stringent control of chlorine discharge with TRC limitations. For multi-unit discharges, these requirements will allow for natural chlorine demand to reduce chlorine discharge levels.

Crustacean Control. EPA proposed to allow an exception to the two hour a day chlorination limit if plants demonstrated that chlorination for a longer period of time was necessary for crustacean control. Because commenters pointed out that other macroinvertebrates besides crustaceans could impede the operation of the cooling tower, EPA is broadening the exception to cover macroinvertebrates.

(ii) **PSES/PSNS.** There were no changes in PSES and PSNS from the proposed regulation. No known facilities discharge once through cooling water to POTWs and none are known to be planned. These very high flow volumes would be unacceptable for discharge to POTWs.

3. Cooling Tower Blowdown. (a) **Background.** In this type of waste stream, the cooling water is recirculated several times before being discharged to receiving waters. This is accomplished through the use of mechanical or natural draft evaporative cooling towers. These large towers use fans or tower design to move air past the droplets or films of water to be cooled. The mechanism for cooling in both types of towers is water evaporation.

As in once-through cooling systems, EPA is concerned with the discharged of chlorine that is added to prevent biological growth in the condensers. In addition to chlorine, other chemicals may be added to control scaling, corrosion, and biofouling of the tower itself. The most common chemicals added (besides chlorine) are chromium and zinc. These chemicals are discharged in the cooling tower blowdown. There are about 300 plants with recirculating cooling systems; this represents 58 percent of the total generating capacity of steam electric power plants.

The 1974 BPT limits control free available chlorine (FAC) with mass

limitations based upon 0.2 mg/l daily average and 0.5 mg/l daily maximum concentrations. FAC and TRC discharges are limited to 2 hours per day per generating unit and simultaneous multi-unit chlorination is prohibited. The 1974 BAT and NSPS contain limitations equivalent to 1974 BPT, plus mass limitations for zinc, chromium, and phosphorous based upon concentrations of 1.0 mg/l, 0.2 mg/l, and 5.0 mg/l, respectively, and for PCBs. The 1974 PSNS contained no categorical pretreatment standards for cooling tower blowdown. The 1977 PSES limits oil and grease with a mass limitation based upon 100 mg/l and prohibits the discharge of PCBs.

The major technology options for this wastestream are dechlorination, chemical substitution, and chemical precipitation.

(b) *Final Limitations. BAT and NSPS. Chlorine.* EPA is promulgating BAT and NSPS limitations equivalent to the 1974 BAT and NSPS level of control. These limitations are based upon daily average and daily maximum concentrations for FAC of 0.2 mg/l and 0.5 mg/l, respectively.

Toxics. The discharge of one hundred twenty-four toxic pollutants is prohibited in detectable amounts from cooling tower discharges if the pollutants come from cooling tower maintenance chemicals. The discharger may demonstrate compliance with such limitations to the permitting authority by either routinely sampling and analyzing for the pollutants in the discharge, or providing mass balance calculations to demonstrate that use of particular maintenance chemicals will not result in detectable amounts of the toxic pollutants in the discharge. In addition, EPA is promulgating a daily maximum BAT limitation and NSPS for chromium and zinc based upon concentrations of 0.2 mg/l and 1.0 mg/l, respectively.

The existing limitation for phosphorous is deleted.

PSES and PSNS. The final regulations prohibit or limit the 126 toxic pollutants as discussed above for BAT and NSPS. Oil and grease PSES are withdrawn.

(c) *Changes from Proposal and Rationale. Chlorine.* For BAT and NSPS, EPA proposed a limitation on TRC discharges based upon a maximum concentration of 0.14 mg/l times flow. A chlorine minimization program was not required. The Agency also proposed to prohibit all discharges of cooling tower maintenance chemicals containing any of the 129 priority pollutants. Since then three of the 129 toxic pollutants have been "delisted." They are dichlorodifluoromethane,

trichlorofluoromethane, and bis-chloromethyl ether. See 46 FR 2266; 46 FR 10723.

Public comments opposed the limitations on chlorine, stating that the proposed limit was unachievable and would not result in any environmental benefit. We do not agree that the limit would be unachievable or result in no effluent reduction benefits; however we did reexamine the data pertaining to chlorine. We found that the flow of this waste stream was less than one percent of the once through cooling water flow. Further, less than 0.5 percent of the TRC which would be removed by regulating both cooling tower blowdown and once-through cooling water is attributable to cooling tower blowdown. We therefore concluded that the appropriate emphasis on chlorine control should be in the once-through cooling water waste stream and that BAT and NSPS for this waste stream should equal the previously promulgated BPT, BAT, and NSPS Limits. This will result in a cost savings of \$25 million in annual costs in 1985 and similar savings in future years.

Toxics. For BAT and NSPS, EPA proposed to prohibit any discharge of cooling tower maintenance chemical containing the 129 priority pollutants. The same prohibition was proposed for PSES and PSNS. Since equivalent pollutant removals are required for indirect and direct dischargers, EPA determined that a zero discharge pretreatment standard was the only means of assuring that no priority pollutant would pass through the POTW.

Commenters objected to the proposed zero discharge requirement for maintenance chemicals, raising concerns about the regulation of maintenance chemicals instead of priority pollutants and the means of measuring compliance with a zero discharge limit. In response, we have substituted "no detectable" for "zero discharge" and made clear that the limit applies to priority pollutants from maintenance chemicals, and not the chemicals themselves. EPA presently considers the nominal detection limit for most of the toxics to be 10 µg/l (i.e., 10 parts per billion). See, *Sampling and Analysis Procedures for Screening of Industrial Effluents for Priority Pollutants*, EPA, 1977.

Another concern expressed by commenters was that EPA did not account for those prohibited toxics that are present in new construction materials for cooling towers. For example, wooden supporting structures or other construction materials in new or rebuilt cooling towers may contain preservatives which contain trace

amounts of certain of the toxic pollutants. These may leach for a period of time from contact with the cooling water. The Agency recognizes such situations. Thus, the prohibition in the final rule, as in the proposed rule, is applicable only to pollutants that are present in cooling tower blowdown as a result of cooling tower maintenance chemicals.

Commenters also expressed concern over potentially substantial compliance costs in analyzing for the 129 toxic pollutants in their discharges. The Agency agrees that the costs of routine compliance monitoring for the toxics could be quite expensive, and that there are alternative compliance mechanisms. Therefore, as an alternative to routine monitoring by sampling and analysis of effluents, the final rule provides for mass balance calculations to demonstrate compliance with the prohibition. For example, the discharger may provide the certified analytical contents of all biofouling and maintenance formulations used and engineering calculations demonstrating that any of the priority pollutants present in the maintenance chemicals would not be detectable in the cooling tower discharge using appropriate analytical methods. The permit issuing authority shall determine the appropriate approach.

Many commenters also indicated that there are presently no acceptable substitutes for the use of chromium and zinc based cooling tower maintenance chemicals. The Agency agrees that adequate substitutes are not presently available for many facilities. This is due in part to site specific conditions, including cooling water intake quality and the presence of construction materials susceptible to fouling corrosion. Further, there is a potential for substitutes to be more toxic than the substances they are meant to replace. Therefore, the final BAT, NSPS and pretreatment standards allow for the discharge of chromium and zinc in cooling tower blowdown. The limitations are the same as those adopted in 1974 for BAT and are based upon pH adjustment, chemical precipitation, and sedimentation or filtration to remove precipitated metals.

No comments were received on the proposal to delete the phosphorous limitations; therefore, the final rule is the same as proposed.

4. *Fly Ash Transport.* (a) *Background.* Coal or oil that is burned in a boiler produces ash that requires disposal. The relatively fine and light-weight ash that is commonly discharged with the flue gases and collected with air pollution

equipment is called "fly ash." Fly ash enters the water primarily through dissolution of reactive compounds on the surface of the fly ash particles. Only plants handling fly ash using partially recirculating water or once-through water systems generate this type of wastewater.

The 1974 BPT and BAT regulations covered PCBs and contained mass limitations for several pollutants based on the following concentrations: total suspended solids at 30 mg/l daily average and 100 mg/l daily maximum; oil and grease at 15 mg/l daily average and 20 mg/l daily maximum. The 1974 NSPS required zero discharge based upon use of dry fly ash transport. (This standard was remanded in 1976). The 1974 PSNS contained no categorical pretreatment standards for the waste stream. The 1977 PSES contains a mass limit for oil and grease based upon a maximum concentration of 100 mg/l and a prohibition on the discharge of PCBs.

(b) *Final Limitations. BAT and PSES.* As discussed below, there are no BAT or PSES limitations for fly ash transport water, with the exception of the prohibition on discharges of PCBs. BAT limitations for conventional pollutants are withdrawn, as discussed earlier.

NSPS and PSNS. As discussed below, the final regulation prohibits the discharge of all pollutants from fly ash transport systems.

(c) *Changes From Proposal and Rational.* EPA determined at proposal that the available data regarding the degree of toxic pollutant reduction to be achieved beyond BPT were too limited to support national limitations.

Therefore, EPA did not propose BAT limitations or PSES for the priority pollutants. The Agency considered requiring a zero discharge option for existing sources but rejected it because the high cost of retrofitting does not justify the additional pollutant reductions beyond BPT. EPA did not receive any comments that we should establish BAT and revised PSES for the priority pollutants found in this wastestream. Therefore, no changes were made in the approach to BAT and PSES for the final rule. However, the Agency will be evaluating the level of control that is appropriate for conventional pollutants for BCT as discussed previously.

For NSPS and PSNS, the coverage of the proposal was ambiguous. The preamble and development document indicated that EPA was prohibiting all discharges of fly ash water. 45 FR 68338. However, the proposed regulatory language only prohibited the discharge of copper, nickel, zinc, arsenic, and selenium. It did not cover the remaining

toxic pollutants or conventional pollutants. Because the preamble correctly reflected EPA's intent, the final rule follows the preamble and not the proposed regulation. There is no practical difference between the two approaches since the fly ash technology option identified by EPA (dry fly ash transport systems) eliminates any discharge of wastewater whatsoever. The absence of any wastewater discharge means that all pollutants would be controlled, not just the five metals listed in the proposed regulation.

Comments were received concerning the proposed NSPA and PSNS but EPA did not make any changes as a result of them. The commenters stated that most new sources can meet the NSPS. However, they stated that EPA's cost estimates did not support the conclusion that the costs of dry and wet fly ash systems are not appreciably different. They also stated that EPA should provide a less stringent NSPS for those plants which could not meet the NSPS because of solid waste disposal constraints or air pollution problems.

We do not believe that less stringent NSPS or PSNS are warranted. Almost half of the existing plants already use dry fly ash systems; we are unaware of any particular technical, air pollution, disposal, or other problems they have encountered, or any reasons why all new plants cannot install dry fly ash systems. No specific examples or problems were given by the commenters. Further, as discussed in Section VI of this preamble, we believe the costs for wet and dry fly ash systems are comparable.

We believe that a zero discharge NSPS and PSNS is practicable and fully demonstrated for new sources. Many existing plants are achieving zero discharge and new plants are at least as capable of implementing dry fly ash systems. We estimate that a typical size new plant operating a dry fly ash handling system will reduce toxic metals discharges by approximately 4800 pounds per year beyond the BAT level of control. Therefore, we have determined that the nonwater quality environmental and energy impacts are reasonable in view of the effluent reduction that is achieved.

Finally, EPA has changed the definition of fly ash to include economizer ash where economizer ash is collected with fly ash. This change was not proposed; it is based on a comment which correctly pointed out that steam electric plants may collect economizer ash with either fly ash or bottom ash. The 1974 definition section, however, only included economizer ash in the bottom ash definition. Therefore,

we are changing both the definition of fly ash and bottom ash to resolve this problem. EPA is not providing the opportunity for comment since the change was made in response to public comment and is necessary to correct a prior oversight.

5. *Bottom Ash Transport Water.* (a) *Background.* Bottom ash refers to the relatively bulky and heavy ash that settles at the bottom of the boiler furnace. Approximately 70 plants currently transport their bottom ash using a dry system and report no discharge to the navigable waters.

Many plants recirculate their bottom ash transport water with a blowdown stream to control the buildup of dissolved solids. A completely recirculating system returns all of the ash sludge water to the ash collecting hoppers for repeated use in sluicing. A recirculating system can be operated at partial recirculation, usually from 12.5 to 25 times recycle, or operated with a complete recycle of bottom ash sludge water. The Agency has not identified any plants with complete recirculation except those in arid areas which had land available to evaporate all excess water.

The 1974 BPT regulations contain mass limitations for PCB and for several pollutants based on the following concentrations: total suspended solids of 30 mg/l daily average / 100 mg/l daily maximum and oil and grease of 15 mg/l daily average / 20 mg/l daily maximum. In addition, the pH is limited to within the range of 6.0 to 9.0. The 1974 BAT contains the same total suspended solids, oil and grease, pH and PCB limits as BPT, plus a recycle requirement of 12.5 cycles of bottom ash sludge water. The 1974 NSPS contains the same total suspended solids, oil and grease, and pH limits as BPT, plus a recycle requirement of 20 cycles of bottom ash sludge water. The 1974 PSNS do not contain any categorical pretreatment standards and the 1977 PSES contains a mass limitation for oil and grease based upon a maximum limitation of 100 mg/l, and prohibits the discharge of PCBs.

(b) *Final Limitations. BAT.* The final regulations contain BAT limitations for PCBs. The BAT limitations for conventional pollutants are withdrawn.

NSPS. The final regulations contain limitations for total suspended solids, oil and grease, PCBs, and pH equal to the existing BPT. The 1974 recycle requirement for 20 cycles of bottom ash sludge water is withdrawn.

PSES and PSNS. The final regulations contain categorical pretreatment requirements on PCBs for this

wastestream. PSES for oil and grease is withdrawn.

(c) *Changes From Proposal and Rationale.* EPA did not propose BAT limitations for the priority pollutants. Analysis of available wastewater sampling data did not indicate that a quantifiable reduction of toxic pollutants would be achieved by requiring technologies beyond the BPT level of control. These technologies include bottom ash recirculation systems and dry bottom ash transport systems. No comments were received objecting to the proposal; therefore, the final rule is the same as proposed. As explained before, EPA will examine conventional pollutant technology options in light of the revised BCT cost test.

For NSPS, PSES, and PSNS, no comments were received. Therefore, the proposed and final regulation are identical.

Finally, EPA is changing the definition of bottom ash for the reasons discussed in the previous section on fly ash.

6. *Low Volume Wastes.* (a) *Background.* Low volume wastes include boiler blowdown, wet air scrubber pollution control systems, ion exchange water treatment system discharges, water treatment evaporation blowdown, laboratory and sampling waste streams, floor drains, cooling tower basin cleaning wastes, and discharges from house service water systems.

The existing BPT, BAT, and NSPS regulation establishes mass limitations for conventional pollutants: (1) Total suspended solids based upon 30 mg/l daily average and 100 mg/l daily maximum concentrations; (2) oil and grease based upon 15 mg/l daily average and 20 mg/l daily maximum concentrations; and (3) pH between 6 and 9. There are no existing categorical pretreatment standards, with the exception of PCBs and oil and grease for PSES.

(b) *Final Limits.* EPA did not propose new or revised limitations for this waste stream with the exception of substituting BCT for the control of conventional pollutants instead of BAT and withdrawing the PSES for oil and grease. BCT limitations are now reserved. However, EPA changed the definition of low volume waste to include boiler blowdown and is withdrawing the separate regulations for boiler blowdown.

(c) *Changes from Proposal and Rationale.* EPA proposed to include boiler blowdown as a low volume waste. This represents a change in coverage from the 1974 regulation. Information collected and analyzed by

the Agency since 1974 led to the conclusion that there is no need to regulate boiler blowdown as a separate waste stream. Boiler blowdown is sufficiently similar in characteristics to the other specific types of low volume wastes. No commenters objected to the proposed change; therefore, the proposed and final rule are identical.

7. *Metal Cleaning Wastes.* (a) *Background.*—"Metal cleaning wastes" is the generic name for a class of waste streams which results from the cleaning of boiler tubes, air preheater wash water, and boiler fireside wash water. This may be accomplished with either chemical cleaning solutions such as acids, degreasers, and metal complexers, or with plant service water only.

The 1974 BPT and BAT limitations and NSPS contain mass limitations for several pollutants based on the following concentrations: total suspended solids of 30 mg/l daily average / 100 mg/l daily maximum; oil and grease of 15 mg/l daily average / 20 mg/l daily maximum; total copper of 1.0 mg/l daily average and daily maximum; total iron 1.0 mg/l daily average and daily maximum pH is limited within the range of 6.0 to 9.0. The discharge of PCBs is prohibited.

The 1974 PSNS contains no categorical pretreatment standards for this waste stream. The 1977 PSES contains: a mass limitation for total copper based upon a maximum concentration of 1.0 mg/l; a mass limitation for oil and grease based upon a maximum concentration of 100 mg/l; and a prohibition on the discharge of PCBs.

(b) *Final Limitations. Chemical Metal Cleaning Wastes. BAT.* With one exception, BAT is equal to the 1974 regulations. The BAT limitations for conventional pollutants are withdrawn since BAT no longer applies to them.

NSPS. There are no changes from the 1974 NSPS.

PSES and PSNS. The final PSES and PSNS contain a maximum concentration limitation of 1.0 mg/l for total copper, and prohibit the discharge of PCBs. The PSES for oil and grease is withdrawn.

Non-Chemical Metal Cleaning Wastes. BAT, NSPS, PSES and PSNS for this waste stream are reserved for future rulemaking.

(c) *Changes From Proposal and Rationale.* For chemical metal cleaning wastes, the final BAT, NSPS, PSES and PSNS are equivalent to the 1980 proposal. The 1980 proposal contained first time coverage of copper for PSNS and, for PSES, copper was changed from a mass-based limitation to a concentration limitation. Unlike the

existing regulations and the 1980 proposal, however, the requirements do not cover non-chemical metal cleaning wastes.

In the preamble to the 1980 proposal, EPA explained that the existing requirements applied to all metal cleaning wastes, whether the wastes resulted from cleaning with chemical solutions or with water only. EPA rejected an earlier guidance statement which stated that wastes from metal cleaning with water would be considered "low volume" wastes. However, because many dischargers may have relied on this guidance, EPA proposed in 1980 to adopt the guidance for purposes of BPT and to change the BPT limitation to apply only to "chemical" metal cleaning wastes. See 45 FR 68333 (October 14, 1980) for a full discussion of the issue.

Commenters argued that EPA's clarified interpretation of the existing regulations would result in extremely high compliance costs and were not supported by the record. In response to the comments, we examined the available data on waste characteristics of non-chemical metal cleaning wastes and the costs and economic impacts of controlling them. The data indicated that there was a definite potential for differences in concentration levels of inorganic pollutants depending on whether the plants were coal or oil-fired. Further, compliance with the existing effluent limitations and standards could be very costly and result in significant adverse economic impacts. However, the data were too limited for EPA to make a final decision.

EPA requested that the Utility Water Act Group provide specific, additional information. The data were submitted too late for the Agency to use at this time. Consequently, EPA is reserving BAT, NSPS, PSES and PSNS for non-chemical metal cleaning wastes in today's rule.

EPA is withdrawing the proposal to change the BPT definition of metal cleaning wastes. However, until the Agency promulgates new limitations and standards, the previous guidance policy may continue to be applied in those cases in which it was applied in the past.

8. *Coal Pile Runoff.* (a) *Background.* Area runoff limitations were promulgated in 1974. The 1974 regulations included coverage for materials storage, including coal, ash, and chemical storage, and runoff from construction area activities. In *Appalachian Power v. Train*, 545 F.2d 1351, 1378 (4th Cir. 1976) the Court remanded the area runoff regulations. In

1980, EPA repromulgated the 1974 coal pile runoff limitations but did not repromulgate any other area runoff limitations.

The BPT and BAT limitations and NSPS for coal pile runoff contain a maximum concentration limitation of 50 mg/l for total suspended solids and pH within the range 6.0 to 9.0. Any untreated overflow from a treatment facility sized to treat coal pile runoff which results from a 10 year-24 hour event is not subject to these 1974 limitations. The 1974 PSNS and 1977 PSES for coal pile runoff contain no limitations for specific pollutants.

(b) *Final Limits.* There are no changes to the existing regulations with the exception of the BAT limitations for conventional pollutants. The latter regulations are withdrawn since BAT limits no longer apply to conventional pollutants.

(c) *Changes From Proposal and Rationale.* EPA did not propose any changes to the existing coal pile runoff regulations with the exception of proposing BCT limitations to replace BAT. As stated previously, we are reserving BCT until we apply the revised BCT methodology to the technology options for controlling conventional pollutants.

VI. Costs and Economic Impact

The Agency's economic impact assessment is set forth in the *Economic Analysis of Final Effluent Limitations, New Source Performance Standards and Pretreatment Standards for the Steam Electric Power Generating Point Source Category*, (EPA 230/11-83/00). The report presents the detailed annualized and investment costs for the industry as a whole and for model plants covered in this regulation. Underlying cost data were obtained from the technical development document and supporting documents, while the economic impact assessment was developed based on an analysis of current and projected costs for the industry under this regulation.

Nationally, the total annual revenue requirements for this regulation range from \$11.5 million in 1985 to \$10.9 million in 1995 (1982 dollars) compared to baseline annual revenue requirements to \$120 to \$175 billion over this period. This range reflects the change in costs as old facilities retire and new facilities are added. This represents a nationwide average increase in consumer charges of less than one-tenth of one percent over that period. Through this period, 85 percent of these costs are for existing facilities. These costs are associated entirely with the BAT and NSPS limitations on total residual chlorine for once-through cooling water. It is

estimated that the regulation will result in the removal of 13.5 million pounds of total residual chlorine in 1985.

Limits for several waste streams beyond current limits are also being set, which provide no incremental cost over the existing regulatory requirements. For BAT and PSES, this regulation prohibits the discharge of 124 of the 126 toxic pollutants in detectable amounts for cooling water blowdown discharges. Substitutes for these heat exchanger maintenance chemicals are available which do not contain these toxics, and the cost differentials are minimal. For the other two toxics, chromium and zinc, mass limitations are being set equivalent to the existing BAT. Therefore, there are no new costs associated with this requirement.

While the final PSNS for chemical metal cleaning wastes contains first time coverage of copper, the copper limitation is no more stringent than the existing PSES. Therefore, there are no incremental costs for new source indirect dischargers as a result of this requirement.

An NSPS limitation and PSNS of zero discharge from fly ash disposal is also being promulgated, while BAT will be set equal to BPT for existing facilities. All existing plants must use either dry or wet fly ash disposal systems to dispose of their waste. Since EPA determined that there are no appreciable cost differences between dry and wet fly ash disposal systems, the economic analysis performed at proposal assumed that no incremental costs beyond BPT would be associated with meeting NSPS.

While stating that most new sources can meet the NSPS, commenters asserted that EPA's Development Document did not support the conclusion that the costs for both disposal systems are comparable. The final development Document indicates that the costs for plants of 500 MW or greater capacity are less for dry than for wet fly ash handling systems. This is confirmed by a recent TVA study, *Economics of Ash Disposal at Coal-Fired Power Plants*, EPA-600/7-81-170, October 1981. The Agency also believes that dry fly ash handling costs are no more than wet fly ash handling costs for smaller plants, but more detailed analyses are not available. The absence of analyses to confirm these conclusions is not critical because it is unlikely that plants smaller than 500 MW capacity will be built in the future. However, should the industry plan to build such smaller plants, and demonstrate that use of dry fly ash systems would pose a significant hardship when compared to the expense of a wet fly ash system, they may file a petition for rulemaking

concerning the suitability of these standards for smaller plants.

In summary, in the absence of case specific, contrary data, we have concluded that the costs of both systems are comparable. Thus, the NSPS requirement will add no incremental cost.

For all other waste streams, no new limitations or standards more stringent than existing requirements are established. Thus there are no other incremental costs associated with the regulation promulgated today.

Individual plants and utility systems which use once-through cooling water will bear somewhat varying costs in controlling chlorine, depending on the control technology used by those plants to meet the individual limits. Forty-two percent of the generating capacity uses recirculating cooling water and therefore faces no incremental compliance costs. Of the 58 percent of steam generating capacity that uses once-through cooling water, some plants do not find it necessary to use chlorine and therefore do not have to engage in a chlorine minimization program or use dechlorination or other chlorine reduction technologies. For those plants that are 25 MW or greater which will require the use of dechlorination, the most expensive compliance option, to meet the chlorine limitation, costs can range as high as 0.4 mills per kilowatt hour generated, representing up to 1 percent of the baseline generating costs for that facility. However, most plants which are of larger size will bear lower costs, ranging from 0.02 mills per kwh to 0.11 mills per kwh or less than one percent of baseline generating costs, even when they must use dechlorination.

Cost increases for a utility system represent the aggregate of control cost increases for all facilities in the system. The increases in cost for installing control technologies must be compared to the costs of generating power from all plants in that system to evaluate the effects of this regulation on the costs to a utility and to the consumer. As a result, the upper bound for increases in cost for a utility system is represented by assuming that all facilities in a system would install the most expensive control option.

Utility systems will generally bear costs which are lower than those faced by individual plants, since the regulation promulgated today will not likely require all facilities in a system to install the most expensive control technology. On a national basis, 29 percent of total generating capacity of plants with once through cooling water do not add

chlorine and therefore automatically meet the TRC limitation. Forty-five percent of this capacity can meet the limit through chlorine minimization while 26 percent must use dechlorination. Industry estimates state that a greater percentage of capacity will be able to meet the TRC limit by chlorine minimization than EPA has predicted.

However, single plants with less than 25 MW of capacity are projected to experience cost increases if required to install the most expensive technology, dechlorination. Their costs will range from 0.18 mills per kwh to 4.0 mills per kwh, depending on the amount of power generated from these facilities. This represents a disproportionate increase on this segment of the industry compared to all other facilities. EPA has identified 130 such plants; they constitute less than one percent of the total industry generation. These cost increases are estimated to represent up to a 10 percent increase in generating costs for those facilities. Furthermore, since many of these facilities are owned by utilities with few other power plants, the percentage increase in generating costs for these facilities is likely to represent actual percentage cost increases to the consumer. This is because the increase in generating costs will not be diluted by other plants owned by the same utility that have lower generating costs and compliance costs. Because there is no less stringent technology option between BPT and the final BAT, BAT will be set equal to BPT for these facilities to avoid the disproportionate costs to facilities and to the consumer.

As a result of this action, EPA does not expect any adverse economic impacts on a plant level or utility level to occur as a result of this regulation. This regulation also is not expected to affect employment and will result in a minimal increase in energy requirements.

VII. Nonwater Quality Environmental Impact

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

quality environmental programs. While it is difficult to balance pollution problems against each other and against energy use, the Agency is proposing regulations that it believes best serve often competing national goals.

The following are the nonwater quality environmental impacts associated with the final regulations:

A. Air Pollution.—Application of dry fly ash handling may cause a higher dust loading in localized areas around the fly ash transport transfer points. A baghouse or other type of dust collection system will minimize such impacts. The costs of such dust control systems are included in the economic analysis. Dry fly ash landfill sites are subject to dusting problems, especially in arid regions. Until the site can be sealed with a cap or vegetative cover, watering to control dust may be required.

B. Solid Waste.—No additional solid wastes are expected as a result of these regulations, including for dry fly ash transport and disposal. Further, fly ash, whether wet or dry, has a wide variety of industrial uses, such as fill or cover material, soil conditioners, roadway bases, drainage media, pozzolan, structural products, aggregate, grout, and metal extraction. Usage of this material eases disposal requirements.

C. Consumptive Water Loss.—Less consumptive water loss is expected from dry fly ash handling and disposal than wet fly ash handling and disposal because of less overall water usage. The amounts of water used for dust control in dry fly ash systems should be no more than the amounts of water consumed in wet fly ash transport and disposal.

D. Energy Requirements.—Additional energy requirements imposed by these regulations are due primarily to the pumping of dechlorination chemicals. These requirements are insignificant compared to a facility's power generating capacity, as indicated by information in the Development Document. Energy costs are no greater for dry fly ash systems than for wet fly ash systems.

VIII. Pollutants and Subcategories Not Regulated

The Settlement Agreement contains provisions authorizing the exclusion from regulation, in certain circumstances, of the 126 toxic pollutants for this industry. Paragraph 8(a)(iii) specifically authorizes the Administrator to exclude toxic pollutants from regulation for the following reasons: (a) Those not detectable by Section 304(h) analytical methods or other state-of-the-art methods; (b) those present in amounts

too small to be effectively reduced by available technologies; (c) those present only in trace amounts and neither causing nor likely to cause toxic effects; (d) those detected in the effluent from only a small number of sources within a subcategory and uniquely related to those sources; and (e) those that will be effectively controlled by the technologies on which other effluent limitations and standards are based.

Paragraph 8(b) of the Settlement Agreement authorizes the Administrator to exclude from regulation a category if: (i) 95 percent or more of all point sources in the subcategory introduce into POTWs only pollutants which are susceptible to treatment by the POTW and which do not interfere with, do not pass through, or are not otherwise incompatible with such treatment works; or (ii) the toxicity and amount of the incompatible pollutants introduced by such point sources into POTWs is so insignificant as not to justify developing a pretreatment regulation.

The pollutants and waste streams excluded from regulation on the basis of Paragraph 8 considerations are presented in Appendix A of this preamble for direct dischargers and indirect dischargers. A summary of the Paragraph 8 determinations by waste stream follows:

BAT, NSPS, PSES, PSNS

Once Through Cooling Water—The seven polychlorinated biphenyl compounds are regulated. The remaining 119 pollutants are excluded from regulation.

Cooling Tower Blowdown—All 126 toxic pollutants are regulated.

Low Volume Wastes—The seven polychlorinated biphenyl compounds are regulated. The remaining 119 pollutants are excluded from regulation.

Chemical Metal Cleaning Wastes—Copper and the seven polychlorinated biphenyl compounds are regulated. The remaining 118 pollutants are excluded from regulation.

Coal Pile Runoff—The seven polychlorinated biphenyl compounds are regulated. The remaining 119 pollutants are excluded from regulation.

Non-Chemical Metal Cleaning Wastes, Ash Pile Runoff, Chemical Handling Area Runoff, Construction Area Runoff. No Paragraph 8 determinations are made at this time because regulation of these waste streams is reserved for future rulemaking.

IX. Summary of Public Participation and Responses to Major Comments on the Proposed Regulation

On October 14, 1980, the Agency published proposed rules for effluent limitations guidelines, pretreatment standards, and new source performance standards under the Clean Water Act for the Steam Electric Power Generating Point Source Category. EPA also conducted technical workshops on the proposal in Chicago on December 2, 1980; Atlanta on December 5, 1980; and Boston on December 8, 1980. A public hearing was held in Washington, D.C. during the comment period on the pretreatment standards.

All comments received have been carefully considered, and appropriate changes in the regulations have been made whenever available data and information supported those changes. Major issues raised by commenters are addressed in Section V and this section. A summary of all the comments received and our detailed responses to all comments are included in a report, "Responses to Public Comments, Proposed Steam Electric Effluent Guidelines and Standards," which is a part of the public record for this regulation.

1. Comment: For BPT, EPA regulated free available chlorine (FAC) and not total residual chlorine (TRC). Several commenters stated that EPA should not change to controlling TRC.

Response: Chlorine may be present in the effluent as free available chlorine (FAC) or as combined residual chlorine (CRC). It may be measured as FAC, CRC, or total residual chlorine (TRC); the latter measures both CRC and FAC. EPA has determined that TRC is a more appropriate measure for chlorine than either FAC or CRC.

FAC is the most toxic pollutant of the three. However, CRC is also toxic to aquatic life.^{1 2 3} Limits on FAC alone would ignore the toxic contribution of CRC; therefore, EPA concluded that regulation of TRC would better protect aquatic life from the toxic effects of both FAC and CRC. For this same reason EPA based the EPA water quality criteria for chlorine on TRC rather than FAC or TRC.¹

The agency recognizes that FAC is used by plants to determine the amount of chlorine used in once through cooling water to control biofouling. However,

this does not mean that FAC is the proper parameter for measuring chlorine in the effluent for pollution control purposes.

2. Comment: One commenter requested that EPA interpret or amend the regulations to allow concentration based limitations to be established in permits instead of mass limitation and based upon concentration and flow. The main reason given by the commenter was that the highly variable nature of waste stream flows in electric power generating facilities makes it very difficult to select an appropriate flow upon which to base a mass based limit. This was said to be particularly true for ash sluice water. The commenter also raised the problem of measuring the contribution of flow to an ash pond from contaminated and noncontaminated runoffs.

Response: After reviewing the comment and consulting with permit writers familiar with power plants, we agree that the use of mass based limits in all circumstances is undesirable. The potentially large variations in flow makes it difficult in some cases to choose a representative flow. Incorrect selection of a representative flow may result in limits that are either too stringent or too lenient.

Accordingly, we have decided to give the permit writer the authority to incorporate either concentration based limits or mass based limits into the permit. Case-by-case determinations may be made, depending on the characteristics of the particular facility. We believe giving the permitting authority this flexibility will allow the choice of the most suitable limits for each plant, thereby promoting effluent reduction benefits. The Agency plans to prepare guidance for permit writers to further clarify the instances in which setting concentration or mass-based permit limitations is appropriate for the various fuel types (nuclear, coal, etc.) as well as types of waste streams.

We have changed the regulations to this effect. See, e.g., § 423.12(b)(11). In addition, where the permit contains concentration based limits at the outfall for a combined waste treatment facility (e.g. ash ponds), the permit writer may establish numerical limits and monitoring on the individual, regulated waste stream prior to their mixing. See 40 CFR 122.63(i). The use of concentration based limits may necessitate the internal monitoring of several waste streams (i.e., cooling tower blowdown, metal cleaning wastes) to ensure that the pollutants of concern are not diluted by other waste streams where commingling occurs.

Finally, it should be noted that the "actual production" rule in 40 CFR 122.63(b)(2) does not apply to this

industry since mass limitations, where used, are based on flow and concentrations, and not on production or other measures of operation.

These changes also apply to BPT permits since BPT permits may continue to be written for conventional pollutants until BCT limits are promulgated.

3. Comment: The proposed regulations require zero discharge of maintenance chemicals containing the 129 priority pollutants used in cooling towers and zero discharge of fly ash water. EPA has no authority under the Act to impose these restrictions without performing a cost/benefit analysis.

Response: EPA disagrees with this contention. We believe there is no statutory requirement to conduct a cost/benefit analysis for either BAT limits or NSPS. There is a requirement, however, to show that a zero discharge NSPS is practicable. EPA has made this finding for the pertinent wastestreams.

4. Comment: While admitting that a .2 mg/1 TRC concentration is generally achievable through dechlorination or chlorine minimization, commenters have argued that the data do not demonstrate that the limit is consistently achievable on a national basis. They assert that one Consumers' power plant and one Detroit Edison plant do not achieve .14 mg/1 TRC with dechlorination and therefore could not be expected to meet a 0.20 mg/1 standard. Further, they identify various operational problems and assert that site-specific factors could prevent some plants from achieving compliance. One commenter argued that a special mechanism must be established to allow higher limitations for those plants that could not meet the limit.

Response: EPA has reviewed all the available data on plants using dechlorination and found that the three Consumers power plants as well as several others are attaining a .20 mg/1 TRC concentration through dechlorination. In 1980 the Detroit Edison plant exceeded .20 mg/1 on numerous occasions but by 1981 had improved its performance significantly. Therefore, its more recent experience is consistent with that of the other plants that are dechlorinating. Many other plants are achieving .20 mg/1 TRC through minimization.

We see no reason why all plants could not meet the 0.20 mg/1 standard. The operational difficulties the commenters have identified have not prevented them from attaining 0.20 mg/1 TRC, and have been fully addressed in the Development Document and Response to Comments Document. The commenters even acknowledge that these limits are attained by make-shift, primitive systems; should they improve these systems, even better performance

¹ Quality Criteria for Water, EPA, July 1976.

² Chlorine Toxicity in Aquatic Ecosystems, Turner and Thayer, 1980.

³ Chlorine Toxicity as a Function of Environmental Variables and Species Tolerance, Edison Electric Institute, November, 1981.

should be achieved. Further, because the dechlorination technology basically involves the addition of chemicals, no special geographic or site specific factors are expected to affect performance. (Indeed, plants EPA has identified as successfully achieving 0.20 mg/l TRC are located in geographically diverse sections of the country.) Therefore, as explained more fully in the "Response to Comments" Document and Development Document, EPA has determined that the final TRC limitations can be achieved on a nationwide basis. Therefore, we believe the proposal to allow plants to exempt themselves from the TRC limitation is unnecessary and inappropriate. Variances are available for those plants which are fundamentally different from those evaluated in the course of developing the BAT regulations.

5. *Comment.* EPA has not demonstrated that the proposed standards would produce any environmental or health benefits.

Response: Under provisions of the Clean Water Act and the Settlement Agreement, EPA is required to establish technology-based limitations and standards. These regulations are applied uniformly on a national basis where there are technically and economically feasible technologies for reducing the amount of pollutants discharged. We believe the removal of the regulated pollutants will produce environmental and health benefits. Nevertheless, in setting these limits, EPA does not consider, and in fact is excluded from considering, specific impacts on receiving water quality. See *Weyerhaeuser Co. v. Costle*, 590 F.2d 1011 (D.C. Cir. 1978); *Appalachian Power Co. v. EPA*, Civ. No. 80-1663 (4th Cir. February 8, 1982).

6. *Comment:* EPA should amend the regulations to allow permits to be written on a "net" basis. This change is necessary to cover those situations where the ambient concentration of TRC in the intake water may exceed 0.2 mg/l.

Response: The Consolidated Permit Regulations allow permits to be written on a "net" basis. See 40 CFR § 122.63(h)(1)(i)(B). Thus, there is no need to address "net" limits in these regulations.

X. Best Management Practices

Section 304(e) of the Clean Water Act gives the Administrator authority to prescribe "best management practices" (BMPs).

Although EPA is establishing BMPs at this time, we are evaluating the appropriateness of BMPs specific to the steam electric industry. Numerous problem areas are known to exist,

including leaks and spills, storm water contamination, groundwater infiltration from storage areas and on-site solid waste disposal.

XI. Upset and Bypass Provisions

A recurring issue of concern has been whether industry guidelines should include provisions authorizing noncompliance with effluent limitations during periods of "upset" or "bypass." An upset, sometimes called an "excursion", is an unintentional noncompliance occurring for reasons beyond the reasonable control of the permittee. It has been argued that an upset provision is necessary in EPA's effluent limitations because such upsets will inevitably occur even in properly operated control equipment. Because technology based limitations require only what technology can achieve, it is claimed that liability for such situations is improper. When confronted with this issue, courts have disagreed on whether an explicit upset or excursion exemption is necessary, or whether upset or excursion incidents may be handled through EPA's exercise of enforcement discretion. Compare *Marathon Oil Co. v. EPA*, 564 F.2d 1253 (9th Cir. 1977) with *Weyerhaeuser v. Costle*, 590 F.2d 1011 (D.C. Cir., 1978), and *Corn Refiners Association, et al. v. Costle*, 594 F.2d 1223 (8th Cir., 1979). See also *American Petroleum Institute v. EPA*, 540 F.2d 1023 (10th Cir. 1976); *CPC International, Inc. v. Train*, 540 F.2d 1320 (8th Cir. 1976); and *FMC Corp. v. Train*, 539 F.2d 973 (4th Cir. 1976).

A bypass is an act of intentional noncompliance during which waste treatment facilities are circumvented because of an emergency situation. EPA has in the past included bypass provisions in NPDES permits.

The Agency has determined that both upset and bypass provisions should be included in NPDES permits and has promulgated Consolidated Permit Regulations which include upset and bypass permit provisions [see 40 CFR 122.60, 45 FR 33290, May 19, 1980]. The upset provision establishes an upset as an affirmative defense to prosecution for violation of technology-based effluent limitations. The bypass provision authorizes bypassing to prevent loss of life, personal injury, or severe property damage. Consequently, although permittees in the steam electric industry will be entitled to upset and bypass provisions in NPDES permits, the final steam electric regulations do not address these issues.

XII. Variances and Modifications

Upon the promulgation of the regulations, the effluent limitations for

the appropriate subcategory must be applied in all Federal and State NPDES permits thereafter issued to direct dischargers in the steam electric industry. In addition, upon promulgation, the pretreatment limitations are applicable to any indirect dischargers.

For the BPT effluent limitations, the only exception to the binding limitations is EPA's "fundamentally different factors" (FDF) variance. See *E. I. du Pont de Nemours & Co. v. Train*, 430 U.S. 112 (1977); *Weyerhaeuser Co. v. Costle, supra*. This variance recognizes factors concerning a particular discharger that are fundamentally different from the factors considered in this rulemaking. While the BPT variance clause for all other industrial categories is contained in the NPDES regulations and referenced in the categorical regulations, there is a special BPT variance clause for the steam electric category. This clause is being amended today for the following reasons.

As originally established in 1974, the FDF provision Part 423 was identical to those contained in all other BPT effluent limitations guidelines. It was amended in 1978 (43 FR 44846-8) in obedience to an order by the Fourth Circuit Court of Appeals to allow for consideration of the cost and affordability factors listed in section 301(c) and section 304(b) of the Act. *Appalachian Power Co. v. Train*, 545 F.2d 1351, 1358-60 (4th Cir. 1976) ("*Appalachian Power I*"). This amendment applied only to this industry. The clause, as amended, was challenged again on the grounds that it should have been expanded further to permit consideration of receiving water characteristics. The Fourth Circuit refused to review the amended variance clause because of doubt whether EPA had in fact taken the position that it would not consider receiving water characteristics. *Appalachian Power Co. v. Train*, 620 F.2d 1040 (4th Cir. 1980) ("*Appalachian Power II*"). In response to the latter decision, EPA amended the clause again to state explicitly that receiving water quality may not be considered as an FDF factor. 45 FR 61619 (1980). The petitioners then returned to the Fourth Circuit, contending that the 1980 amendment violated the *Appalachian Power I* mandate.

On February 8, 1982, the Fourth Circuit decided the latest challenge and concluded that the 1980 variance clause was valid. *Appalachian Power Co. v. EPA*, Civ. No. 80-1663 (4th Cir. February 8, 1982) ("*Appalachian Power III*"). In explaining its decision the Court noted that a recent Supreme Court case made it

clear that section 301(c) factors are not to be considered in making BPT variance determinations. *National Crushed Stone Association v. EPA*, 449 U.S. 64 (1980). Since the first two *Appalachian Power* decisions suggested that the requirement to consider receiving water quality derived in part from section 301(c)(2), the Court concluded that a BPT variance clause allowing consideration of receiving water quality would have to be justified on another basis. However, the Court rejected the use of section 304(b)(1)(B) as an alternative ground explaining that the Fourth Circuit had already concluded that section 304(b)(1)(B) did not provide that authority.

Consolidation Coal Co. v. Costle, 604 F.2d 239 (4th Cir. 1979) reviewed in part *sub nom.*, *EPA v. National Crushed Stone Association*, 449 U.S. 64 (1980). Based on the relevant court decisions and the legislative history of the Act, the Court affirmed the variance clause.

As a result of these decisions EPA is retaining the portion of the current and proposed BPT variance clause that precludes consideration of impacts on receiving water quality. In addition, EPA is deleting the reference to Section 301(c) factors in the BPT variance clause. Because *Appalachian Power III* did not affect EPA's use of "significant cost differentials" in referring to Section 304(b)(1)(B) economic factors, EPA is leaving that aspect of the variance clause in place. EPA is not providing notice and opportunity for comment on the deletion of the reference to Section 301(c) factors since the charge reflects judicial interpretation of the variance clause. Finally, EPA is deleting the reference in the BPT clause to a 1974 EPA legal interpretation since that interpretation has since been withdrawn.

With respect to BAT, EPA proposed to extend the FDF variance clause that applies to all other categories to this industry. See 40 CFR 125.30-32. No comments were received. Accordingly, EPA is retaining the proposed wording in the final rule.

BAT limitations for nonconventional pollutants are also subject to modifications 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 guidelines. See 43 FR 40895, September 13, 1978.

Section 301(j)(1)(B) of the Act requires that application for modifications under section 301 (c) or (g) must be filed within 270 days after the promulgation of an

applicable effluent guideline. Initial applications must be filed with the Regional Administrator and, in those States that participate in the NPDES program, a copy must be sent to the Director of the State program. Initial applications to comply with 301(j) must include the name of the permittee, the permit and outfall number, the applicable effluent guideline, and whether the permittee is applying for the 301(c) or 301(g) modification or both. Applicants interested in applying for both must do so in their initial application. For further details, see 43 FR 40859, September 13, 1978.

The nonconventional pollutant limited under BAT in this regulation is total residual chlorine. No regulations establishing criteria for 301(c) and 301(g) determinations have been proposed or promulgated, but the Agency recently announced plans to propose such regulations by December, 1982 (47 FR 15702, April 12, 1982). All dischargers who file an initial application within 270 days will be sent a copy of the substantive requirements for 301(c) and 301(g) determinations once they are promulgated. Modification determinations will be considered at the time the NPDES permit is being reissued.

Pretreatment standards for existing sources are subject to the "fundamentally different factors" variance and credits for pollutants removed by POTW. (See 40 CFR 403.7, 403.13). Pretreatment standards for new sources are subject only to the credits provision in 40 CFR 403.7. NSPS are not subject to EPA's "fundamentally different factors" variance or any statutory or regulatory modifications. See *E. I. duPont de Nemours and Co. v. Train, supra*.

XIII. Relationship to NPDES Permits

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

One issue that warrants consideration is the effect of this regulation on the powers of NPDES permit-issuing authorities. The promulgation of this regulation does not restrict the power of any permitting authority to act in any manner consistent with law or these or

any other EPA regulations, guidelines, or policy. For example, even if this regulation does not control a particular pollutant, the permit issuer may still limit such pollutant on a case-by-case basis when limitations are necessary to carry out the purposes of the Act. In addition, to the extent that State water quality standards or other provisions of State or Federal law require limitation of pollutants not covered by this regulation (or require more stringent limitations on covered pollutants), such limitations must be applied by the permit-issuing authority.

A second topic that warrants discussion is the operation of EPA's NPDES enforcement program, many aspects of which were considered in developing this regulation. Although the Clean Water Act is a strict liability statute, the initiation of enforcement proceedings by EPA is discretionary. EPA has exercised and intends to exercise that discretion in a manner that recognizes and promotes good-faith compliance efforts.

XIV. Availability of Technical Assistance

The major documents upon which these regulations are based are: (1) the *Development Document for Final Effluent Limitations Guidelines, New Source Performance Standards, and Pretreatment Standards for the Steam Electric Point Source Category* (EPA 440/1-82/029); (2) in *Economic Analysis of Final Effluent Limitations Guidelines, New Source Performance Standards and Pretreatment Standards for the Steam Electric Power Generating Point Source Category*, and (3) the technical development document and record supporting the proposed regulations, and the "Responses to Public Comments, Proposed Steam Electric Effluent Guidelines and Standards."

XV. OMB Review

The regulation was submitted to the Office of Management and Budget for review as required by Executive Order 12291. Any comments from OMB to EPA and any EPA response to those comments are available for public inspection at Room M2404, U.S. EPA, 401 M St. SW., Washington, D.C. 20460 from 9:00 a.m. to 4:00 p.m. Monday-Friday excluding Federal holidays.

In accordance with the Paperwork Reduction Act of 1980 (Pub. L. 96-511), the reporting and recordkeeping provisions that are included in this regulation will be submitted for approval to OMB. They are not effective until OMB approval has been obtained and the public is notified to that effect

through a technical amendment to this regulation.

List of Subjects in 40 CFR Part 419

Electric power, Water pollution control, Waste treatment and disposal.

Dated: November 7, 1982.

Anne M. Gorsuch,
Administrator.

XVII. Appendices

Appendix A—Steam Electric Point Source Category Pollutants Excluded From Regulation

Pollutants excluded from regulation based upon Paragraph 8 of the Settlement Agreement are addressed by waste streams in the following sections. No Paragraph 8 determinations are made at this time for non-chemical metal cleaning wastes, ash pile runoff, chemical handling area runoff, and construction area runoff because regulation of these waste streams is reserved for future rulemaking.

Once-Through Cooling Water, Low Volume Wastes, Chemical Metal Cleaning Wastes, Coal Pile Runoff

The following 73 toxic pollutants are excluded from national regulation because they were not detected by Section 304(h) analytical methods or other state-of-the-art methods:

Acenaphthene
Acrolein
Acrylonitrile
Benzidene
Carbon Tetrachloride
1,2,4-Trichlorobenzene
Hexachlorobenzene
Hexachloroethane
1,1-Dichloroethane
1,1,2,2-Tetrachloroethane
Chloroethane
Bis(2-Chloroethyl) Ether
2-Chloroethyl Vinyl Ether (Mixed)
2,4,6-Trichlorophenol
Parachlorometa Cresol
1,3-Dichlorobenzene
3,3-Dichlorobenzidine
1,2-Dichloropropane
1,3-Dichloropropene
2,4-Dimethylphenol
2,4-Dinitrotoluene
2,6-Dinitrotoluene
1,2-Diphenylhydrazine
Fluoranthene
4-Chlorophenyl Phenyl Ether
4-Bromophenyl Phenyl Ether
(Bis(2-Chloroisopropyl) Ether
Bis(2-Chlororethoxy) Methane
Methyl Chloride
Methyl Bromide
Hexachlorobutadiene
Hexachlorocyclopentadiene
Isophorone
Naphthalene
2-Nitrophenol
4-Nitrophenol
2,4-Dinitrophenol
4,6-Dinitro-O-Cresol
N-Nitrosodimethylamine
N-Nitrosodiphenylamine
N-Nitrosodi-N-Propylamine

Benzo(A)Anthracene
Benzo(A)Pyrene
Benzo(B)Fluoranthene
Benzo(K)Fluoranthene
Chrysene
Acenaphthylene
Anthracene
Benzo(G,H,I)Perylene
Fluorene
Phenanthrene
Dibenzo(A,H)Anthracene
Indeno(1,2,3,-C,D) Pyrene
Pyrene
Vinyl Chloride
Aldrin
Dieldrin
Chlordane
4,4-DDT
4,4-DDE
Endosulfan-Alpha
Endosulfan-Beta
Endosulfan Sulfate
Endrin
Endrin Aldehyde
Heptachlor
Heptachlor Epoxide
BHC-Alpha
BHC-Beta
BHC(Lindane)-Gamma
BHC-Delta
Tosaphene
2,3,7,8-Tetrachlorodibenzo-P-Dioxin

The following seven toxic pollutants are excluded from regulation because their detection in the final effluent samples is believed to be attributed to laboratory analysis and sampling contamination. Therefore, they are detectable in the effluent from only a small number of sources or no sources within the industry.

Methylene Chloride
Bis(2-Ethylhexyl) Phthalate
Butyl Benzyl Phthalate
Di-N-Butyl Phthalate
Di-N-Octyl Phthalate
Diethyl Phthalate
Dimethyl Phthalate

Once-Through Cooling Water

The following 12 toxic pollutants are excluded from national regulation because they were not detected by Section 304(h) analytical methods or other state-of-the-art methods:

Chlorobenzene
1,2-Dichloroethane
1,1,2-Trichloroethane
2-Chlorophenol
1,4-Dichlorobenzene
1,2-Trans-Dichloroethylene
Dichlorobromomethane
Nitrobenzene
4,4-DDD
Asbestos
Beryllium
Cyanide

The following 24 toxic pollutants are excluded from national regulation because they are present in amounts too small to be effectively reduced by technologies known to the Administrator:

Benzene
1,1,1-Trichloroethane
2-Chloronaphthalene
1,2-Dichlorobenzene
1,1-Dichloroethylene

2,4-Dichlorophenol
Ethylbenzene
Pentachlorophenol
Phenol
Tetrachloroethylene
Toluene
Trichloroethylene
Antimony
Arsenic
Cadmium
Chromium
Copper
Lead
Mercury
Nickel
Selenium
Silver
Thallium
Zinc

The following three toxic pollutants are excluded from national regulation because the pollutants are detectable in only a small number of sources and are uniquely related to those sources and because the pollutants are present in amounts too small to be effectively reduced by technologies known to the Administrator:

Chloroform
Bromoform
Chlorodibromomethane

Low Volume Wastewaters

The following five toxic pollutants are excluded from national regulation because they were not detected by Section 304(h) analytical methods or other state-of-the-art methods.

2-Chloronaphthalene
1,1-Dichloroethylene
Pentachlorophenol
Asbestos
Beryllium

The following 34 toxic pollutants are excluded from national regulation because they are present in amounts too small to be effectively reduced by technologies known to the Administrator:

Benzene
Chlorobenzene
1,2-Dichloroethane
1,1,1-Trichloroethane
1,1,2-Trichloroethane
Chloroform
2-Chlorophenol
1,2-Dichlorobenzene
1,4-Dichlorobenzene
1,2-Trans-Dichloroethylene
2,4-Dichlorophenol
Ethylbenzene
Bromoform
Dichlorobromomethane
Chlorodibromomethane
Nitrobenzene
Phenol
Tetrachloroethylene
Toluene
Trichloroethylene
4,4-DDD
Antimony
Arsenic
Cadmium
Chromium
Copper
Cyanide
Lead

Mercury
Nickel
Selenium
Silver
Thallium
Zinc

Chemical Metal Cleaning Wastewater

The following 32 toxic pollutants are excluded from national regulation because they were not detected by Section 304(h) analytical methods or other state-of-the-art methods.

Benzene
Chlorobenzene
1,2-Dichloroethane
1,1,1-Trichloroethane
1,1,2-Trichloroethane
2-Chloronaphthalene
Chloroform
2-Chlorophenol
1,2-Dichlorobenzene
1,4-Dichlorobenzene
1,1-Dichloroethylene
1,2-Trans-Dichloroethylene
2,4-Dichlorophenol
Ethylbenzene
Bromoform
Dichlorobromomethane
Chlorodibromomethane
Nitrobenzene
Pentachlorophenol
Phenol
Tetrachloroethylene
Toluene
Trichloroethylene
4,4-DDD
Antimony
Arsenic
Asbestos
Cyanide
Mercury
Selenium
Silver
Thallium

The following six toxic pollutants are excluded from national regulation because sufficient protection is already provided by the Agency's guidelines and standards under the Act.

Beryllium
Cadmium
Chromium
Lead
Nickel
Zinc

Coal Pile Runoff

The following 32 toxic pollutants are excluded from national regulation because they were not detected by Section 304(h) analytical methods or state-of-the-art methods.

Benzene
Chlorobenzene
1,2-Dichloroethane
1,1,1-Trichloroethane
1,1,2-Trichloroethane
2-Chloronaphthalene
Chloroform
2-Chlorophenol
1,2-Dichlorobenzene
1,4-Dichlorobenzene
1,1-Dichloroethylene
1,2-Trans-Dichloroethylene
2,4-Dichlorophenol

Ethylbenzene
Bromoform
Dichlorobromomethane
Chlorodibromomethane
Nitrobenzene
Pentachlorophenol
Phenol
Tetrachloroethylene
Toluene
Trichloroethylene
4,4-DDD
Antimony
Arsenic
Asbestos
Cyanide
Mercury
Selenium
Silver
Thallium

The following seven toxic pollutants are excluded from national regulation because sufficient protection is already provided by the Agency's guidelines and standards under the Act.

Beryllium
Cadmium
Chromium
Copper
Lead
Nickel
Zinc

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

Act—The Clean Water Act.
Agency—The U.S. Environmental Protection Agency
BAT—The best available technology economically achievable, under Section 304(b)(2)(B) of the Act.
BCT—The best conventional pollutant control technology, under Section 304(b)(4) of the Act.
BMP—Best management practices under Section 304(e) of the Act.
BOD₅—Five day biochemical oxygen demand.
BPT—The best practicable control technology currently available, under Section 304(b)(1) of the Act.
Clean Water Act—The Federal Water Pollution Control Act Amendments of 1972 (33 U.S.C. 1251 et seq.), as amended by the Clean Water Act of 1977 (Pub. L. 95-217).
Direct discharger—A facility which discharges or may discharge pollutants into waters of the United States.
FAC—Free Available Chlorine
GW—gigawatts; one billion watts
Indirect discharger—A facility which discharges or may discharge pollutants into a publicly owned treatment works.
MW—megawatts; one million watts
mg/l—Milligrams per liter
NPDES permit—A National Pollutant Discharge Elimination System permit issued under section 402 of the Act.
NSPS—New source performance standards, under Section 304 of the Act.
PCB—Polychlorinated biphenyl compound
ppb—Parts per billion.
POTW—Publicly owned treatment works.
PSES—Pretreatment standards for existing sources of indirect discharges, under section 307(b) of the Act.

PSNS—Pretreatment standards for new sources of direct discharges, under section 307(b) and (c) of the Act.
RCRA—Resource Conservation and Recovery Act (P.L. 94-580) of 1976, Amendments to Solid Waste Disposal Act.
TRC—Total Residual Chlorine
TRO—Total Residual Oxidants
TSS—Total suspended solids
µg/l—Micrograms per liter

40 CFR Part 423 is revised to read as follows:

PART 423—STEAM ELECTRIC POWER GENERATING POINT SOURCE CATEGORY

Sec.

423.10 Applicability.
423.11 Specialized definitions.
423.12 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of best practicable control technology currently available (BPT).
423.13 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of best available technology economically achievable (BAT).
423.14 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology (BCT). [Reserved.]
423.15 New source performance standards (NSPS).
423.16 Pretreatment standards for existing sources (PSES).
423.17 Pretreatment standards for new sources (PSNS).

Appendix A—126 Priority Pollutants

Authority: Sec. 301; 304(b), (c), (e), and (g); 306(b) and (c); 307(b) and (c); and 501, Clean Water Act (Federal Water Pollution Control Act Amendments of 1972, as amended by 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. 818, Pub. L. 92-500; 91 Stat. 1567, Pub. L. 95-217).

§ 423.10 Applicability.

The provisions of this part are, applicable to discharges resulting from the operation of a generating unit by an establishment primarily engaged in the generation of electricity for distribution and sale which results primarily from a process utilizing fossil-type fuel (coal, oil, or gas) or nuclear fuel in conjunction with a thermal cycle employing the steam water system as the thermodynamic medium.

§ 423.11 Specialized definitions.

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

(a) The term "total residual chlorine" (or total residual oxidants for intake water with bromides) means the value obtained using the amperometric

method for total residual chlorine described in 40 CFR Part 136.

(b) The term "low volume waste sources" means, taken collectively as if from one source, wastewater from all sources except those for which specific limitations are otherwise established in this part. Low volume waste sources include, but are not limited to: wastewaters from wet scrubber air pollution control systems, ion exchange water treatment system, water treatment evaporator blowdown, laboratory and sampling streams, boiler blowdown, floor drains, cooling tower basin cleaning wastes, and recirculating house service water systems. Sanitary and air conditioning wastes are not included.

(c) The term "chemical metal cleaning waste" means any wastewater resulting from the cleaning of any metal process equipment with chemical compounds, including, but not limited to, boiler tube cleaning.

(d) The term "metal cleaning waste" means any wastewater resulting from cleaning [with or without chemical cleaning compounds] any metal process equipment including, but not limited to, boiler tube cleaning, boiler fireside cleaning, and air preheater cleaning.

(e) The term "fly ash" means the ash that is carried out of the furnace by the gas stream and collected by mechanical precipitators, electrostatic precipitators, and/or fabric filters. Economizer ash is included when it is collected with fly ash.

(f) The term "bottom ash" means the ash that drops out of the furnace gas stream in the furnace and in the economizer sections. Economizer ash is included when it is collected with bottom ash.

(g) The term "once through cooling water" means water passed through the main cooling condensers in one or two passes for the purpose of removing waste heat.

(h) The term "recirculated cooling water" means water which is passed through the main condensers for the purpose of removing waste heat, passed through a cooling device for the purpose of removing such heat from the water and then passed again, except for blowdown, through the main condenser.

(i) The term "10 year, 24/hour rainfall event" means a rainfall event with a probable recurrence interval of once in ten years as defined by the National Weather Service in Technical Paper No. 40, "Rainfall Frequency Atlas of the United States," May 1961 or equivalent regional rainfall probability information developed therefrom.

(j) The term "blowdown" means the minimum discharge of recirculating water for the purpose of discharging materials contained in the water, the further buildup of which would cause concentration in amounts exceeding limits established by best engineering practices.

(k) The term "average concentration" as it relates to chlorine discharge means the average of analyses made over a single period of chlorine release which does not exceed two hours.

(l) The term "free available chlorine" shall mean the value obtained using the amperometric titration method for free available chlorine described in "Standard Methods for the Examination of Water and Wastewater," page 112 (13th edition).

(m) The term "coal pile runoff" means the rainfall runoff from or through any coal storage pile.

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

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

establish for the discharger effluent limitations in the NPDES Permit either more or less stringent than the limitations established herein, to the extent dictated by such fundamentally different factors. Such limitations must be approved by the Administrator of the Environmental Protection Agency. The Administrator may approve or disapprove such limitations, specify other limitations, or initiate proceedings to revise these regulations. The phrase "other such factors" appearing above may include significant cost differentials. In no event may a discharger's impact on receiving water quality be considered as a factor under this paragraph.

(b) Any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction by the application of the best practicable control technology currently available (BPT):

(1) The pH of all discharges, except once through cooling water, shall be within the range of 6.0-9.0.

(2) There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

(3) The quantity of pollutants discharged from low volume waste sources shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the concentration listed in the following table:

Pollutant or pollutant property	BPT effluent limitations	
	Maximum for any 1 day (mg/l)	Average of daily values for 30 consecutive days shall not exceed (mg/l)
TSS.....	100.0	30.0
Oil and grease.....	20.0	15.0

(4) The quantity of pollutants discharged in fly ash and bottom ash transport water shall not exceed the quantity determined by multiplying the flow of fly ash and bottom ash transport water times the concentration listed in the following table:

Pollutant or pollutant property	BPT effluent limitations	
	Maximum for any 1 day (mg/l)	Average of daily values for 30 consecutive days shall not exceed (mg/l)
TSS.....	100.0	30.0
Oil and grease.....	20.0	15.0

(5) The quantity of pollutants discharged in metal cleaning wastes shall not exceed the quantity determined by multiplying the flow of metal cleaning wastes times the concentration listed in the following table:

Pollutant or pollutant property	BPT effluent limitations	
	Maximum for any 1 day (mg/l)	Average of daily values for 30 consecutive days shall not exceed (mg/l)
TSS.....	100.0	30.0
Oil and grease.....	20.0	15.0
Copper, total.....	1.0	1.0
Iron, total.....	1.0	1.0

(6) The quantity of pollutants discharged in once through cooling water shall not exceed the quantity determined by multiplying the flow of once through cooling water sources times the concentration listed in the following table:

Pollutant or pollutant property	BPT effluent limitations	
	Maximum concentration (mg/l)	Average concentration (mg/l)
Free available chlorine.....	0.5	0.2

(7) The quantity of pollutants discharged in cooling tower blowdown shall not exceed the quantity determined by multiplying the flow of cooling tower blowdown sources times the concentration listed in the following table:

Pollutant or pollutant property	BPT effluent limitations	
	Maximum concentration (mg/l)	Average concentration (mg/l)
Free available chlorine.....	0.5	0.2

(8) Neither free available chlorine nor total residual chlorine may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available or total residual chlorine at any one time unless the utility can demonstrate to the Regional Administrator or State, if the State has NPDES permit issuing authority, that the units in a particular location cannot operate at or below this level or chlorination.

(9) Subject to the provisions of paragraph b(10) of this section, the

following effluent limitations shall apply to the point source discharges of coal pile runoff:

Pollutant or pollutant property	BPT effluent limitations
	Maximum concentration for any time (mg/l)
TSS.....	50

(10) Any untreated overflow from facilities designed, constructed, and operated to treat the volume of coal pile runoff which is associated with a 10 year, 24 hour rainfall event shall not be subject to the limitations in paragraph (b)(9) of this section.

(11) At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as a concentration limitation instead of the mass based limitations specified in paragraphs (b)(3) through (7) of this section. Concentration limitations shall be those concentrations specified in this section.

(12) In the event that waste streams from various sources are combined for treatment or discharge, the quantity of each pollutant or pollutant property controlled in paragraphs (b)(1) through (11) of this section attributable to each controlled waste source shall not exceed the specified limitations for that waste source.

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

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

(a) There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

(b)(1) For any plant with a total rated electric generating capacity of 25 or more megawatts, the quantity of pollutants discharged in once through cooling water from each discharge point shall not exceed the quantity determined by multiplying the flow of

once through cooling water from each discharge point times the concentration listed in the following table:

Pollutant or pollutant property	BAT Effluent Limitations
	Maximum concentration (mg/l)
Total residual chlorine.....	0.20

(2) Total residual chlorine may not be discharged from any single generating unit for more than two hours per day unless the discharger demonstrates to the permitting authority that discharge for more than two hours is required for macroinvertebrate control. Simultaneous multi-unit chlorination is permitted.

(c)(1) For any plant with a total rated generating capacity of less than 25 megawatts, the quantity of pollutants discharged in once through cooling water shall not exceed the quantity determined by multiplying the flow of once through cooling water sources times the concentration listed in the following table:

Pollutant or pollutant property	BAT effluent limitations	
	Maximum concentration (mg/l)	Average concentration (mg/l)
Free available chlorine.....	0.5	0.2

(2) Neither free available chlorine nor total residual chlorine may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available or total residual chlorine at any one time unless the utility can demonstrate to the Regional Administrator or State, if the State has NPDES permit issuing authority, that the units in a particular location cannot operate at or below this level of chlorination.

(d)(1) The quantity of pollutants discharged in cooling tower blowdown shall not exceed the quantity determined by multiplying the flow of cooling tower blowdown times the concentration listed below:

Pollutant or pollutant property	BAT effluent limitations	
	Maximum concentration (mg/l)	Average concentration (mg/l)
Free available chlorine.....	0.5	0.2

Pollutant or pollutant property	Maximum for any 1 day (mg/l)	Average of daily values for 30 consecutive days shall not exceed (mg/l)
The 126 priority pollutants (Appendix A) contained in chemicals added for cooling tower maintenance, except:	(1)	(1)
Chromium, total.....	0.2	0.2
Zinc, total.....	1.0	1.0

¹No detectable amount.

(2) Neither free available chlorine nor total residual chlorine may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available or total residual chlorine at any one time unless the utility can demonstrate to the Regional Administrator or State, if the State has NPDES permit issuing authority, that the units in a particular location cannot operate at or below this level of chlorination.

(3) At the permitting authority's discretion, instead of the monitoring specified in 40 CFR 122.11(b) compliance with the limitations for the 126 priority pollutants in paragraph (d)(1) of this section may be determined by engineering calculations which demonstrate that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR Part 136.

(e) The quantity of pollutants discharged in chemical metal cleaning wastes shall not exceed the quantity determined by multiplying the flow of chemical metal cleaning wastes times the concentration listed in the following table:

Pollutant or pollutant property	BAT effluent limitations	
	Maximum for any 1 day (mg/l)	Average of daily values for 30 consecutive days shall not exceed (mg/l)
Copper, total.....	1.0	1.0
Iron, total.....	1.0	1.0

(f) [Reserved—Nonchemical Metal Cleaning Wastes].

(g) At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as a concentration limitation instead of the mass based limitations specified in paragraphs (b) through (e) of this section. Concentration limitations

shall be those concentrations specified in this section.

(h) In the event that waste streams from various sources are combined for treatment or discharge, the quantity of each pollutant or pollutant property controlled in paragraphs (a) through (g) of this section attributable to each controlled waste source shall not exceed the specified limitation for that waste source.

§ 423.14 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology (BCT). [Reserved]

§ 423.15 New source performance standards (NSPS).

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

(a) The pH of all discharges, except once through cooling water, shall be within the range of 6.0-9.0.

(b) There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

(c) The quantity of pollutants discharged from low volume waste sources shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the concentration listed in the following table:

Pollutant or pollutant property	NSPS effluent limitations	
	Maximum for any 1 day (mg/l)	Average of daily values for 30 consecutive days shall not exceed (mg/l)
TSS.....	100.0	30.0
Oil and grease.....	20.0	15.0

(d) The quantity of pollutants discharged in chemical metal cleaning wastes shall not exceed the quantity determined by multiplying the flow of chemical metal cleaning wastes times the concentration listed in the following table:

Pollutant or pollutant property	NSPS effluent limitations	
	Maximum for any 1 day (mg/l)	Average of daily values for 30 consecutive days shall not exceed (mg/l)
TSS.....	100.0	30.0
Oil and grease.....	20.0	15.0
Copper, total.....	1.0	1.0
Iron, total.....	1.0	1.0

(e) [Reserved—Nonchemical Metal Cleaning Wastes].

(f) The quantity of pollutants discharged in bottom ash transport water shall not exceed the quantity determined by multiplying the flow of the bottom ash transport water times the concentration listed in the following table:

Pollutant or pollutant property	NSPS effluent limitations	
	Maximum for any 1 day (mg/l)	Average of daily values for 30 consecutive days shall not exceed (mg/l)
TSS.....	100.0	30.0
Oil and grease.....	20.0	15.0

(g) There shall be no discharge of wastewater pollutants from fly ash transport water.

(h)(1) For any plant with a total rated electric generating capacity of 25 or more megawatts, the quantity of pollutants discharged in once through cooling water from each discharge point shall not exceed the quantity determined by multiplying the flow of once through cooling water from each discharge point times the concentration listed in the following table:

Pollutant or pollutant property	NSPS effluent limitations
	Maximum concentration (mg/l)
Total residual chlorine.....	0.20

(2) Total residual chlorine may not be discharged from any single generating unit for more than two hours per day unless the discharger demonstrates to the permitting authority that discharge for more than two hours is required for macroinvertebrate control. Simultaneous multi-unit chlorination is permitted.

(i)(1) For any plant with a total rated generating capacity of less than 25 megawatts, the quantity of pollutants discharged in once through cooling water shall not exceed the quantity determined by multiplying the flow of once through cooling water sources times the concentration listed in the following table:

Pollutant or pollutant property	NSPS effluent limitations	
	Maximum concentration (mg/l)	Average concentration (mg/l)
Free available chlorine.....	0.5	0.2

(2) Neither free available chlorine nor total residual chlorine may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available or total residual chlorine at any one time unless the utility can demonstrate to the Regional Administrator or State, if the State has NPDES permit issuing authority, that the units in a particular location cannot operate at or below this level of chlorination.

(j)(1) The quantity of pollutants discharged in cooling tower blowdown shall not exceed the quantity determined by multiplying the flow of cooling tower blowdown times the concentration listed below:

Pollutant or pollutant property	NSPS effluent limitations	
	Maximum concentration (mg/l)	Average concentration (mg/l)
Free available chlorine.....	0.5	0.2

Pollutant or pollutant property	Maximum for any 1 day (mg/l)	Average of daily values for 30 consecutive days shall not exceed - (mg/l)

¹No detectable amount.

(2) Neither free available chlorine nor total residual chlorine may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available or total residual chlorine at any one time unless the utility can demonstrate to the Regional Administrator or State, if the State has NPDES permit issuing authority, that the units in a particular location cannot operate at or below this level of chlorination.

(3) At the permitting authority's discretion, instead of the monitoring in 40 CFR 122.11(b), compliance with the limitations for the 126 priority pollutants in paragraph (j)(1) of this section may be determined by engineering calculations which demonstrate that the regulated pollutants are not detectable in the final

discharge by the analytical methods in 40 CFR Part 136.

(k) Subject to the provisions of § 423.15(l), the quantity or quality of pollutants or pollutant parameters discharged in coal pile runoff shall not exceed the limitations specified below:

Pollutant or pollutant property	NSPS effluent limitations for any time
TSS.....	Not to exceed 50 mg/l.

(l) Any untreated overflow from facilities designed, constructed, and operated to treat the coal pile runoff which results from a 10 year, 24 hour rainfall event shall not be subject to the limitations in § 423.15(k).

(m) At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as a concentration limitation instead of the mass based limitation specified in paragraphs (c) through (j) of this section. Concentration limits shall be based on the concentrations specified in this section.

(n) In the event that waste streams from various sources are combined for treatment or discharge, the quantity of each pollutant or pollutant property controlled in paragraphs (a) through (m) of this section attributable to each controlled waste source shall not exceed the specified limitation for that waste source.

§ 423.16 Pretreatment standards for existing sources (PSES).

Except as provided in 40 CFR 403.7 and 403.13, any existing source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403 and achieve the following pretreatment standards for existing sources (PSES) by July 1, 1984:

(a) There shall be no discharge of polychlorinated biphenol compounds such as those used for transformer fluid.

(b) The pollutants discharged in chemical metal cleaning wastes shall not exceed the concentration listed in the following table:

Pollutant or pollutant property	PSES pretreatment standards
	Maximum for 1 day (mg/l)
Copper, total.....	1.0

(c) [Reserved—Nonchemical Metal Cleaning Wastes].

(d)(1) The pollutants discharged in

cooling tower blowdown shall not exceed the concentration listed in the following table:

Pollutant or pollutant property	PSES pretreatment standards
	Maximum for any time (mg/l)
The 126 priority pollutants (Appendix A) contained in chemicals added for cooling tower maintenance, except: Chromium, total..... Zinc, total.....	(¹) 0.2 1.0

¹No detectable amount.

(2) At the permitting authority's discretion, instead of the monitoring in 40 CFR 122.11(b), compliance with the limitations for the 126 priority pollutants in paragraph (d)(1) of this section may be determined by engineering calculations which demonstrate that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR Part 136.

§ 423.17 Pretreatment standards for new sources (PSNS).

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

(a) There shall be no discharge of polychlorinated biphenyl compounds such as those used for transformer fluid.

(b) The pollutants discharged in chemical metal cleaning wastes shall not exceed the concentration listed in the following table:

Pollutant or pollutant property	PSNS pretreatment standards
	Maximum for 1 day (mg/l)
Copper, total.....	1.0

(c) [Reserved—Nonchemical Metal Cleaning Wastes].

(d)(1) The pollutants discharged in cooling tower blowdown shall not exceed the concentration listed in the following table:

Pollutant or pollutant property	PSNS pretreatment standards
	Maximum for any time (mg/l)
The 126 priority pollutants (Appendix A) contained in chemicals added for cooling tower maintenance, except: Chromium, total..... Zinc, total.....	0.2 1.0

(2) At the permitting authority's discretion, instead of the monitoring in 40 CFR 122.11(b), compliance with the limitations for the 126 priority pollutants in paragraph (d)(1) of this section may be determined by engineering calculations which demonstrate that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR Part 136.

(e) There shall be no discharge of wastewater pollutants from fly ash transport water.

Appendix A—126 Priority Pollutants

001 Acenaphthene
 002 Acrolein
 003 Acrylonitrile
 004 Benzene
 005 Benzidine
 006 Carbon tetrachloride (tetrachloromethane)
 007 Chlorobenzene
 008 1,2,4-trichlorobenzene
 009 Hexachlorobenzene
 010 1,2-dichloroethane
 011 1,1,1-trichloroethane
 012 Hexachloroethane
 013 1,1-dichloroethane
 014 1,1,2-trichloroethane
 015 1,1,2,2-tetrachloroethane
 016 Chloroethane
 018 Bis(2-chloroethyl) ether
 019 2-chloroethyl vinyl ether (mixed)
 020 2-chloronaphthalene
 021 2,4, 6-trichlorophenol
 022 Parachlorometa cresol
 023 Chloroform (trichloromethane)
 024 2-chlorophenol
 025 1,2-dichlorobenzene
 026 1,3-dichlorobenzene
 027 1,4-dichlorobenzene
 028 3,3-dichlorobenzidine
 029 1,1-dichloroethylene
 030 1,2-trans-dichloroethylene
 031 2,4-dichlorophenol
 032 1,2-dichloropropane
 033 1,2-dichloropropylene (1,3-dichloropropene)
 034 2,4-dimethylphenol
 035 2,4-dinitrotoluene
 036 2,6-dinitrotoluene
 037 1,2-diphenylhydrazine
 038 Ethylbenzene
 039 Fluoranthene
 040 4-chlorophenyl phenyl ether
 041 4-bromophenyl phenyl ether

042 Bis(2-chloroisopropyl) ether
 043 Bis(2-chloroethoxy) methane
 044 Methylene chloride (dichloromethane)
 045 Methyl chloride (dichloromethane)
 046 Methyl bromide (bromomethane)
 047 Bromoform (tribromomethane)
 048 Dichlorobromomethane
 051 Chlorodibromomethane
 052 Hexachlorobutadiene
 053 Hexachloromyclopentadiene
 054 Isophorone
 055 Naphthalene
 056 Nitrobenzene
 057 2-nitrophenol
 058 4-nitrophenol
 059 2,4-dinitrophenol
 060 4,6-dinitro-o-cresol
 061 N-nitrosodimethylamine
 062 N-nitrosodiphenylamine
 063 N-nitrosodi-n-propylamine
 064 Pentachlorophenol
 065 Phenol
 066 Bis(2-ethylhexyl) phthalate
 067 Butyl benzyl phthalate
 068 Di-N-Butyl Phthalate
 069 Di-n-octyl phthalate
 070 Diethyl Phthalate
 071 Dimethyl phthalate
 072 1,2-benzanthracene (benzo(a)anthracene)
 073 Benzo(a)pyrene (3,4-benzo-pyrene)
 074 3,4-Benzofluoranthene (benzo(b)fluoranthene)
 075 11,12-benzofluoranthene (benzo(b)fluoranthene)
 076 Chrysene
 077 Acenaphthylene
 078 Anthracene
 079 1,12-benzoperylene (benzo(ghi)perylene)
 080 Fluorene
 081 Phenanthrene
 082 1,2,5,6-dibenzanthracene (dibenzo(h)anthracene)
 083 Indeno (1,2,3-cd) pyrene (2,3-ophenylene pyrene)
 084 Pyrene
 085 Tetrachloroethylene
 086 Toluene
 087 Trichloroethylene
 088 Vinyl chloride (chloroethylene)
 089 Aldrin
 090 Dieldrin
 091 Chlordane (technical mixture and metabolites)
 092 4,4-DDT
 093 4,4-DDE (p,p-DDX)
 094 4,4-DDD (p,p-TDE)
 095 Alpha-endosulfan

096 Beta-endosulfan
 097 Endosulfan sulfate
 098 Endrin
 099 Endrin aldehyde
 100 Heptachlor
 101 Heptachlor epoxide (BHC-hexachlorocyclohexane)
 102 Alpha-BHC
 103 Beta-BHC
 104 Gamma-BHC (lindane)
 105 Delta-BHC (PCB-polychlorinated biphenyls)
 106 PCB-1242 (Arochlor 1242)
 107 PCB-1254 (Arochlor 1254)
 108 PCB-1221 (Arochlor 1221)
 109 PCB-1232 (Arochlor 1232)
 110 PCB-1248 (Arochlor 1248)
 111 PCB-1260 (Arochlor 1260)
 112 PCB-1016 (Arochlor 1016)
 113 Toxaphene
 114 Antimony
 115 Arsenic
 116 Asbestos
 117 Beryllium
 118 Cadmium
 119 Chromium
 120 Copper
 121 Cyanide, Total
 122 Lead
 123 Mercury
 124 Nickel
 125 Selenium
 126 Silver
 127 Thallium
 126 Silver
 128 Zinc
 129 2,3,7,8-tetrachloro-dibenzo-p-dioxin (TCDD)

PART 125—[AMENDED]

40 CFR 125.30(a) is amended to revise the last sentence thereof to read as follows:

§ 125.30 Purpose and scope.

(a) *** This subpart applies to all national limitations promulgated under Sections 301 and 304 of the Act, except for the BPT limits contained in 40 CFR 423.12 (steam electric generating point source category).

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