ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 419

[WH-FRL 2203-3]

Petroleum Refining Point Source Category Effluent Limitations Guidelines, Pretreatment Standards, and New Source Performance Standards

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: These regulations limit the discharge of pollutants into navigable waters and into publicly owned treatment works (POTW) by existing and new sources in the petroleum refining industry. The Clean Water Act and a consent decree require EPA to issue these regulations. These regulations provide final effluent limitations guidelines for "best available technology economically achievable" (BAT), and establishes final pretreatment standards for existing sources (PSES) and for new sources (PSNS). The Agency has decided to retain its previously promulgated "new source performance standards" (NSPS) for this industry. Effluent limitations guidelines for "best practicable control technology currently available" (BPT) were not modified by EPA in this rulemaking. The Agency is reserving coverage of "best conventional pollutant control technology" (BCT) effluent limitations guidelines because the methodology to assess the cost reasonableness of BCT has not yet been established. The Agency is withdrawing storm water runoff limitations promulgated on May 9, 1974 (39 FR 16560) for BPT, BAT, and NSPS, because these limitations were remanded by the court in *American Petroleum Institute* v. *EPA*, 540 F. 2d 1023 (10th Cir. 1976).

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 November 1, 1982.

These regulations shall become effective December 1, 1982.

The compliance date for the newly issued PSNS regulation is the date that the new source commences discharge. The compliance date for PSES is the same as the compliance date for the interim final PSES for this industry promulgated on March 23, 1977. (See 42 FR 15684). The PSES promulgated today is no more stringent than the interim final PSES.

Under Section 509(b)(1) of the Clean Water Act judicial review of these regulations is available only by filing a petition for review in the United States Court of Appeals within ninety days after these regulations are considered issued for purpose of judicial review. Under Section 509(b)(2) of the Clean Water Act, these requirements of the regulations may not be challenged later in civil or criminal proceedings brought by EPA to enforce these requirements.

Those portions of the existing petroleum refining effluent guidelines limitations and standards that are not substantively amended by this notice are not subject to judicial review nor is their effectiveness altered by this notice. These regulations are BPT and NSPS.

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, S.W., 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 William A. Telliard, Effluent Guidelines Division (WH-552), EPA, 401 M Street, S.W., Washington, D.C. 20460, or by calling (202) 426-4617. Copies of the technical development and economic documents can be obtained from the National Technical Information Service, Springfield, Virginia 22161 (703/487-6000).

FOR FURTHER INFORMATION CONTACT: Dennis Ruddy, (202) 382-7165.

SUPPLEMENTARY INFORMATION:

Organization of this Notice

I. Legal Authority

These regulations are being promulgated under the authority of Sections 301, 304, 306, 307, and 501 of the Clean Water Act (the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1251 *et seq.*, as amended by the Clean Water Act of 1977, Pub. L. 95-217) also called the "Act". These regulations are also being promulgated in response to the Settlement Agreement in *Natural Resources Defense Council, Inc. v. Train*, 8 ERC 2120 (D.D.C. 1976), *modified*, 12 ERC 1833 (D.D.C. 1979).

II. Scope of this Rulemaking

The petroleum refining industry is included within the U.S. Department of Commerce, Bureau of the Census, Standard Industrial Classification (SIC) 2911. A detailed overview of the petroleum refining industry can be found in the proposed regulations of December 21, 1979 for this industry (44 FR 75926).

The most important pollutants or pollutant parameters in petroleum refinery wastewaters are: (a) toxic pollutants (chromium); (b) conventional pollutants (TSS, Oil and Grease, BOD5, and pH); and (c) nonconventional pollutants (phenolic compounds (4-AAP), COD, sulfide and ammonia). 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.

EPA is promulgating BAT, PSES, and PSNS for each of the five subcategories established for this industry. BPT, BAT and NSPS effluent limitations for storm water runoff for all direct dischargers and all BCT requirements, including storm water runoff, are being reserved for future rulemaking.

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 industry 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 and 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). See also: 43 FR 4108; 46 FR 2266; 46 FR 10723.

Many of the basic elements of this Settlement Agreement program were incorporated into the Clean Water Act of 1977. Like the Agreement, the Act stressed control of toxic pollutants including the 65 "priority" pollutants. In addition, to strengthen the toxic control program, Section 304(e) of the Act authorizes the Administrator to prescribe "best management practices" (BMPs) to prevent the release of toxic and hazardous pollutants from plant site runoff, spillage or leaks, sludge or waste disposal, and drainage from raw material storage associated with, or ancillary to, the manufacturing of 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 Development Document supporting these regulations. The following is a brief summary:

1. *Best Practicable Control Technology (BPT).* BPT limitations are generally based on the average of the best existing performance by 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 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. EPA promulgated BPT for the petroleum refining point source category on May 9, 1974 (39 FR 16560) and amended the regulations on May 20, 1975 (40 FR 21939). BPT is printed in this final rule for the sake of completeness to the reader.

2. *Best Available Technology (BAT).* BAT limitations, in general, represent the best existing performance of technology 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 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 discharge of conventional pollutants from existing industrial point sources. Conventional pollutants are those defined in Section 304(a)(4) [biochemical oxygen demanding pollutants (BOD5), total suspended solids (TSS), fecal coliform and pH], and any additional pollutants defined by the Administrator as "conventional" [oil and grease, 44 FR 44501, July 30, 1979].

BCT is not an additonal limitation but replaces BAT for the control of conventional pollutants. In additon to other factors specified in section 304(b)(4)(B), the Act requires the BCT limitations be assessed in light of a two part "cost-reasonableness" test. *American Paper Institute* v. *EPA,* 660 F2d 954 (4th Cir. 1981). The first test compares the cost for private industry to reduce its conventional pollutants with the costs to publicly owned treatment works for similar levels of reduction in their discharge of these pollutants. The second test examines the cost-effectiveness of additional industrial treatment beyond BPT. EPA must find that limitations are "reasonable" under both tests before establishing them as BCT. In no case may BCT be less stringent than BPT.

EPA published its methodology for carrying out the BCT analysis on August 29, 1979 (44 FR 50732). In the case mentioned above, the Court of Appeals ordered EPA to correct data errors underlying EPA's calculation of the first test, and to apply the second cost test. (EPA had argued that a second cost test was not required). The Agency is reserving BCT effluent limitations guidelines because the methodology to assess the cost reasonableness of BCT has not yet been established.

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. EPA promulgated NSPS for the petroleum refining point source category on May 9, 1974 (39 FR 16560) and amended the regulation on May 20, 1975 (40 FR 21939). NSPS is printed in this final rule for the sake of completeness to the reader.

5. *Pretreatment Standards for Existing Sources (PSES).* PSES are designed to prevent 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 toxic pollutants that pass through the POTW 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 1977 Act indicates that pretreatment standards are to be technology-based, analogous to the best available technology for removal of toxic pollutants. 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 prevent the discharge of pollutants 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 Petroleum Refining Regulations

EPA promulgated BPT, BAT, NSPS, and PSNS for the petroleum refining point source category on May 9, 1974 (39 FR 16560). The BPT, BAT, and NSPS regulations were challenged by the American Petroleum Institute (API) and others in the United States Court of Appeals for the Tenth Circuit. Both BPT and NSPS were upheld by the Court, with the exception of limitations for storm water runoff which were remanded for further consideration. BAT, including limitations for storm water runoff, was remanded for further consideration. *American Petroleum Institute v. EPA,* 540 F.2d 1023 (10th Cir. 1976). Interim final PSES was promulgated on March 23, 1977 (42 FR 15684) in response to the Settlement Agreement.

BAT and BCT were proposed on December 21, 1979 (44 FR 75926). At the same time, the Agency proposed to revise NSPS, PSNS, and PSES.

B. Methodology and Data Gathering Efforts

The methodology and data gathering efforts used in developing the proposed regulations were summarized in the preamble to the proposed petroleum refining regulations published on December 21, 1979 (44 FR 75926).

EPA has prepared the following reports concerning data it has acquired on this industry since the December 1979 proposed regulations were published: (1) a report entitled *Petroleum Refining Industry, Refinements to 1979 Proposed Flow Model;* and (2) a report entitled *Petroleum Refining Industry, Surrogate Sampling Program.* The Agency has rejected the options which utilized the data and conclusions from these reports in this rulemaking; therefore, the results were not used by EPA as bases for the Agency's regulations in today's rulemaking.

V. Control Treatment Options and Technology Basis for Regulations

A. Final BAT Limitations

EPA is promulgating BAT limitations which are equivalent to the BPT level of control (Option 9 discussed below). These limitations are based on both in-plant and end-of-pipe technologies, including sour water stripping to control ammonia and sulfide, water use management, sewer segregation, wastewater, flow equalization, initial oil and solids removal (API separators or baffle plate separators), advanced oil and solids removal (clarifiers, dissolved air flotation, or filters), biological treatment, and filtration or other "polishing" steps. The flow model and subcategorization scheme upon which these limitations are based are the same as those used for developing the BPT effluent limitations. BPT removes 96 percent of the toxic pollutants from raw wastewaters discharged by the petroleum refining industry.

1. *Control Treatment Options for BAT.* The control and treatment technology options that EPA investigated for use in this industry for BAT are presented below. Options 1 through 6 were considered in formulating the proposed rule. Option 7, a modification of Option 2, and Option 8, a modification of Option 1, were developed on the basis of information available at the time of the 1979 proposal, modified as a result of information collected by EPA after the proposed rule was published, as well as from public comments received on the proposed rule. Option 9, the BPT level of control, was reconsidered after publication of the proposed rule, as a result of public comments received.

Option 1—Discharge flow reduction of 27 percent from the proposed model flow, achieved through greater reuse and recycle of wastewaters, in addition to BPT treatment.

Option 2—Discharge flow reduction of 52 percent from the proposed model flow, achieved through greater reuse and recycle of wastewaters, in addition to BPT treatment. This was the control treatment option selected in the 1979 proposal.

Option 3—Discharge flow reduction of 27 percent from the proposed model flow per Option 1, plus enhanced BPT treatment with powdered activated carbon to reduce residual toxic organic pollutants.

Option 4—Discharge flow reduction of 52 percent from the proposed model flow per Option 2, in addition to BPT treatment plus segregation and separate treatment of cooling tower blowdown. Cooling tower blowdown treatment for metals removal includes reduction of hexavalent chromium to trivalent chromium, pH adjustment, precipitation, and settling or clarification.

Option 5—Discharge flow reduction of 27 percent from the proposed model flow per Option 1, in addition to BPT treatment plus granular activated carbon treatment to reduce residual toxic organic pollutants.

Option 6—A "no discharge of wastewater pollutants" (i.e., zero discharge) standard based upon reuse, recycle, evaporation, or reinjection of wastewaters.

Option 7—Discharge flow reduction of 37.5 percent from revised model flow achieved through greater reuse and recycle of wastewaters, in addition to BPT treatment.

Option 8—Discharge flow reduction of approximately 20 percent from revised model flow achieved through greater reuse and recycle of wastewaters, in addition to BPT treatment.

Option 9—Flow equalization, initial oil and solids removal, advanced oil and solids removal, biological treatment, and filtration or other final "polishing" steps. This option is the basis of the existing regulations.

2. *Technology Basis for the Final BAT Regulation.* (a) Final BAT Limits: EPA is promulgating BAT limitations based on Option 9 which is equivalent to the BPT level of control. Regulated pollutants for BAT are (1) nonconventional pollutants: Chemical oxygen demand (COD), total phenols (4AAP), ammonia(N), and sulfides; and (2) toxic pollutants: total chromium, and hexavalent chromium.

(b) Changes From Proposal: The options considered in formulating the proposed rules were based on various combinations of wastewater flow reduction and improved performance of wastewater treatment technology. A flow modeling approach was used for regulatory purposes to define the industry's current wastewater generation and to correlate effluent flow with process variables. The proposed 1979 flow model was developed to establish the average wastewater flow that can be expected from refineries with similar process configurations. The proposed flow model was also used to determine specific effluent limitations for the prescribed levels of flow reduction in Options 1 through 5.

The proposed regulation was based on the Option 2 level of control. This option proposed to regulate chemical oxygen demand (COD), total phenols (4AAP), ammonia(N), sulfide, total chromium, and hexavalent chromium.

The Agency determined that, regardless of the amount of flow reduction, the levels of ammonia, sulfide, and COD would not measurably change compared to the BPT level of control. The control of ammonia and sulfide is achieved through steam stripping, an in-plant control technique. No technologically feasible process changes or in-plant controls beyond those presently in use in this industry were identified to further reduce ammonia and sulfide. The Agency's attempts to quantify or predict changes in COD levels with implementation of flow reduction/water reuse technologies were inconclusive.

The proposed regulation would have limited total phenols at a mass equivalent of 19 μg/1. The Agency received a number of comments on this issue stating that the proposal to limit total phenols at 19μg/1 was too stringent because technology is not available to consistently achieve such a level. Additional information on phenol was collected by EPA in the "Long Term Data Collection Survey" and the "Surrogate Sampling Program" (See Sections IV and XVI) subsequent to the December 1979 proposal. Information collected included effluent data from 37 refineries for calendar year 1979. Analysis of the data collected during these two studies concluded that existing BPT treatment systems are not achieving the proposed 19 μg/1 level on a long term basis. However, the results do show that such systems are capable of achieving the 100 μg/1 level of control previously established for determining BPT mass limitations.

The preamble to the 1979 proposal (44 FR 75938) stated that implementation of Option 2 would result in the removal of approximately 123,000 pounds of chromium per year, at an incremental (beyond BPT) annual cost of $62 million and a capital cost of $138 million (1979 dollars). This 123, 000 pounds of chromium per year represents the incremental removal from the BPT level to the BAT Option 2 level. However, based upon reevaluation of the effluent data base, the Agency has found this figure was overstated because the observed chromium discharge of refineries with BPT level treatment was considerably less than that allowable by the BPT chromium limitations. The actual amount of chromium which would have been removed under this option is approximately 32,000 pounds per year. The capital costs, to a considerable extent, represent retrofit costs.

BAT Option 2 was developed using the proposed 1979 flow model. However, based upon data submitted by commenters and the "Flow Model" study performed by EPA after the proposal (See Section IV), the proposed 1979 flow model was modified. The technical points raised by some of the commenters were of considerable assistance in the flow model refinement process. The main emphasis of the comments concerned the statistical deficiencies of the proposed model, the choice of model variables, and aspects of the resulting model fit. The structure of the model and the process variables to be included were reexamined and modified accordingly. This refinement process resulted in the revised 1979 flow model which was more representative of the current wastewater generation in the industry. Thus, Option 2 has been rejected because it was based on the proposed flow model that has been modified. (See discussion of Option 7 below).

Other Options Considered

Because BAT Option 1 relies on the same technology as BAT Option 2, ammonia, sulfide, and COD levels would not be measurably changed by implementing Option 1. The total phenols limitation for this option was based upon the same 19 μg/1 concentration level as was used for Option 2. However, as previously discussed, BPT end-of-pipe treatment has not been shown to be capable of achieving this concentration level on a long term basis.

The Agency's analysis of available data shows that implementation of Option 1 would remove an additional 1 percent beyond BPT treatment levels of toxic pollutants that are present in raw wastewaters. This translates into an additional removal beyond BPT of approximately 1.3 pounds of toxi pollutants per day, per direct discharge refinery. The proposed 1979 regulation would require $23.5 million additional capital investment at an annual cost of $9.3 million (1979 dollars) to implement Option 1 for this industry. The capital costs, to a considerable extent, represent retrofit costs. This option was rejected because it was based on the proposed 1979 flow model, which, as discussed above, has been modified. (See discussion of Option 8 below).

The Agency's analysis of available data shows that implementation of Option 3 would remove an additional 1.5 percent (beyond BPT treatment) levels of beyond BPT treatment levels. This translates into an additional removal beyond BPT of approximately two pounds of toxic pollutants per day, per direct discharge refinery. The two end-of-pipe treatment technologies that were used to establish Option 3 are rotating biological contactors (RBC) and powdered activated carbon (PAC) treatment. At the time of the Agency's data collection efforts in 1976–1979, there were seven facilities using these technologies. The Agency determined that, upon analysis of available data, there are significant operational (mechanical) problems with RBC technology. The Agency also found that full-scale experience with PAC technology was mixed, i.e., some facilities experienced consistently measurable pollutant reductions as intended, while others experienced inconsistent or no measurable effluent reductions. Because of these operational problems observed in full-scale facilities, there was limited performance information available. While both of these technologies appear promising, the Agency believes there is not enough performance information available at this time upon which to base national regulation for this industry.

Option 4 was predicated on industrywide ability to segregate, collect, and separately treat cooling tower blowdown, the major source of chromium for this industry. The wastewater recycle/reuse study (See Section IV), completed after the publication of the proposed regulation, concluded that, for existing sources, it is extremely difficult in many instances to segregate cooling tower blowdown for chromium treatment. Cooling tower recirculation and blowdown is typically practiced at numerous locations throughout a refinery. Extensive collection systems would be necessary at many refineries to collect all blowdown streams for separate treatment. In addition, not all cooling tower blowdown streams are collectible. For instance, cooling water when used as makeup for refinery processing commingles with process water and cannot be traced or segregated, especially in older refineries. Therefore, the Agency has determined that it would not be proper to base BAT effluent limitations guidelines on this technology option.

The alternative for additional chromium removal beyond BPT is to treat the combined final effluent. However, further end-of-pipe treatment for chromium in combined final effluent after BPT treatment would result in limited, if any, measurable effluent reduction benefits. This is because the chromium level in combined final effluent (115 μg/l observed average) approximates the level achievable by any further treatment of this type of wastewater. For the foregoing reasons,

the Agency rejected Option 4 for this industry.

EAT Option 5 was predicated on industry's ability to install and operate granular activated carbon (GAC) treatment as an end-of-pipe technology. In the preamble to the 1979 proposal (44 FR 75933), the Agency stated that granular activated carbon (GAC) treatment is not a demonstrated technology in this industry. The Agency also stated that toxic pollutant removal generally increases with the use of GAC. However, because the levels of toxic pollutants after BPT treatment are so low, additional pollutant reduction across GAC treatment would be minimal. Difficulties in quantifying pollutant reductions were experienced when the Agency conducted six pilot plant treatability studies using GAC on BPT-treated wastewaters in this industry. See 44 FR 75930. EPA is not aware of any petroleum refinery presently using this technology. Although this technology is used in other industries, EPA has no adequate data to indicate that this technology is capable of being transferred to the petroleum refining industry. For the foregoing reasons the Agency rejected Option 5 for this industry.

The Agency rejected BAT Option 6, a zero discharge requirement: (1) Because of its high capital and operating costs, including significant retrofit expenditures; and (2) because analysis of the zero discharge technologies revealed that significant non-water quality impacts would result from their use. These non-water quality impacts include generation of large amounts of solid waste and very high energy consumption.

BAT Option 7 is the revision of regulatory Option 2, and is based upon a discharge flow reduction of 37.5 percent from the revised 1979 model flow. The Agency revised the costs to implement Option 7 recycle and reuse technologies. An estimated capital cost of $112 million dollars and $37 million dollars annually would be required for refiners to comply with Option 7 (1979 dollars). The Agency's analysis of available data shows that implementation of Option 7 would remove 110,000 pounds of toxic pollutants annually beyond BPT treatment levels, which is equivalent to an additional 1.5 percent (beyond BPT treatment levels) of toxic pollutants from raw wastewaters. This translates into an additional removal beyond BPT of approximately two pounds of toxic pollutants per day, per direct discharge refinery. The Agency believes, that given all of these factors, the costs involved do not warrant selection of Option 7 for this industry.

BAT Option 8 is a revised version of Option 1 reduction of 20 percent from the revised 1979 model flow. The Agency has not performed a detailed cost analysis for Option 8 but rather has estimated such costs based upon the costing procedure developed for Option 7. (Option 7 is the revision of the regulatory Option 2 selected in the 1979 proposal). The Agency's analysis of available data shows that implementation of Option 8 would remove an additional 80,000 pounds of toxic pollutants annually beyond BPT treatment levels, which would be an additional one percent (beyond BPT treatment levels) of toxic pollutants from raw wastewaters at a capital cost of $77 million dollars and an annual cost of $25 million (1979 dollars). This translates into an additional removal beyond BPT of 1.3 pounds of toxic pollutants per day, per direct discharge refinery. The Agency believes that given all these factors, the costs involved do not warrant selection of Option 8 for this industry.

Option 9 is based upon the same flow model and subcategorization scheme that were used for developing the BPT regulations promulgated by the Agency in 1974. A process classification system was used to divide the industry into five subcategories. A procedure was developed to establish effluent limitations for each subcategory. The resulting limits were defined in terms of a quantity of pollutant per unit of feedstock (mass allocation), and were derived by multiplying a predicted wastewater flow per unit of production times an achievable effluent concentration for each pollutant. A flow modeling approach, based on process configuration, was used to predict expected wastewater flow for an individual refinery, and is referred to as the "BPT flow model".

Option 9 was selected by the Agency as the basis for the final BAT regulations. Considering the limited pollutant reduction benefits associated with Options 1 through 8, the inability to quantify nonconventional pollutant reduction via Options 1 through 8, the costs involved of going beyond the BPT level of control, and the 96 percent reduction in toxic pollutant loadings achieved by BPT, the Agency has determined that the BAT should be equivalent to the BPT level of control for this industry.

B. New Source Performance Standards (NSPS)

NSPS were promulgated by EPA on May 9, 1974 (29 FR 16560) and are currently in effect. The Agency is retaining the existing NSPS.

1. *Control Treatment Options for NSPS.* The control and treatment technology options that EPA investigated for use in this industry for NSPS are presented below. Options 1 through 3 were considered in formulating the proposed rule and were based upon the 1979 flow model. Option 4, the existing NSPS level of control, was reconsidered after publication of the proposed rule as a result of the public comments and is based upon the 1974 flow model.

Option 1—Discharge flow reduction of 52 percent from model flow, achieved through greater reuse and recycle of wastewaters, in addition to BPT treatment. This option is equivalent to BAT Option 2.

Option 2—Discharge flow reduction of 27 percent from model flow, achieved through greater reuse and recycle of wastewaters in addition to BPT treatment, plus use of granular activated carbon to reduce residual organic toxic pollutants. This option is equivalent to BAT Option 5.

Option 3—Zero discharge of wastewater pollutants.

Option 4—Discharge flow reduction of from 25 percent to 50 percent of average BPT flow, depending upon subcategory, achieved through greater reuse and recycle of wastewaters in addition to BPT treatment. This option, which is based upon the 1974 flow model and 1974 subcategorization scheme, is the existing NSPS.

2. *Technology Basis for the NSPS Regulation.* (a) NSPS Limits: EPA is retaining the existing NSPS which are based on recycle and reuse technology resulting in pollutant reductions that range from 25 to 50 percent beyond BPT removals, depending upon the subcategory. Regulated pollutants for NSPS are BOD5, total suspended solids, chemical oxygen demand, oil and grease, total phenols (4AAP), ammonia (N), sulfide, total chromium, hexavalent chromium, and pH.

(b) Changes from Proposal: The proposed NSPS regulation was based on Option 3. Upon reevaluation of the existing data base and evaluation of comments received on the proposed regulation, EPA has decided not to revise the existing NSPS.

Option 3, zero discharge, was rejected for the following reasons. First, it generates significant adverse non-water quality environmental impacts, including the production of large amounts of solid waste and high energy consumption. Second, EPA estimates that the annual costs of achieving zero

discharge are extremely high, especially in geographical areas of low evapotranspiration which requires energy intensive forced evaporation techniques. It would cost an estimated $4.6 million (1979 dollars) annually for a 150,000 barrels per day new source of refinery in the cracking subcategory to comply with a zero discharge requirement. Third, only marginal additional water pollution reduction benefits would be achieved beyond the existing NSPS requirement. The quantities of pollutants that would be removed daily are 2.46 pounds of total phenols (4AAP), 3.9 pounds of hexavalent chromium, 6 pounds of total chromium, 308 pounds of total suspended solids, and 381 pounds of BOD5. EPA believes that the high costs of implementing such requirements would raise serious barriers to any decision involving construction of a new source refinery.

Other Options Considered

NSPS Option 1 is equivalent to proposed BAT Option 2. The technology for this option is the same as that for the existing NSPS regulations—wastewater recycle and reuse technologies, in addition to BPT end-of-pipe treatment. The Agency compared effluent reductions achievable by existing NSPS and this option. The analysis was performed on a model greenfield new source refinery (190,000 bbl/day), which is classified as a "Subcategory B" refinery as defined by the existing regulation ("cracking"). This model refinery was configured to correspond with demand growth forecasts published by the Department of Energy (See the Economic Analysis document.) This comparison concluded that effluent reductions resulting from existing NSPS and this option are comparable. The costs to implement this option are comparable to the existing NSPS. Non-water quality environmental impacts and energy requirements are also comparable to existing NSPS. Accordingly, there would be no benefit in revising the existing NSPS option.

NSPS Option 2 is equivalent to proposed BAT Option 5, which is based on granular activated carbon (GAC) treatment as an end-of-pipe technology. For the reasons stated in the above discussion on BAT Option 5, the Agency believes that GAC treatment is not a demonstrated technology for this industry. Accordingly, the Agency rejected Option 2 for this industry.

NSPS Option 4, is the existing NSPS level of control. It consists of recycle and reuse technologies to achieve flow reduction of from 25 to 50 percent of average BPT flow, depending upon the subcategory. For the reasons discussed above, after careful consideration of the options proposed in 1979, together with the public comments received, the Agency finds no reason for revising current NSPS. Accordingly, the existing level of NSPS, Option 4, is retained.

C. Final Pretreatment Standards for Existing Sources (PSES)

Interim final PSES was promulgated by the Agency on March 23, 1977 (42 FR 15684) and is currently in effect. Regulated pollutants are oil and grease (100 mg/l) and ammonia-N (100 mg/l) each on a daily maximum basis. EPA is retaining the existing PSES regulation, with one modification. An alternative mass limitation for ammonia(N) is provided for those indirect dischargers whose discharge to the POTW consists solely of sour waters.

1. *Control Treatment Options Considered.* The control and treatment options that EPA investigated for PSES in this industry are presented below. Options 1 and 2 were considered in formulating the proposed rule. Option 3, the existing PSES level of control, was reconsidered after publication of the proposed rule as a result of public comments received on it. As a result of public comments, Option 3 also contains an alternative mass limitation for ammonia(N).

Option 1—Chromium reduction by pH adjustment, precipitation and clarification technologies applied to segregated cooling tower blowdown, plus control of oil and grease and ammonia at the existing PSES level of control.

Option 2—Establish two sets of pretreatment standards. The first would be Option 1 control for refineries discharging to POTW with existing or planned secondary treatment. The second would be Option 1 control plus treatment for total phenols based on biological treatment for those refineries discharging to a POTW that has been granted a waiver from secondary treatment requirements under Section 301(h) of the Act. EPA's proposed pretreatment standards for existing sources were based on this option. For a further discussion see the 1979 proposed petroleum refining regulation at 44 FR 75935.

Option 3—Reduction of oil and grease and ammonia based on oil/water separation and steam stripping technologies. This option is the basis for the existing interim final PSES regulation. An alternative mass limitation for ammonia(N) is included for those indirect dischargers whose discharge to the POTW consists solely of "sour" waters. Sour waters generally result from water brought into direct contact with a hydrocarbon stream, and contain sulfides, ammonia and phenols. The Agency developed an alternative mass limitation for ammonia in response to public comments received on the proposed regulation. Several commenters indicated that, when the refinery discharge to the POTW consists solely of sour waters, the achievement of the 100 mg/l ammonia concentration limitation is often not possible. This is because steam stripping technology, the basis for the limitations, cannot consistently reduce ammonia in sour water streams to the 100 mg/l level. Thus, an equivalent mass limitation for ammonia was developed by the Agency.

2. *Technology Basis for the Final PSES Options.* (a) Final PSES Limits: EPA is retaining the existing PSES regulation. Regulated pollutants are oil and grease and ammonia(N), each limited at 100 mg/l on a daily maximum basis. An alternative mass limitation for ammonia-N is also provided as described above.

(b) Changes from Proposal: The proposed regulation was based on Option 2 for the PSES control level. EPA has rejected Option 2 because it now believes that it is not feasible and that it would be inappropriate to establish national pretreatment standards that take into account whether a discharger uses a POTW which has received a 301(h) waiver. Rather, the need for more rigorous pretreatment controls should be resolved on a case-by-case basis during the Section 301(h) waiver process. This is because the level of treatment proposed by Section 301(h) applicants varies considerably, and the Section 301 (h) process entails the consideration of site-specific toxic pollutant problems.

Options 1 and 2 as proposed also would have established a chromium limitation for PSES. This limitation was proposed to avoid concentration of chromium in POTW sludge. At the time of proposal, the Agency believed such concentrations would limit a POTW's use or management alternatives of the sludge. Based upon review of existing information and analysis of public comments on the proposal, EPA has determined that this rationale is not valid on a nationwide basis. For this industry, chromium levels in sludge from POTW receiving petroluem refinery wastes generally do not impact on sludge disposition or alternatives for use. There are no Section 405 sludge standards directed at concentrations of chromium in the sludge. Accordingly, EPA has determined that the better approach is to leave it to the POTW to establish chromium pretreatment

standards for existing sources if refinery waste would limit their sludge disposal alternatives. The general pretreatment regulations specifically provide POTW's with this authority. (See 40 CFR 403.5).

EPA has investigated whether toxic pollutants "pass through" a POTW. The Agency generally considers that there is pass through of a pollutant if the percent of the pollutant removal by a well-operated POTW achieving secondary treatment is less than the percent removed by the BAT model treatment technology. Under this approach, chromium passes through a POTW. The Agency's BAT model treatment system removes 86 percent of the chromium while a well-operated POTW achieving secondary treatment removes 65 percent of the chromium. In addition, under this approach the toxic pollutants identified in Appendix D—Parts II/III of this **Federal Register** notice may pass through a POTW.

As discussed under BAT Option 4 above, the Agency found it infeasible in many instances to segregate cooling tower blowdown for chromium treatment on an industrywide basis. Accordingly, EPA has determined that implementation of Option 1 for PSES is not achievable on an industry-wide basis. As an alternative, treatment of the combined refinery waste stream for chromium removal would require installation of most if not all of the BPT treatment train. Installation of such treatment for all indirect dischargers would cost an estimated $110 million in capital costs, with a total annual cost of $42 million in (1979 dollars). The Agency did not propose requiring installation of BPT-type treatment on an industry-wide basis for indirect dischargers. EPA did not receive any comments during the public comment period suggesting such a requirement. For the foregoing combination of reasons, and given the costs involved, EPA does not believe installation of the BPT treatment train for chromium removal for indirect dischargers is warranted.

The toxic pollutants listed in Appendix D of this preamble were detected in petroleum refinery waste streams that are discharged to POTWs. The Agency has decided not to establish PSES for these toxic pollutants in this industry for the following reasons:

The pollutants listed in Part I and Part II of Appendix D are excluded from national regulation in accordance with Paragraph 8 of the Settlement Agreement because either they were found to be susceptible to treatment by the POTW and do not interfere with, pass through, or are not otherwise incompatible with the POTW, or the toxicity and amount of incompatible pollutants are insignificant.

The pollutants listed in Part III of Appendix D are excluded for several reasons in accordance with Paragraph 8 of the Settlement Agreement. First, there is significant removal of some of these pollutants by the existing oil/water separation technology used to comply with the pretreatment standard for oil and grease. Second, there is significant removal of these pollutants by the POTW treatment processes by air stripping and biodegredation. Third, the amount and toxicity of these pollutants does not justify developing national pretreatment standards.

D. Final Pretreatment Standards for New Sources (PSNS)

PSNS was promulgated by the Agency on May 9, 1974 (39 FR 16560) and is currently in effect. Pretreatment Standards for incompatible pollutants are equivalent to NSPS.

1. *Control Treatment Options Considered.* The control and treatment options that EPA investigated for PSNS in this industry are the same as those presented for PSES, as described above. Option 1 was selected as the basis for PSNS. As a result of public comment, the final PSNS contains an alternative mass limitation for ammonia(N).

Option 1—Chromium reduction by pH adjustment, precipitation and clarification technologies applied to segregated cooling tower blowdown, plus control of oil and grease and ammonia to 100 mg/1 each.

Otion 2—Establish two sets of pretreatment standards as for PSES Option 2.

2. *Technology Basis for the Final PSNS.* (a) Final PSNS Limits: EPA is promulgating PSNS equivalent to Option 1. Regulated pollutants are oil and grease and ammonia(N), each limited at 100 mg/1, on a daily maximum basis, and total chromium at the equivalent of 1 mg/1 for the cooling tower discharge part of the total refinery flow to the POTW. An alternative mass limitation for ammonia(N) is also provided, as described above for PSES.

(b) Changes from Proposal: The final PSNS limits are equal to Option 1, the option selected at proposal. Chromium was selected for regulation for PSNS because: (1) It was determined to "pass through" POTWs as described above; (2) treatment technology is available and demonstrated; and (3) there are no retrofit problems or retrofit costs involved with implementing Option 1.

Alternative mass limitations for ammonia(N) are also provided, as discussed previously.

Pretreatment costs for a typical new source refinery are estimated to be $260,000 in capital costs and $190,000 in annual costs (1979 dollars).

VI. Costs and Economic Impacts

Executive Order 12291 requires EPA and other agencies to provide regulatory impact analyses for rules that result in an annual cost to the economy of 100 million dollars or more or that meet other economic impact criteria. In addition, the Clean Water Act specifies that the Agency should consider the costs and economic impacts in establishing effluent limitations and standards. The Agency does not consider this final regulation to be a major rule. This rulemaking satisfies the requirements of the Executive Order for a non-major rule.

The economic impact assessment is presented in *Economic Impact Analysis of Proposed Revised Effluent Limitations for the Petroleum Refining Industry* (EPA). Copies of the analysis can be obtained by contacting the National Technical Information Service, 5282 Port Royal Road, Springfield, VA 22161 (703/487-4600).

BAT/PSES

EPA is making substantial changes to the regulations that were proposed in December 1979. The limitations promulgated today for existing sources do not reflect any treatment requirements beyond BPT for existing direct dischargers. For indirect dischargers the PSES promulgated today is no more stringent than existing pretreatment standards already in effect. Accordingly, EPA expects no incremental costs or impacts for existing plants from this rulemaking.

NSPS

EPA is not imposing any more stringent NSPS by today's action. Accordingly, today's action will not affect the rate of entry of new refineries into the industry. Moreover, EPA does not expect the NSPS promulgated in 1974 to change the rate of entry or growth of the industry. The Agency expects that if a firm decides to bring a new refinery on line, the control costs that will be required to meet these standards are relatively small compared to the total cost required to start a greenfield operation. The current economic analysis was based on a 190,000 barrel per day refinery with a configuration appropriate for production of gasoline, distillate fuels and petrochemical feedstocks. There would essentially be no additional investment required for meeting the current

standard beyond the BPT level of control. This is because the "add-on" recycle technology for the existing NSPS can be incorporated in the water supply, use, and treatment systems during planning and construction of the new source. Therefore, this regulation is expected to have negligible economic effects on the industry.

Due to significant changes in the world market for refined petroleum products, however, the Agency does not anticipate any new sources within the petroleum refining category through 1990. A refinery can be a new source if it is a "greenfield site" or if modification of an existing plant is extensive enough to be "substantially independent" of an existing source. (See 45 FR 59343, September 9, 1980.) The Agency expects that in the latter case the control costs that would be required to meet these standards would be less than the cost in the case of a greenfield operation.

PSNS

EPA believes that for indirect dischargers the PSNS promulgated today is no more stringent than existing PSNS. Under the existing PSNS chromium was subject to regulation on a case-by-case basis along with other pollutants. The Agency expects that if a firm decides to bring a new indirect discharger on line, the control cost that will be required to meet these standards are relatively minor compared to the total investment cost for a new refinery and would not pose a barrier to entry. The Agency believes that where an existing refinery is modified so that it is considered a new source, the costs for chromium treatment would not be greater than the costs for a greenfield refinery and the cost of chromium treatment would not be a significant factor in the decision to modify that refinery.

Public Law 96–354 requires that a Regulatory Flexibility Analysis (RFA) be prepared for regulations proposed after January 1, 1981 that have a significant effect on a substantial number of small entities. This regulation was proposed on December 21, 1979. Therefore, a Regulatory Flexibility Analysis is not required. The Agency does not believe that this regulation will have a significant impact on a substantial number of small entities

VII. Non-Water Quality Environmental Impacts

Eliminating or reducing one form of pollution may cause other environmental problems. Sections 304(b) and 306 of the Act require EPA to consider the non-water quality environmental impacts (including energy requirements) of certain regulations. In compliance with these provisions, we considered the effect of this regulation on air pollution, solid waste generation, water scarcity, and energy consumption. This regulation was circulated to and reviewed by EPA personnel responsible for non-water quality programs. While it is difficult to balance pollution problems against each other and against energy use, we believe that this regulation will best serve often competing national goals.

The following non-water quality environmental impacts (including energy requirements) are associated with the final regulation. The Administrator has determined that the impacts identified below are justified by the benefits associated with compliance with the limitations and standards.

A. *Air Pollution*

The petroleum refining regulations will not result in any additional air quality impacts beyond those from compliance with existing regulations.

B. *Solid Waste*

The petroleum refining regulations will not result in any additional solid waste impacts beyond those from compliance with existing regulations.

C. *Consumptive Water Loss*

The petroleum refining regulations will not result in any additional water consumption beyond that from compliance with existing regulations.

D. *Energy Requirements*

The petroleum refining regulations will not result in any additional energy requirements beyond those for compliance with existing regulations.

VIII. Pollutants and Subcategories Not Regulated

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

A. *Exclusion of Pollutants*

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

The toxic pollutants excluded from regulation in all subcategories because they were not detectable by Section 304(h) analytical methods or other state-of-the-art methods are listed in Appendix A for direct dischargers and Appendix B for indirect dischargers

The toxic pollutants that will be effectively controlled by the technologies on which other effluent limitations and standards are based are listed in Appendix C for direct dischargers.

B. *Exclusion of Subcategories*

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 excluded under Paragraphs 8(b)(i), 8(b)(ii), and 8(a) are listed in Appendix D for indirect dischargers.

IX. Responses to Major Comments

This section contains responses to those issues raised in a large number of the comments received and which affect all subcategories. The original comments and a summary of the comments received and our detailed responses to all comments are included in a report "Responses to Public Comments, Proposed Petroleum Refining Effluent Guidelines and Standards", which is included in the public record for this regulation.

Most of the commenters criticized the need for further control beyond existing BPT and NSPS and the alleged technical inadequacy of data to support the proposed regulations. Since the Agency has decided to promulgate BAT equivalent to BPT retain the existing NSPS and retain the existing PSES regulation (with an alternative mass limitation provided for ammonia (N)), EPA believes it unnecessary to address in detail many of the comments in this preamble. A brief summary of significant comments received by the Agency, together with the Agency's responses, is set forth below:

A. *Regulation Beyond the BPT Level*

Many of the commenters indicated

that further control beyond BPT is unwarranted since BPT technology already reduces significant quantities of toxics.

The Agency agrees with the commenters that BPT technology already removes significant quantities of toxic and other pollutants and is thus promulgating BAT equal to BPT. One of the many factors considered in formulating the final rule are the very low pollutant levels in BPT effluents and the overall effectiveness and efficiency of the treatment systems already in place in removing toxic and other pollutants.

Other commenters argued for BAT to be promulgated at the proposed BAT level or a more stringent level, including zero discharge or separate treatment of cooling water discharges. The reasons for not adopting levels of treatment are discussed in Section V above.

The proposed requirement for separate treatment of cooling tower blowdown for existing dischargers was not adopted as a result of public comments received. In addition, the Agency performed a study which evaluated the cost and feasibility of implementing recycle and reuse technologies. The study (Recycle/Reuse Study referenced in Section IV) indicated that the collection of all the cooling tower water is infeasible in many existing refineries because of leaks and auxiliary uses and thus supports the Agency's decision not to impose this requirement.

Several commenters argued that the proposed zero discharge requirement for new sources has questionable effluent reduction benefits and the Agency did not consider the benefit/cost ratio of zero discharge. The factors that led to the Agency's decision to retain the existing NSPS are discussed in Section V.

B. *Pretreatment Standards for POTW with § 301(h) Waivers*

Some commenters argued that EPA has no authority to establish more stringent pretreatment standards for refineries that discharge to POTW with Section 301(h) waivers.

Although the Agency does not agree with these commenters, we have decided to change the proposed approach and establish one set of pretreatment standards for all indirect dischargers in this industry. This industrial category is the only one for which EPA proposed separate pretreatment standards for indirect dischargers whose wastes go to POTWs with § 301(h) waivers. The Agency would like to gain more experience with § 301(h) applicants before considering a two-tier pretreatment requirement. Added experience will enable the Agency to decide whether control of toxics should be effectuated through requirements imposed on POTW during the § 301(h) waiver process or by revised pretreatment standards.

C. *Pretreatment Standards for Hydrogen Sulfide and Mercaptans*

A few commenters indicated that hydrogen sulfide and mercaptans can cause damage to the wastewater collection systems and can cause significant odor problems at the treatment plant if not removed. Pretreatment standards were recommended.

Pretreatment standards adopted today limit ammonia to 100 mg/l. The technology for control of ammonia is steam stripping, the same technology required for sulfide removal. The Agency therefore believes that the technology for control of ammonia will also control sulfide and therefore that it is not necessary to establish separate pretreatment standards for sulfide. Mercaptans were not found to be a problem warranting national regulation. Any POTW experiencing problems caused by mercaptans should impose the appropriate pretreatment standards on a case-by-case basis.

D. *Total Phenol (4AAP)*

Several commenters indicated that EPA has incorrectly assumed that total phenols as determined by the 4-aminoantipyrine method (4AAP) is a toxic pollutant in this industry.

The Agency agrees. Total phenols (4AAP) measures many compounds, including the phenolic compounds that are on the Agency's list of priority pollutants. Because the 4AAP method measures more compounds than just the GC/MS compounds, it does not provide an accurate quantification of the toxic pollutant phenol (GC/MS). Thus, total phenols (4AAP) is considered a non-conventional pollutant for this industry.

E. *Regulation of Toxic Organics*

It was argued that EPA should promulgate effluent limitations guidelines for specific toxic pollutants such as methylene chloride, carbon tetrachloride, mercury, ethylbenzene, naphthalene, 2-4 dimethylphenol, benzene, and toluene.

The Agency has concluded that the levels of these pollutants detected in this industry do not warrant industry-wide regulation. Mercury was found in effluents from BPT treatment systems during the Agency's sampling programs at an average concentration of less than 1 ppb. Methylene chloride was detected in BPT effluents, but is a contaminant inherent in the analyses of organic compounds. Thus, it is difficult to determine the amounts discharged by refinery operations. Ethylbenzene, naphthalene, 2,4-dimethylphenol, benzene, toluene, and carbon tetrachloride were either not detected in BPT treated wastewaters or were present at average concentrations that were at or less than the level of quantification, which is nominally 10 ppb.

F. *Indicator and Surrogate Pollutants.*

Comments were received from industry and private citizens on the possible use of indicator or surrogate pollutant limitations. Most of the comments were not favorable. The industry commenters argued that indicator limitations, if necessary, should be developed on a case-by-case basis. Industry also questioned the use of total organic carbon (TOC), chemical oxygen demand (COD), and BPT-limited pollutant parameters as indicators for toxic pollutants because the concentration of toxics are several orders of magnitude smaller than that of such traditional pollutants. The private citizens felt that the Agency should limit the toxics directly instead of relying on indicators. Additionally, many commenters pointed out the difficulty in using the BPT pollutant parameters as indicators of toxic pollutants.

In the Solicitation of Comments section of the preamble to the 1979 proposal (40 FR 45941), the Agency requested comments on the possibility of regulating toxic pollutants with limitations on indicator pollutants. While EPA recognizes that the relationship between "indicator" and toxic pollutants may not be quantifiable on a one-to-one basis, we believe control of the "indicator" pollutants would reasonably assure control of toxic pollutants with similar physical and chemical properties.

Subsequent to the 1979 proposal, the Agency conducted a sampling program at two refineries for a period of sixty days to determine whether an indicator/surrogate relationship existed between the BPT pollutant parameters and the toxics. The results of the study confirm the difficulties of using such parameters and indicates that a statistically significant correlation between candidate surrogate/indicator parameters and toxic pollutant parameters does not exist for this industry. The Agency, therefore, decided not to issue limitations for indicator or surrogate pollutants in this rule.

Specific toxic pollutants other than chromium are not regulated by today's rule for reasons presented in Sections V and VIII of this preamble.

G. New Source Construction

It was argued that there is no basis for EPA's statements that no new refineries will be entering the industry. Commenters stated that new refineries are currently being planned, such as the one in Portsmouth, Virginia.

The U.S. refining industry has experienced a dramatic reversal of historical growth trends as a result of the reduction in consumption of petroleum products that has taken place since 1978. U.S. crude oil runs peaked at 14.7 million barrels per day in the calendar year 1978. Runs have decreased each year since then reaching 12.5 million barrels per day for the calendar year 1981. In early 1982 runs dropped to below 11.5 million barrels per day—representing percentage capacity utilizations in the low 60's. The 1981 DOE Annual Report to Congress predicts production to regain strength to 14.4 million barrels per day in 1985 and 13.4 million barrels per day by 1990. The Agency believes that these forecasts of U.S. refinery activity indicate that it is unlikely that any new refinery facilities will be built at *undeveloped* sites over the next decade, including the Portsmouth, Virginia site which has become uneconomical and is not expected to be built. However, it will be necessary for U.S. refiners to modernize and expand downstream facilities at existing refinery sites to allow increasingly heavier and higher sulfur crude oils to be processed into a product mix which emphasizes production of the lighter and higher quality products that will be demanded by the marketplace. This modernization process is not expected to be sufficiently independent to be considered a new source.

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 not establishing BMPs at this time, we are considering development of BMPs specific to the petroleum refining industry. Numerous problem areas are known exist, including leaks and spills, storm water contamination, groundwater infiltration from storage areas and on-site solid waste disposal. Section VII of the development document describes possible BMP's for this industry. This information can guide the permitting agency in developing case-by-case BMPs for NPDES permits.

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 pemittees in the petroleum refining industry will be entitled to upset and bypass provisions in NPDES permits, the final petroleum refining 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 petroleum refining 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" 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. Although this variance clause was set forth in EPA's 1973–1976 industry regulations, it is now included in the NPDES regulations and is referenced by citation in the petroleum refining or other industry regulations. See the NPDES regulations at 40 CFR Part 125, Subpart D.

The BAT limitations in this regulation are also subject to EPA's "fundamentally different factors" variance. BAT limitations for nonconventional pollutants are 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.

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; 43 FR 27736 (June 26, 1978)).

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 petroleum refineries 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 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 and conserves enforcement resources for those who fail to make good-faith efforts to comply with the Act.

XIV. Public Participation

Numerous agencies and groups have participated during the development of these effluent limitations guidelines and standards. Following the publication of the proposed rules on December 21, 1979, in the **Federal Register**, EPA provided the development document supporting the proposed rules to industry, Government agencies, and the public sector for comments. Five technical workshops were held on the proposed rulemaking. On April 9, 1980, in Washington, D.C., a public hearing was held on the proposed pretreatment standards.

The individuals and organizations that submitted written comments during the comment period on the proposed regulation are listed in Appendix A of this preamble.

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 IX of this preamble. A summary of all the comments received and our detailed responses to all comments are included in a report "Responses to Public Comments, Proposed Petroleum Refining Effluent Guidelines and Standards," which is a part of the public record for this regulation. This report, along with the rest of the public record, will be available for public review four weeks after the effective date in EPA's Public Information Reference Unit, Room 2004 (Rear), (EPA Library), 401 M Street, S.W., Washington, D.C.

XV. Small Business Administration (SBA) Financial Assistance

The Agency is continuing to encourage small manufacturers to use Small Business Administration (SBA) financing as needed for pollution control equipment. Three basic programs are in effect: the Guaranteed Pollution Control Bond Program, the Section 503 Program, and the Regular Guarantee Program. All the SBA loan programs are open only to businesses with net assets less than $6 million, with an average annual after-tax income of less than $2 million, and with fewer than 250 employees.

The guaranteed pollution control bond is a full faith and credit instrument with a tax free feature, making this program the most favorable. The program applies to projects that cost from $150,000 to $2,000,000.

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

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

For additional information on the Regular Guarantee and Section 503 Programs contact your district or local SBA Office. The coordinator at EPA headquarters is Ms. Frances Desselle who may be reached at (202) 426-7874.

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

XVI. Availability of Technical Assistance

The major documents upon which these regulations are based are: (1) The *Development Document for Effluent Limitations Guidelines, New Source Performance Standards, and Pretreatment Standards for the Petroleum Refining* Point Source Category (EPA 440/1-82/014; (2) a report entitled *Long Term Monitoring Data Collection Survey for the Petroleum Refining Industry* (public record); (3) a report entitled *Wastewater Recycle Study, Petroleum Refining Industry* (public record); (4) *Economic Analysis of Promulgated Effluent Standards and Limitations for the Petroleum Refining Industry* (EPA 440/2-82/007); (5) public comments received by the Agency on the studies upon which the proposed regulations were based; and (6) the development document supporting the proposed regulations. A summary of the public comments received on the proposed regulation is presented in a report "Responses to Public Comments Proposed Petroleum Refining Effluent Guidelines and Standards", which is a part of the public record for this regulation.

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

List of Subjects in 40 CFR Part 419

Petroleum, Water pollution control, Waste treatment and disposal.

Dated: September 30, 1982.

John W. Hernandez,

Acting Administrator.

XVII. Appendices

Appendix A.—Priority Pollutants Not Detected in Treated Effluents Discharged Directly, and Excluded From Regulation

Pursuant to Paragraph 8(a)(iii) of the Settlement Agreement, the following 98 priority pollutants are excluded from national regulation because they were not detected in effluents from BPT treatment systems by Section 304(h) analytical methods or other state-of-the-art methods:

EPA No.	Priority pollutant
2	acrolein
3	acrylonitrile
5	benzidine
6	carbon tetrachloride
7	chlorobenzene
8	1,2,4-trichlorobenzene
9	hexachlorobenzene
10	1,2-dichloroethane
11	1,1,1-trichloroethane
12	hexachloroethane
13	1,1-dichloroethane
14	1,1,2-trichloroethane
15	1,1,2,2-tetrachloroethane
16	chloroethane
18	bis(2-chloroethyl) ether
19	2-chloroethylvinyl ether
20	2-chloronaphthalene
21	2,4,6-trichlorophenol
24	2-chlorophenol
25	1,2-dichlorobenzene
26	1,3-dichlorobenzene
27	1,4-dichlorobenzene
28	3,3'-dichlorobenzidine
29	1,1-dichloroethylene
30	1,2-trans-dichloroethylene
32	1,2-dichloropropane
33	1,3-dichloropropylene
34	2,4-dimethylphenol
35	2,4-dinitrotoluene
36	2,6-dinitrotoluene
37	1,2-diphenylhydrazine
38	ethylbenzene
39	fluoranthene
40	4-chlorophenyl phenyl ether
41	4-bromophenyl phenyl ether
42	bis(2-chloroisopropyl) ether
43	bis(2-chloroethoxy) methane

EPA No.	Priority pollutant
45	methyl chloride
46	methyl bromide
47	bromoform
48	dichlorobromomethane
51	chlorodibromomethane
52	hexachlorobutadiene
53	hexachlorocyclopentadiene
54	isophorone
55	naphthalene
56	nitrobenzene
57	2-nitrophenol
58	4-nitrophenol
59	2,4-dinitrophenol
60	4,6-dinitro-o-cresol
61	N-nitrosodimethylamine
62	N-nitrosodiphenylamine
63	N-nitrosodi-n-propylamine
64	pentachlorophenol
65	phenol
67	butyl benzyl phthalate
69	di-n-octyl phthalate
72	benzo(a)anthracene
74	3,4-benzofluoranthene
75	benzo(k)fluoranthane
77	acenaphthylene
78	anthracene
79	benzo(ghi)perylene
80	fluorene
82	dibenzo(a,h)anthracene
83	ideno(1,2,3-cd)pyrene
85	tetrachloroethylene
87	trichloroethylene
88	vinyl chloride
89	aldrin
90	dieldrin
91	chlordane
92	4,4'-DDT
93	4,4'-DDE
94	4,4'-DDD
95	alpha-endosulfan
96	beta-endosulfan
97	endosulfan sulfate
98	endrin
99	endrin aldehyde
100	heptachlor
101	heptachlor epoxide
102	alpha-BHC
103	beta-BHC
104	gamma-BHC
105	delta-BHC
106	PCB-1242
107	PCB-1254
108	PCB-1221
109	PCB-1232
110	PCB-1248
111	PCB-1260
112	PCB-1016
113	toxaphene
114	antimony (total)
116	asbestos
129	2,3,7,8-tetrachloro-dibenzo-p-dioxin (TCDD)

Appendix B.—Priority Pollutants not Detected in Effluents Discharged To POTWs, and Excluded From Regulation

Pursuant to Paragraph 8(a)(iii) of the Settlement Agreement, the following 75 priority pollutants are excluded from national regulation because they were not detected by Section 304(h) analytical methods or other state-of-the-art methods in effluents discharged to POTWs:

EPA No.	Priority pollutant
3	acrylonitrile
5	benzidine
6	carbon tetrachloride
8	1,2,4-trichlorobenzene
9	hexachlorobenzene
12	hexachloroethane
13	1,1-dichloroethane
14	1,1,2-trichloroethane
15	1,1,2,2-tetrachloroethane
16	chloroethane
18	bis(2-chloroethyl) ether
19	2-chloroethylvinyl ether
20	2-chloronaphthalene
21	2,4,6-trichlorophenol
22	parachlorometa cresol
25	1,2-dichlorobenzene
26	1,3-dichlorobenzene
27	1,4-dichlorobenzene
28	3,3'-dichlorobenzidine
29	1,1-dichloroethylene
31	2,4-dichlorophenol
32	1,2-dichloropropane
33	1,3-dichloropropylene
35	2,4-dinitrotoluene
36	2,6-dinitrotoluene
37	1,2-diphenylhydrazine
41	4-bromophenyl phenyl ether
42	bis(2-chloroisopropyl) ether
43	bis(2-chloroethoxy) methane
44	methylene chloride
45	methyl chloride
46	methyl bromide
47	bromoform
51	chlorodibromomethane
52	hexachlorobutadiene
53	hexachlorocyclopentadie
56	nitrobenzene
61	N-nitrosodimethylamine
62	N-nitrosodiphenylamine
63	N-nitrosodi-n-propylami
66	bis(2-ethylhexyl) phtha
69	d-n-octyl phthalate
71	dimethyl phthalate
74	3,4-benzofluoranthene
75	benzo (k) fluoranthane
79	benzo (ghi) perylene
82	dibenzo (a,h) anthracene
83	ideno (1,2,3-C,D) pyrene
87	trichloroethylene
88	vinyl chloride
90	dieldrin
91	chlordane
94	4,4'-DDD
95	alpha-endosulfan
97	endosulfan sulfate
98	endrin
99	endrin aldehyde
100	heptachlor
101	heptachlor epoxice
102	alpha-BHC
103	beta-BHC
104	gamma-BHC (lindane)
106	PCB-1242
107	PCP-1254
108	PCB-1221
109	PCB-1232
110	PCB-1248
111	PCB-1260
112	PCB-1016
113	toxaphene
114	antimony (total)
116	asbestos
126	silver (total)
127	thallium (total)
129	2,3,7,8-tetrachloro-dibenzo-p-dioxin (TCDD)

Appendix C.—Priority Pollutants Detected in Treated Effluents Discharged Directly, but Excluded From Regulation

I. Pursuant to Paragraph 8(a)(iii) of the Settlement Agreement, the following 25 priority pollutants are excluded from national regulation because they are already effectively controlled by technologies upon which other effluent limitations and guidelines are based:

EPA No.	Priority pollutant
1	acenaphthene
4	benzene
22	parachlorometacresol
23	chloroform
31	2,4-dichlorophenol
68	di-n-butyl phthalate
70	diethyl phthalate
71	dimethyl phthalate
73	benzo(a)pyrene
76	chrysene
81	phenanthrene
84	pyrene
86	toluene
115	arsenic
117	beryllium
118	cadmium
120	copper
121	cyanide
122	lead
123	mercury
124	nickel
125	selenium
126	silver
127	thallium
128	zinc

II. Pursuant to Paragraph 8(a)(iii) of the Settlement Agreement, the following two priority pollutants are excluded from national regulation because their detection is believed to be attributed to laboratory analysis and sample contamination:

Epa No.	Priority pollutant
44	methylene chloride
66	bis(2-ethylhexyl) phthalate

Appendix D.—Priority Pollutants Detected in Effluents Discharged to POTWs, but Excluded From Regulation

I. Pursuant to Paragraph 8(b)(i) of the Settlement Agreement, the following 5 priority pollutants are excluded from regulation because 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:

EPA No.	Priority pollutant
24	2-chlorophenol
57	2-nitrophenol
77	acenaphthylene
80	fluorene
125	selenium

II. Pursuant to paragraph 8(b)(ii) of the Settlement Agreement, the following 33 priority pollutants are excluded from regulation because the amount and toxicity of each pollutant does not justify developing national regulations:

EPA No.	Priority pollutant
2	acrolein
7	chlorobenzene
10	1,2-dichloroethane
11	1,1,1-trichloroethane
23	chloroform
30	1,2-trans-dichloroethylene
39	fluoranthene
40	4-chlorophenyl phenyl ether
48	dichlorobromomethane
60	4,6, dinitro-o-cresol
64	pentachlorophenol
67	butyl benzyl phthalate
68	di-n-butyl phthalate

EPA No.	Priority pollutant
70	diethyl phthalate
72	benzo(a)anthracene
73	benzo(a)pyrene
76	chrysene
84	pyrene
85	tetrachloroethylene
89	aldrin
92	4,4'-DDT
93	4,4'-DDE
96	beta endosulfan
105	delta BHC
115	arsenic
117	beryllium
118	cadmium
120	copper
121	cyanide
122	lead
123	mercury
124	nickel
128	zinc

III. Pursuant to Paragraphs 8(a)(iii), 8(a)(iv), and 8(b) of the Settlement Agreement, the following 12 priority pollutants are excluded from regulation for a combination of reasons. First, there is significant removal of some of these pollutants by the existing pretreatment standards for oil and grease; second, there is significant removal of all these pollutants by the POTW treatment system; and thirdly, the amount and toxicity of the pollutants does not justify developing national pretreatment standards.

EPA No.	Priority pollutant
1	acenaphthene
4	benzene
34	2,4-dimethylphenol
38	ethylbenzene
54	isophorone
55	naphthalene
58	4-nitrophenol
59	2,4-dinitrophenol
65	phenol
78	anthracene
81	phenanthrene
86	toluene

Appendix E.—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
COD—Chemical oxygen demand
Clean Water Act—The Federal Water Pollution Control Act Amendments of 1972 (33 U.S.C. 1251 et seq.), as amended by the Clean Water Act of 1977 (Pub. L. 95-217)
Direct discharger—A facility which discharges or may discharge pollutants into waters of the United States
Indirect discharger—A facility which discharges or may discharge pollutants into a publicly owned treatment works
kg/m ^{3}—Kilograms per cubic meter
lb/bbl—Pounds per barrel (one barrel equals 42 gallons)
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
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 (Pub. L. 94-580) of 1976, Amendments to Solid Waste Disposal Act
TOC—Total organic carbon
TSS—Total suspended solids
μg/l—Micrograms per liter

40 CFR Part 419 is revised to read as follows:

PART 419—PETROLEUM REFINING POINT SOURCE CATEGORY

Subpart A—Topping Subcategory

Subpart B—Cracking Subcategory

Subpart C—Petrochemical Subcategory

Subpart D—Lube Subcategory

Subpart E—Integrated Subcategory

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

Subpart A—Topping Subcategory

§ 419.10 Applicability; description of the topping subcategory.

The provisions of this subpart apply to discharges from any facility that produces petroleum products by the use of topping and catalytic reforming, whether or not the facility includes any other process in addition to topping and catalytic reforming. The provisions of this subpart do not apply to facilities that include thermal processes (coking, vis-breaking, etc.) or catalytic cracking.

§ 419.11 Specialized definitions.

For the purpose of this subpart:

(a) Except as provided below, the general definitions, abbreviations, and methods of analysis set forth in Part 401 of this chapter shall apply to this subpart.

(b) The term "runoff" shall mean the flow of storm water.

(c) The term "ballast" shall mean the flow of waters, from a ship, that is treated along with refinery wastewaters in the main treatment system.

(d) The term "feedstock" shall mean the crude oil and natural gas liquids fed to the topping units.

(e) The term "once-through cooling water" shall mean those waters discharged that are used for the purpose of heat removal and that do not come into direct contact with any raw material, intermediate, or finished product.

(f) The following abbreviations shall be used: (1) Mgal means one thousand gallons; (2) Mbbl means one thousand barrels (one barrel is equivalent to 42 gallons).

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

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

Pollutant or pollutant property	BPT Effluent Limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed
	Metric units (kilograms per 1,000 m^3 of feedstock)	
BOD5	22.7	12.0
TSS	15.8	10.1
COD [1]	117.0	60.3
Oil and grease	6.9	3.7
Phenolic compounds	0.168	0.076
Ammonia as N	2.81	1.27
Sulfide	0.149	0.068
Total chromium	0.345	0.20
Hexavalent chromium	0.028	0.012
pH	[2]	[2]
	English units (pounds per 1,000 bbl of feedstock)	
BOD5	8.0	4.25
TSS	5.6	3.6
COD [1]	41.2	21.3
Oil and grease	2.5	1.3
Phenolic compounds	0.060	0.027
Ammonia as N	0.99	0.45
Sulfide	0.53	0.24
Total chromium	0.122	0.071
Hexavalent chromium	0.10	0.0044
pH	[2]	[2]

[1] See footnote following Table in § 419.13(c).
[2] Within the range of 6.0 to 9.0.

(b) The limits set forth in paragraph (a) of this section are to be multiplied by the following factors to calculate the maximum for any one day and maximum average of daily values for thirty consecutive days.

(1) Size factor.

1,000 bbl of feedstock per stream day	Size factor
Less than 24.9	1.02
25.0 to 49.9	1.06
50.0 to 74.9	1.16
75.0 to 99.9	1.26
100 to 124.9	1.38
125.0 to 149.9	1.50
150.0 or greater	1.57

(2) Process factor.

Process configuration	Process factor
Less than 2.49	0.62
2.5 to 3.49	0.67
3.5 to 4.49	0.80
4.5 to 5.49	0.95
5.5 to 5.99	1.07
6.0 to 6.49	1.17
6.5 to 6.99	1.27
7.0 to 7.49	1.39
7.5 to 7.99	1.51
8.0 to 8.49	1.64
8.5 to 8.99	1.79
9.0 to 9.49	1.95
9.5 to 9.99	2.12
10.0 to 10.49	2.31
10.5 to 10.99	2.51
11.0 to 11.49	2.73
11.5 to 11.99	2.98
12.0 to 12.49	3.24
12.5 to 12.99	3.53
13.0 to 13.49	3.84
13.5 to 13.99	4.18
14.0 or greater	4.36

(3) See the comprehensive example Subpart D § 419.42(b)(3).

(c) The following allocations constitute the quantity and quality of pollutants or pollutant properties controlled by this paragraph and attributable to ballast, which may be discharged after the application of best practicable control technology currently available, by a point source subject to this subpart, in addition to the discharge allowed by paragraph (b) of this section. The allocation allowed for ballast water flow, as kg/cu m (lb/M gal), shall be based on those ballast waters treated at the refinery.

Pollutant or pollutant property	BPT effluent limitations for ballast water	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed
	Metric units (kilograms per cubic meter of flow)	
BOD5	0.048	0.026
TSS	0.033	0.021
COD [1]	0.47	0.24
Oil and grease	0.015	0.008
pH	[2]	[2]
	English units (pounds per 1,000 gal of flow)	
BOD5	0.40	0.21
TSS	0.26	0.17
COD [1]	3.9	2.0
Oil and grease	0.126	0.067
pH	[2]	[2]

[1] See footnote following table in § 419.13(c).
[2] Within the range of 6.0 to 9.0.

(d) The quantity and quality of pollutants or pollutant properties controlled by this paragraph, attributable to once-through cooling water, are excluded from the discharge allowed by paragraph (b) of this section. Once-through cooling water may be discharged with a total organic carbon concentration not to exceed 5 mg/1.

(e) Effluent Limitation for Runoff—[Reserved].

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

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

Pollutant or pollutant property	BAT effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed
	Metric units (kilograms per 1,000 m^3 of feedstock)	
COD[1]	117	60.3
Phenolic compounds	0.168	0.076
Ammonia as N	2.81	1.27
Sulfide	0.149	0.068
Total chromium	0.345	0.20
Hexavalent chromium	0.028	0.012
	English units (pounds per 1,000 bbl of feedstock)	
COD[1]	41.2	21.3
Phenolic compounds	0.060	0.027
Ammonia as N	0.99	0.45
Sulfide	0.053	0.024
Total chromium	0.122	0.071
Hexavalent chromium	0.10	0.0044

[1] See footnote following Table in § 419.13(c).

(b) The limits set forth in paragraph (a) of this section are to be multiplied by the following factors to calculate the maximum for any one day and maximum average of daily values for thirty consecutive days.

(1) Size factor.

1,000 bbl of feedstock per stream day	Size factor
Less than 24.9	1.02
25.0 to 49.9	1.06
50.0 to 74.9	1.16
75.0 to 99.9	1.26
100 to 124.9	1.38
125.0 to 149.9	1.50
150.0 or greater	1.57

(2) Process factor.

Process configuration	Process factor
Less than 2.49	0.62
2.5 to 3.49	0.67
3.5 to 4.49	0.80
4.5 to 5.49	0.95
5.5 to 5.99	1.07
6.0 to 6.49	1.17
6.5 to 6.99	1.27
7.0 to 7.49	1.39
7.5 to 7.99	1.51
8.0 to 8.49	1.64
8.5 to 9.99	1.79
9.0 to 9.49	1.95
9.5 to 9.99	2.12
10.0 to 10.49	2.31
10.5 to 10.99	2.51
11.0 to 11.49	2.73
11.5 to 11.99	2.98
12.0 to 12.49	3.24
12.5 to 12.99	3.53
13.0 to 13.49	3.84
13.5 to 13.99	4.18
14.0 or greater	4.36

(3) See the comprehensive example in Subpart D, § 419.42(b)(3).

(c) The following allocations constitute the quantity and quality of pollutants or pollutant properties controlled by this paragraph, attributable to ballast, which may be discharged after the application of best available technology economically achievable by a point source subject to the provisions of this subpart. These allocations are in addition to the discharge allowed by paragraph (b) of this section. The allocation allowed for ballast water flow, as kg/cu m (lb/M gal), shall be based on those ballast waters treated at the refinery.

Pollutant or pollutant property	BAT effluent limitations for ballast water	
	Maximum for any 1 day	Average or daily values for 30 consecutive days shall not exceed
	Metric units (kilograms per cubic meter of flow)	
COD[1]	0.47	0.24
	English units (pounds per 1,000 gal of flow)	
COD[1]	3.9	2.0

[1] In any case in which the applicant can demonstrate that the chloride ion concentration in the effluent exceeds 1,000 mg/l (1,000 ppm), the Regional Administrator may substitute TOC as a parameter in lieu of COD Effluent limitations for TOC shall be based on effluent data from the plant correlating TOC to BOD5.

If in the judgment of the Regional Administrator, adequate correlation data are not available, the effluent limitations for TOC shall be established at a ratio of 2.2 to 1 to the applicable effluent limitations on BOD5.

(d) The quantity and quality of pollutants or pollutant properties controlled by this paragraph, attributable to once-through cooling water, are excluded from the discharge allowed by paragraph (b) of this section. Once-through cooling water may be discharged with a total organic carbon concentration not to exceed 5 mg/l.

(e) Effluent Limitation for Runoff—[Reserved].

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

§ 419.15 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). The following standards apply to the total refinery flow contribution to the POTW:

Pollutant or pollutant property	Pretreatment standards for existing sources maximum for any 1 day
	(Milligrams per liter (mg/l))
Oil and Grease	100
Ammonia (as N)	[1] 100

[1] Where the discharge to the POTW consists solely of sour waters, the owner or operator has the option of complying with this limit or the daily maximum mass limitation for ammonia set forth in § 419.13 (a) and (b).

§ 419.16 Standards of performance for new sources (NSPS).

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

Pollutant or pollutant property	NSPS effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed
	Metric units (kilograms per cubic meter of flow)	
BOD5	11.8	6.3
TSS	8.3	4.9
COD[1]	61.0	32
Oil and grease	3.6	1.9
Phenolic compounds	0.088	0.043
Ammonia as N	2.8	1.3
Sulfide	0.078	0.035
Total chromium	0.18	0.105
Hexavalent chromium	0.015	0.0068
pH	[2]	[2]
	English units (pounds per 1,000 gal of flow)	
BOD5	4.2	2.2

Pollutant or pollutant property	NSPS effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed
TSS	3.0	1.9
COD [1]	21.7	11.2
Oil and grease	1.3	0.70
Phenolic compounds	0.031	0.016
Ammonia as N	1.0	0.45
Sulfide	0.027	0.012
Total chromium	0.064	0.037
Hexavalent chromium	0.0052	0.0025
pH	(2)	(2)

[1] See footnote following table in § 419.13(c).
[2] Within the range of 6.0 to 9.0

(b) The limits set forth in paragraph (a) of this section are to be multiplied by the following factors to calculate the maximum for any one day and maximum average of daily values for thirty consecutive days.

(1) Size factor.

1,000 bbl of feedstock per stream day	Size factor
Less than 24.9	1.02
25.0 to 49.9	1.06
50.0 to 74.9	1.16
75.0 to 99.9	1.26
100 to 124.9	1.38
125.0 to 149.9	1.50
150.0 or greater	1.57

(2) Process factor.

Process configuration	Process factor
Less than 2.49	0.62
2.5 to 3.49	0.67
3.5 to 4.49	0.80
4.5 to 5.49	0.95
5.5 to 5.99	1.07
6.0 to 6.49	1.17
6.5 to 6.99	1.27
7.0 to 7.49	1.39
7.5 to 7.99	1.51
8.0 to 8.49	1.64
8.5 to 9.99	1.79
9.0 to 9.49	1.95
9.5 to 9.99	2.12
10.0 to 10.49	2.31
10.5 to 10.99	2.51
11.0 to 11.49	2.73
11.5 to 11.99	2.98
12.0 to 12.49	3.24
12.5 to 12.99	3.53
13.0 to 13.49	3.84
13.5 to 13.99	4.18
14.0 or greater	4.36

(3) See the comprehensive example in Subpart D, § 419.42(b)(3).

(c) The following allocations constitute the quantity and quality of pollutants or pollutant properties controlled by this paragraph and attributable to ballast, which may be discharged after the application of best practicable control technology currently available, by a point source subject to this subpart, in addition to the discharge allowed by paragraph (b) of this section. The allocation allowed for ballast water flow, as kg/cu m (lb/Mgal), shall be based on those ballast waters treated at the refinery.

Pollutant or pollutant property	NSPS Effluent Limitations for Ballast Water	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed
	Metric units (kilograms per cubic meter of flow)	
BOD5	0.048	0.026
TSS	0.033	0.021
COD [1]	0.47	0.24
Oil and grease	0.015	0.008
pH	(2)	(2)
	English units (pounds per 1,000 gal of flow)	
BOD5	0.40	0.21
TSS	0.27	0.17
COD [1]	3.9	2.0
Oil and grease	0.126	0.067
pH	(2)	(2)

[1] See footnote following table in § 419.13(c).
[2] Within the range of 6.0 to 9.0

(d) The quantity and quality of pollutants or pollutant properties controlled by this paragraph, attributable to once-through cooling water, are excluded from the discharge allowed by paragraph (b) of this section. Once-through cooling water may be discharged with a total organic carbon concentration not to exceed 5 mg/l.

(e) Effluent Limitations for Runoff—[Reserved]

§ 419.17 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 achieve the following pretreatment standards for new sources (PSNS). (a) The following standards apply to the total refinery flow contribution to the POTW:

Pollutant or pollutant property	Pretreatment standards for new sources—maximum for any 1 day
	Milligrams per liter (mg/1)
Oil and grease	100
Ammonia (as N)	[1] 100

[1] Where the discharge to the POTW consists solely of sour waters, the owner or operator has the option of complying with this limit or the daily maximum mass limitation for ammonia set forth in § 419.16 (a) and (b).

(b) The following standard is applied to the cooling tower discharge part of the total refinery flow to the POTW by multiplying: (1) The standard; (2) by the total refinery flow to the POTW; and (3) by the ratio of the cooling tower discharge flow to the total refinery flow.

Pollutant or pollutant property	Pretreatment standards for new sources—maximum for any 1 day
	Milligrams per liter (mg/1)
Total chromium	1

Subpart B—Cracking Subcategory

§ 419.20 Applicability; description of the cracking subcategory.

The provisions of this subpart are applicable to all discharges from any facility that produces petroleum products by the use of topping and cracking, whether or not the facility includes any process in addition to topping and cracking. The provisions of this subpart are not applicable, however, to facilities that include the processes specified in Subparts C, D, or E of this part.

§ 419.21 Specialized definitions.

The general definitions, abbreviations and methods of analysis set forth in Part 401 of this chapter and the specialized definitions set forth in § 419.11 shall apply to this subpart.

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

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

Pollutant or pollutant property	BPT effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed
	Metric units (kilograms per 1,000 m^3 of feedstock)	
BOD5	28.2	15.6
TSS	19.5	12.6
COD[1]	210.0	109
Oil and grease	8.4	4.5
Phenolic compounds	0.21	0.10
Ammonia as N	18.8	8.5
Sulfide	0.18	0.082
Total chromium	0.43	0.25
Hexavalent chromium	0.035	0.016
pH	[2]	[2]
	English units (pounds per 1,000 bbl feedstock)	
BOD5	9.9	5.5
TSS	6.9	4.4
COD[1]	74.0	38.4
Oil and grease	3.0	1.6
Phenolic compounds	0.074	0.036
Ammonia as N	6.6	3.0
Sulfide	0.065	0.029
Total chromium	0.15	0.088
Hexavalent chromium	0.012	0.0056
pH	[2]	[2]

[1] See footnote following table in § 419.13(c).
[2] Within the range of 6.0 to 9.0.

(b) The limits set forth in paragraph (a) of this section are to be multiplied by the following factors to calculate the maximum for any one day and maximum average of daily values for thirty consecutive days.

(1) Size factor.

1,000 bbl of feedstock per stream day	Size factor
Less than 24.9	0.91
25.0 to 49.9	0.95
50.0 to 74.9	1.04
75.0 to 99.9	1.13
100.0 to 124.9	1.23
125.0 to 149.9	1.35
150.0 or greater	1.41

(2) Process factor.

Process configuration	Process factor
Less than 2.49	0.58
2.5 to 3.49	0.63
3.5 to 4.49	0.74
4.5 to 5.49	0.88
5.5 to 5.99	1.00
6.0 to 6.49	1.09
6.5 to 6.99	1.19
7.0 to 7.49	1.29
7.5 to 7.99	1.41
8.0 to 8.49	1.53
8.5 to 8.99	1.67
9.0 to 9.49	1.82
9.5 or greater	1.89

(3) See the comprehensive example Subpart D § 419.42(b)(3).

(c) The provisions of § 419.12(c) apply to discharges of process wastewater pollutants attributable to ballast water by a point source subject to the provisions of this subpart.

(d) The quantity and quality of pollutants or pollutant properties controlled by this paragraph, attributable to once-through cooling water, are excluded from the discharge allowed by paragraph (b) of this section. Once-through cooling water may be discharged with a total organic carbon concentration not to exceed 5 mg/l.

(e) Effluent Limitations for Runoff—[Reserved]

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

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

Pollutant or pollutant property	BAT Effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed
	Metric units (kilograms per 1,000 m^3 of feedstock)	
COD[1]	210	109
Phenolic compounds	0.21	0.10
Ammonia as N	18.8	8.5
Sulfide	0.18	0.082
Total chromium	0.43	0.25
Hexavalent chromium	0.035	0.016
	English units (pounds per 1,000 bbl of feedstock)	
COD[1]	74.0	38.4
Phenolic compounds	0.074	0.036
Ammonia as N	6.6	3.0
Sulfide	0.065	0.029
Total chromium	0.15	0.088
Hexavalent chromium	0.012	0.0056

[1] See footnote following table in § 419.13(c)(2).

(b) The limits set forth in paragraph (a) of this section are to be multiplied by the following factors to calculate the maximum for any one day and maximum average of daily values for thirty consecutive days.

(1) Size factor.

1,000 bbl of feedstock per stream day	Size factor
Less than 24.9	0.91
25.0 to 49.9	0.95
50.0 to 74.9	1.04
75.0 to 99.9	1.13
100.0 to 124.9	1.23
125.0 to 149.9	1.35
150.0 or greater	1.41

(2) Process factor.

Process configuration	Process factor
Less than 2.49	0.58
2.5 to 3.49	0.63
3.5 to 4.49	0.74
4.5 to 5.49	0.88
5.5 to 5.99	1.00
6.0 to 6.49	1.09
6.5 to 6.99	1.19
7.0 to 7.49	1.29
7.5 to 7.99	1.41
8.0 to 8.49	1.53
8.5 to 8.99	1.67
9.0 to 9.49	1.82
9.5 or greater	1.89

(3) See the comprehensive example in Subpart D, § 419.42(b)(3).

(c) The provisions of § 419.13(c) apply to discharges of process wastewater pollutants attributable to ballast water by a point source subject to the provisions of this subpart.

(d) The quantity and quality of pollutants or pollutant properties controlled by this paragraph, attributable to once-through cooling water, are excluded from the discharge allowed by paragraph (b) of this section. Once-through cooling water may be discharged with a total organic carbon concentration not to exceed 5 mg/l.

(e) Effluent Limitation for Runoff—[Reserved]

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

§ 419.25 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). The following standards apply to the total refinery flow contribution to the POTW:

Pollutant or pollutant property	Pretreatment standards for new sources—maximum for any 1 day
	Milligrams per liter (mg/l)
Oil and grease	100
Ammonia	[1]100

[1] Where the discharge to the POTW consists solely of sour waters, the owner or operator has the option of complying with this limit or the daily maximum mass limitation for ammonia set forth in § 419.23 (a) and (b).

§ 419.26 Standards of performance for new sources (NSPS).

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

Pollutant or pollutant property	NSPS effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed
	Metric units (kilograms per 1,000 m^3 of feedstock)	
BOD5	16.3	8.7
TSS	11.3	7.2
COD [1]	118.0	61
oil and grease	4.8	2.6
Phenolic compounds	0.119	0.058
Ammonia (as N)	18.8	8.6
Sulfide	0.105	0.048
Total chromium	0.24	0.14
Hexavalent chromium	0.020	0.0088
pH	([2])	([2])
	English units (pounds per 1,000 bbl of feedstock)	
BOD5	5.8	3.1
TSS	4.0	2.5
COD [1]	41.5	21
Oil and grease	1.7	0.93
Phenolic compounds	0.042	0.020
Ammonia (as N)	6.6	3.0
Sulfide	0.037	0.017
Total chromium	0.084	0.049
Hexavalent chromium	0.0072	0.0032
pH	([2])	([2])

[1] See footnote following table in § 419.13(c).
[2] Within the range 6.0 to 9.0.

(b) The limits set forth in paragraph (a) of this section are to be multiplied by the following factors to calculate the maximum for any 1 day and maximum average of daily values for 30 consecutive days.

(1) Size Factor.

1,000 bbl of feedstock per stream day	Size factor
Less than 24.9	0.91
25.0 to 49.9	0.95
50.0 to 74.9	1.04
75.0 to 99.9	1.13
100.0 to 124.9	1.23
125.0 to 149.9	1.35
150.0 or greater	1.41

(2) Process factor.

Process configuration	Process factor
Less than 2.49	0.58
2.5 to 3.49	0.63
3.5 to 4.49	0.74
4.5 to 5.49	0.88
5.5 to 5.99	1.00
6.0 to 6.49	1.09
6.5 to 6.99	1.19
7.0 to 7.49	1.29
7.5 to 7.99	1.41
8.0 to 8.49	1.53
8.5 to 8.99	1.67
9.0 to 9.49	1.82
9.5 or greater	1.89

(3) See the comprehensive example in Subpart D, § 419.42(b)(3).

(c) The provisions of § 419.16(c) apply to discharges of process wastewater pollutants attributable to ballast water by a point source subject to the provisions of this subpart.

(d) The quantity and quality of pollutants or pollutant properties controlled by this paragraph, attributable to once-through cooling water, are excluded from the discharge allowed by paragraph (b) of this section. Once-through cooling water may be discharged with a total organic carbon concentration not to exceed 5 mg/l.

(e) Effluent Limitation for Runoff—[Reserved]

§ 419.27 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 achieve the following pretreatment standards for new sources (PSNS).

(a) The following standards apply to the total refinery flow contribution to the POTW.

Pollutant or pollutant property	Pretreatment standards for new sources—maximum for any 1 day
	Milligrams per liter (mg/l)
Oil and grease	100
Ammonia (as N)	[1]100

[1] Where the discharge to the POTW consists solely of sour waters, the owner or operator has the option of complying with this limit or the daily maximum mass limitation for ammonia set forth in § 419.26(a) and (b).

(b) The following standard is applied to the cooling tower discharge part of the total refinery flow to the POTW by multiplying: (1) The standard; (2) by the total refinery flow to the POTW; and (3) by the ratio of the cooling tower discharge flow to the total refinery flow.

Pollutant or pollutant property	Pretreatment standards for new sources—maximum for any 1 day
	Milligrams per liter (mg/l)
Total chromium	1

Subpart C—Petrochemical Subcategory

§ 419.30 Applicability; description of the petrochemical subcategory.

The provisions of this subpart are applicable to all discharges from any facility that produces petroleum products by the use of topping, cracking, and petrochemical operations whether or not the facility includes any process in addition to topping, cracking, and petrochemical operations. The provisions of this subpart shall not be applicable, however, to facilities that include the processes specified in Subparts D or E of this part.

§ 419.31 Specialized definitions.

For the purpose of this subpart:

(a) The general definitions, abbreviations, and methods of analysis set forth in Part 401 of this chapter and the specialized definitions set forth in § 419.11 shall apply.

(b) The term "petrochemical operations" shall mean the production of second-generation petrochemicals (i.e., alcohols, ketones, cumene, styrene, etc.) or first generation petrochemicals and isomerization products (i.e. BTX, olefins, cyclohexane, etc.) when 15 percent or more of refinery production is as first-generation petrochemicals and isomerization products.

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

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

Pollutant or pollutant property	BPT Effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed
	Metric units (kilograms per 1,000 m^3 of feedstock)	
BOD5	34.6	18.4
TSS	23.4	14.8
COD[1]	210.0	109.0
Oil and grease	11.1	5.9
Phenolic compound	0.25	0.120
Ammonia as N	23.4	10.6
Sulfide	0.52	0.099
Total chromium	0.52	0.30
Hexavalent chromium	0.046	0.020
pH	(2)	(2)
	English units (pounds per 1,000 bbl of feedstock)	
BOD5	12.1	6.5
TSS	8.3	5.25
COD[1]	74.0	38.4
Oil and grease	3.9	2.1
Phenolic compounds	0.088	0.0425
Ammonia as N	8.25	3.8
Sulfide	0.078	0.035
Total chromium	0.183	0.107
Hexavalent chromium	0.016	0.0072
pH	(2)	(2)

[1] See footnote following table in § 419.13(c).
[2] Within the range of 6.0 to 9.0.

(b) The limits set forth in paragraph (a) of this section are to be multiplied by the following factors to calculate the maximum for any one day and maximum average of daily values for thirty consecutive days.

(1) Size factor.

1,000 barrels of feedstock per stream day	Size factor
Less than 24.9	0.73
25.0 to 49.9	0.76
50.0 to 74.9	0.83
75.0 to 99.9	0.91
100.0 to 124.9	0.99
125.0 to 149.9	1.08
150.0 or greater	1.13

(2) Process factor.

Process configuration	Process factor
Less than 4.49	0.73
4.5 to 5.49	0.80
5.5 to 5.99	0.91
6.0 to 6.49	0.99
6.5 to 6.99	1.08
7.0 to 7.49	1.17
7.5 to 7.99	1.28
8.0 to 8.49	1.39
8.5 to 8.99	1.51
9.0 to 9.49	1.65
9.5 or greater	1.72

(3) See the comprehensive example in Subpart D, § 419.42(b)(3).

(c) The provisions of § 419.12(c) apply to discharges of process wastewater pollutants attributable to ballast water by a point source subject to the provisions of this subpart.

(d) The quantity and quality of pollutants or pollutant properties controlled by this paragraph, attributable to once-through cooling water, are excluded from the discharge allowed by paragraph (b) of this section. Once-through cooling water may be discharged with a total organic carbon concentration not to exceed 5 mg/l.

(e) Effluent Limitation for runoff - [Reserved].

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

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

Pollutant or pollutant property	BAT Effluent Limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed
	Metric units (kilograms per 1,000 m^3 of feedstock)	
COD[1]	210.0	109.0
Phenolic compounds	0.25	0.120
Ammonia as N	23.4	10.6
Sulfide	0.22	0.099
Total chromium	0.52	0.30
Hexavalent chromium	0.046	0.020
	English units (pounds per 1,000 bbl of feedstock)	
COD[1]	74.0	38.4
Phenolic compounds	0.088	0.0425
Ammonia as N	8.25	3.8
Sulfide	0.078	0.035
Total chromium	0.183	0.107
Hexavalent chromium	0.016	0.0072

[1] See footnote following table in § 419.13(c).

(b) The limits set forth in paragraph (a) of this section are to be multiplied by the following factors to calculate the maximum for any one day and maximum average of daily values for thirty consecutive days.

(1) Size factor.

1,000 bbl of feedstock per stream day	Size factor
Less than 24.9	0.73
25.0 to 49.9	0.76
50.0 to 74.9	0.83
75.0 to 99.9	0.91
100.0 to 124.9	0.99
125.0 to 149.9	1.08
150.0 or greater	1.13

(2) Process factor.

Process configuration	Process factor
Less than 4.49	0.73
4.5 to 5.49	0.80
5.5 to 5.99	0.91
6.0 to 6.49	0.99
6.5 to 6.99	1.08
7.0 to 7.49	1.17
7.5 to 7.99	1.28
8.0 to 8.49	1.39
8.5 to 8.99	1.51
9.0 to 9.49	1.65
9.5 or greater	1.72

(3) See the comprehensive example in Subpart D, § 419.42(b)(3).

(c) The provisions of § 419.13(c) apply to discharges of process wastewater pollutants attributable to ballast water by a point source subject to the provisions of this subpart.

(d) The quantity and quality of pollutants or pollutant properties controlled by this paragraph, attributable to once-through cooling water, are excluded from the discharge allowed by paragraph (b) of this section. Once-through cooling water may be discharged with a total organic carbon concentration not to exceed 5 mg/1.

(e)Effluent Limitation for Runoff—[Reserved].

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

§ 419.35 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). The following standards apply to the

total refinery flow contribution to the POTW:

Pollutant or pollutant property	Pretreatment standards maximum for any 1 day
	(Milligrams per liter (mg/l))
Oil and grease	100
Ammonia (as N)	[1]100

[1] Where the discharge to the POTW consists solely of sour waters, the owner or operator has the option of complying with this limit or the daily maximum mass limitation for ammonia set forth in § 419.33 (a) and (b).

§ 419.36 Standards of performance for new sources (NSPS).

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

Pollutant or pollutant property	NSPS Effluent Limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed
	Metric units (kilograms per 1,000 m^3 of feedstock)	
BOD5	21.8	11.6
TSS	14.9	9.5
COD[1]	133.0	69.0
Oil and grease	6.6	3.5
Phenolic compounds	0.158	.077
Ammonia as N	23.4	10.7
Sulfide	0.140	0.063
Total chromium	0.32	0.19
Hexavalent chromium	0.025	0.012
pH	[2]	[2]
	English units (pounds per 1,000 bbl of feedstock)	
BOD5	7.7	4.1
TSS	5.2	3.3
COD[1]	47.0	24.0
Oil and grease	2.4	1.3
Phenolic compounds	0.056	0.027
Ammonia as N	8.3	3.8
Sulfide	0.050	0.022
Total chromium	0.116	0.068
Hexavalent chromium	0.0096	0.0044
pH	[2]	[2]

[1] See footnote following table in § 419.13(c)(2).
[2] Within the range of 6.0 to 9.0.

(b) The limits set forth in paragraph (a) of this section are to be multiplied by the following factors to calculate the maximum for any one day and maximum average of daily values for thirty consecutive days.

(1) Size factor.

1,000 bbl of feedstock per stream day	Size factor
Less than 24.9	0.73
25.0 to 49.9	0.76
50.0 to 74.9	0.83
75.0 to 99.9	0.91
100.0 to 124.9	0.99
125.0 to 149.9	1.08
150.0 or greater	1.13

(2) Process factor.

Process configuration	Process factor
Less than 4.49	0.73
4.5 to 5.49	0.80
5.5 to 5.99	0.91
6.0 to 6.49	0.99
6.5 to 6.99	1.08
7.0 to 7.49	1.17
7.5 to 7.99	1.28
8.0 to 8.49	1.39
8.5 to 8.99	1.51
9.0 to 9.49	1.65
9.5 or greater	1.72

(3) See the comprehensive example in Subpart D, § 419.42(b)(3).

(c) The provisions of § 419.16(c) apply to discharges of process wastewater pollutants attributable to ballast water by a point source subject to the provisions of this subpart.

(d) The quantity and quality of pollutants or pollutant properties controlled by this paragraph, attributable to once-through cooling water, are excluded from the discharge allowed by paragraph (b) of this section. Once-through cooling water may be discharged with a total organic carbon concentration not to exceed 5 mg/1.

(e) Effluent Limitations for Runoff—[Reserved]

§ 419.37 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 achieve the following pretreatment standards for new sources (PSNS).

(a) The following standards apply to the total refinery flow contribution to the POTW:

Pollutant or pollutant property	Pretreatment standards for new sources maximum for any 1 day
	Milligrams per liter (mg/l)
Oil and grease	100
Ammonia (as N)	[1]100

[1] Where the discharge to the POTW consists solely of sour waters, the owner or operator has the option of complying with this limit or the daily maximum mass limitation for ammonia set forth in § 419.36 (a) and (b).

(b) The following standard is applied to the cooling tower discharge part of the total refinery flow to the POTW by multiplying: (1) The standard; (2) by the total refinery flow to the POTW; and (3) by the ratio of the cooling tower discharge flow to the total refinery flow.

Pollutant or pollutant property	Pretreatment standards for new sources maximum for any 1 day
	Miligrams per liter (mg/l)
Total chromium	1

Subpart D—Lube Subcategory

§ 419.40 Applicability; description of the lube subcategory.

The provisions of this subpart are applicable to all discharges from any facility that produces petroleum products by the use of topping, cracking, and lube oil manufacturing processes, whether or not the facility includes any process in addition to topping, cracking, and lube oil manufacturing processes. The provisions of this subpart are not applicable, however, to facilities that include the processes specified in Subparts C and E of this part.

§ 419.41 Specialized definitions.

The general definitions, abbreviations and methods of analysis set forth in Part 401 of this chapter and the specialized definitions set forth in § 419.11 shall apply to this subpart.

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

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

Pollutant or pollutant property	BPT effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed
	Metric units (kilograms per 1,000 m^3 of feedstock)	
BOD[5]	50.6	25.8
TSS	35.6	22.7
COD[1]	360.0	187.0
Oil and grease	16.2	8.5
Phenolic compounds	0.38	0.184
Ammonia as N	23.4	10.6
Sulfide	0.33	0.150
Total chromium	0.77	0.45
Hexavalent chromium	0.068	0.030
pH	(2)	(2)
	English units (pounds per 1,000 bbl of feedstock)	
BOD5	17.9	9.1
TSS	12.5	8.0
COD[1]	127.0	66.0
Oil and grease	5.7	3.0
Phenolic compounds	0.133	0.065
Ammonia as N	8.3	3.8
Sulfide	0.118	0.053
Total chromium	0.273	0.160
Hexavalent chromium	0.024	0.011
pH	(2)	(2)

[1] See footnote following table in § 419.13(c)(2).
[2] Within the range of 6.0 to 9.0.

(b) The limits set forth in paragraph (a) of this section are to be multiplied by the following factors to calculate the maximum for any one day and maximum average of daily values for thirty consecutive days.

(1) Size factor.

1,000 bbl of feedstock per stream day	Size factor
Less than 49.9	0.71
50.0 to 74.9	0.74
75.0 to 99.9	0.81
100.0 to 124.9	0.88
125.0 to 149.9	0.97
150.0 to 174.9	1.05
175.0 to 199.9	1.14
200.0 or greater	1.19

(2) Process factor.

Process configuration	Process factor
Less than 6.49	0.81
6.5 to 7.49	0.88
7.5 to 7.99	1.00
8.0 to 8.49	1.09
8.5 to 8.99	1.19
9.0 to 9.49	1.29
9.5 to 9.99	1.41
10.0 to 10.49	1.53
10.5 to 10.99	1.67
11.0 to 11.49	1.82
11.5 to 11.99	1.98
12.0 to 12.49	2.15
12.5 to 12.99	2.34
13.0 or greater	2.44

(3) Example of the application of the above factors. Example—Lube refinery 125, 000 bbl per stream day throughput.

CALCULATION OF THE PROCESS CONFIGURATION

Process category	Process included	Weighting factor
Crude	Atm crude distillation	1
	Vacuum, crude distillation	
	Desalting	
Cracking and coking.	Fluid cat. cracking	6
	Vis-breaking	
	Thermal cracking	
	Moving bed cat. cracking	
	Hydrocracking	
	Fluid coking	
	Delayed coking	
Lube	Further defined in the development document.	13
Asphalt	Asphalt production	12
	Asphalt oxidation	
	Asphalt emulsifying	

Process	Capacity (1,000 bbl per stream day)	Capacity relative to throughput	Weighting Factor	Processing configuration
Crude:				
Atm	125.0	1.0		
Vacuum	60.0	0.48		
Desalting	125.0	1.0		
Total		2.48	×1	=2.48
Cracking–FCC	41.0	0.328		
Hydrocracking	20.0	0.160		
Total		0.488	×6	=2.93
Lubes	5.3	0.042		
	4.0	0.032		
	4.9	0.039		
Total		0.113	×13	=1.47
Asphalt	4.0	0.032	×12	= .38
Refinery process configuration				=7.26

Notes:
See Table § 419.42(b)(2) for process factor. Process factor = 0.88.
See Table § 419.42(b)(1) for size factor for 125,000 bbl per stream day lube refinery. Size factor = 0.97.
To calculate the limits for each parameter, multiply the limit § 419.42(a) by both the process factor and size factor. BOD5 limit (maximum for any 1 day) = 17.9 × 0.88 × 0.97 = 15.3 lb. per 1,000 bbl of feedstock.

(c) The provisions of § 419.12(c) apply to discharges of process wastewater pollutants attributable to ballast water by a point source subject to the provisions of this subpart.

(d) The quantity and quality of pollutants or pollutant properties controlled by this paragraph, attributable to once-through cooling water, are excluded from the discharge allowed by paragraph (b) of this section. Once-through cooling water may be discharged with a total organic carbon concentration not to exceed 5 mg/1.

(e) Effluent Limitations for Runoff—[Reserved]

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

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

Pollutant or pollutant property	BAT effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed
	Metric units (kilograms per	
COD[1]	360.0	187.0
Phenolic compounds	0.38	0.184
Ammonia as N	23.4	10.6
Sulfide	0.33	0.150
Total chromium	0.77	0.45
Hexavalent chromium	0.068	0.030
	English units (pounds per 1,000 bbl of feedstock)	
COD[1]	127.0	66.0
Phenolic compounds	0.133	0.065
Ammonia as N	8.3	3.8
Sulfide	0.118	0.053
Total chromium	0.273	0.160
Hexavalent chromium	0.024	0.011

[1] See footnote following table in § 419.13(c)(2).

(b) The limits set forth in paragraph (a) of this section are to be multiplied by the following factors to calculate the maximum for any one day and maximum average of daily values for thirty consecutive days.

(1) Size factor.

1,000 bbl of feedstock per stream day	Size factor
Less than 49.9	0.71
50.0 to 74.9	0.74
75.0 to 99.9	0.81
100.0 to 124.9	0.88
125.0 to 149.9	0.97
150.0 to 174.9	1.05
175.0 to 199.9	1.14
200.0 or greater	1.19

(2) Process factor.

Process configuration	Process factor
Less than 6.49	0.81
6.5 to 7.49	0.88
7.5 to 7.99	1.00
8.0 to 8.49	1.09
8.5 to 8.99	1.19
9.0 to 9.49	1.29
9.5 to 9.99	1.41
10.0 to 10.49	1.53
10.5 to 10.99	1.67
11.0 to 11.49	1.82
11.5 to 11.99	1.98
12.0 to 12.49	2.15
12.5 to 12.99	2.34

Process configuration	Process factor
13.0 or greater	2.44

(3) See the comprehensive example in Subpart D, § 419.42(b)(3).

(c) The provisions of § 419.13(c) apply to discharges of process wastewater pollutants attributable to ballast water by a point source subject to the provisions of this subpart.

(d) The quantity and quality of pollutants or pollutant properties controlled by this paragraph, attributable to once-through cooling water, are excluded from the discharge allowed by paragraph (b) of this section. Once-through cooling water may be discharged with a total organic carbon concentration not to exceed 5 mg/l.

(e) Effluent Limitation for Runoff—[Reserved]

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

§ 419.45 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). The following standards apply to the total refinery flow contribution to the POTW:

Pollutant or pollutant property	Pretreatment standards for existing sources—maximum for any 1 day
	Miligrams per liter (mg/l)
Oil and grease	100
Ammonia (as N)	[1] 100

[1] Where the discharge to the POTW consists solely of sour waters, the owner or operator has the option of complying with this limit or the daily maximum mass limitation for ammonia set forth in § 419.43 (a) and (b).

§ 419.46 Standards of performance for new sources (NSPS).

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

Pollutant or pollutant property	NSPS effluent limitations: Maximum for any 1 a day	NSPS effluent limitations: Average of daily values for 30 consecutive days shall not exceed
	Metric units (kilograms per 1,000 m^3 of feedstock)	
BOD5	34.6	18.4
TSS	23.4	14.9
COD [1]	245.0	126.0
Oil and grease	10.5	5.6
Phenolic compounds	0.25	0.12
Ammonia as N	23.4	10.7
Sulfide	0.220	0.10
Total chromium	0.52	0.31
Hexavalent chromium	0.046	0.021
pH	[2]	[2]
	English units (pounds per 1,000 bbl of feedstock)	
BOD [1]	12.2	6.5
TSS	8.3	5.3
COD [1]	87.0	45.0
Oil and grease	3.8	2.0
Phenolic compounds	0.088	0.043
Ammonia as N	8.3	3.8
Sulfide	0.078	0.035
Total chromium	0.180	0.105
Hexavalent chromium	0.022	0.0072
pH	[2]	[2]

[1] See footnote following table in § 419.13(c).
[2] Within the range 6.0 to 9.0.

(b) The limits set forth in paragraph (a) of this section are to be multiplied by the following factors to calculate the maximum for any one day and maximum average of daily values for thirty consecutive days.

(1) Size factor.

1,000 bbl of feedstock per stream day	Size factor
Less than 49.9	0.71
50.0 to 74.9	0.74
75.0 to 99.9	0.81
100.0 to 124.9	0.88
125.0 to 149.9	0.97
150.0 to 174.9	1.05
175.0 to 199.9	1.14
200.0 or greater	1.19

(2) Process factor.

Process configuration	Process factor
Less than 6.49	0.81
6.5 to 7.49	0.88
7.5 to 7.99	1.00
8.0 to 8.49	1.09
8.5 to 8.99	1.19
9.0 to 9.49	1.29
9.5 to 9.99	1.41
10.0 to 10.49	1.53
10.5 to 10.99	1.67
11.0 to 11.49	1.82
11.5 to 11.99	1.98
12.0 to 12.49	2.15
12.5 to 12.99	2.34
13.0 or greater	2.44

(3) See the comprehensive example in Subpart D, § 419.42(b)(3).

(c) The provisions of § 419.15(c) apply to discharges of process wastewater pollutants attributable to ballast water by a point source subject to the provision of this subpart.

(d) The quantity and quality of pollutants or pollutant properties controlled by this paragraph, attributable to once-through cooling water, are excluded from the discharge allowed by paragraph (b) of this section. Once-through cooling water may be discharged with a total organic carbon concentration not to exceed 5 mg/1.

(e) Effluent Limitations for Runoff—[Reserved].

§ 419.47 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 achieve the following pretreatment standards for new sources (PSNS).

(a) The following standards apply to the total refinery flow contribution to the POTW:

Pollutant or pollutant property	Pretreatment standards for new sources, maximum for any 1 day
	Milligrams per liter (mg/l)
Oil and grease	100
Ammonia (as N)	[1] 100

[1] Where the discharge to the POTW consists solely of sour waters, the owner or operator has the option of complying with this limit or the daily maximum mass limitation for ammonia set forth in § 419.46 (a) and (b).

(b) The following standard is applied to the cooling tower discharge part of the total refinery flow to the POTW by multiplying: (1) The standard; (2) by the total refinery flow to the POTW; and (3) by the ratio of the cooling tower discharge flow to the total refinery flow.

Pollutant or pollutant property	Pretreatment standards for new sources, maximum for any 1 day
	Milligrams per liter (mg/l)
Total chromium	1

Subpart E—Integrated Subcategory

§ 419.50 Applicability; description of the integrated subcategory.

The provisions of this subpart are applicable to all discharges resulting from any facility that produces petroleum products by the use of topping, cracking, lube oil manufacturing processes, and petrochemical operations, whether or not the facility includes any process in addition to topping, cracking, lube oil manufacturing processes, and petrochemical operations.

§ 419.51 Specialized definitions.

The general definitions, abbreviations, and methods of analysis set forth in Part 401 of this chapter and the specialized definitions set forth in § 419.31 shall apply to this subpart.

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

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

Pollutant or pollutant property	BPT Effluent Limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed
	Metric units (kilograms per 1,000 m^3 of feedstock)	
BOD_5	54.4	28.9
TSS	37.3	23.7
COD [1]	388.0	198.0
Oil and grease	17.1	9.1
Phenolic compounds	0.40	0.192
Ammonia as N	23.4	10.6
Sulfide	0.35	0.158
Total Chromium	0.82	0.48
Hexavalent chromium	0.068	0.032
pH	(2)	(2)
	English units (pounds per 1,000 bbl of feedstock)	
BOD [1]	19.2	10.2
TSS	13.2	8.4
COD [1]	136.0	70.0
Oil and grease	6.0	3.2
Phenolic compounds	0.14	0.068
Ammonia as N	8.3	3.8
Sulfide	0.124	0.056
Total chromium	0.29	0.17
Hexavalent chromium	0.025	0.011
pH	(2)	(2)

[1] See footnote following table in § 419.13(c).
[2] Within the range 6.0 to 9.0.

(b) The limits set forth in paragraph (a) of this section are to be multiplied by the following factors to calculate the maximum for any one day and maximum average of daily values for thirty consecutive days.

(1) Size factor.

1,000 bbl of feedstock per stream day	Size factor
Less than 124.9	0.73
125.0 to 124.9	0.76
150.0 to 174.9	0.83
175.0 to 199.9	0.91
200 to 244.9	0.99
225 or greater	1.04

(2) Process factor.

Process configuration	Process factor
Less than 6.49	0.75
6.5 to 7.49	0.82
7.5 to 7.99	0.92
8.0 to 8.49	1.00
8.5 to 8.99	1.10
9.0 to 9.49	1.20
9.5 to 9.99	1.30
10.0 to 10.49	1.42
10.5 to 10.99	1.54
11.0 to 11.49	1.68
11.5 to 11.99	1.83
12.0 to 12.49	1.99
12.5 to 12.99	2.17
13.0 or greater	2.26

(3) See the comprehensive example in Subpart D, § 419.42(b)(3).

(c) The provisions of § 419.12(c) apply to discharges of process wastewater pollutants attributable to ballast water by a point source subject to the provision of this subpart.

(d) The quantity and quality of pollutants or pollutant properties controlled by this paragraph, attributable to once-through cooling water, are excluded from the discharge allowed by paragraph (b) of this section. Once-through cooling water may be discharged with a total organic carbon concentration not to exceed 5 mg/l.

(e) Effluent Limitations for Runoff—[Reserved]

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

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

Pollutant or pollutant property	BAT Effluent Limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed
	Metric units (kilograms per 1,000 m^3 of feedstock)	
COD [1]	388.0	198.0
Phenolic compounds	0.40	0.192
Ammonia as N	23.4	10.6
Sulfide	0.35	0.158
Total chromium	0.068	0.032
hexavalent chromium	0.068	0.032
	English units (pounds per 1,000 bbl of feedstock)	
COD [1]	136.0	70.0
Phenolic compounds	0.14	0.068
Ammonia as N	8.3	3.8
Sulfide	0.124	0.056
Total chromium	0.29	0.17
Hexavalent chromium	0.025	0.011

[1] See footnote following table in § 419.13(C).

(b) The limits set forth in paragraph (a) of this section are to be multiplied by the following factors to calculate the maximum for any one day and maximum average of daily values for thirty consecutive days.

(1) Size factor.

1,000 bbl of feedstock per stream day	Size factor
Less than 124.9	0.73
125.0 to 149.9	0.76
150.0 to 174.9	0.83
175.0 to 199.9	0.91
200 to 224.9	0.99
225 or greater	1.04

2) Process factor.

Process configuration	Process factor
Less than 6.49	0.75
6.5 to 7.49	0.82
7.5 to 7.99	0.92
8.0 to 8.49	1.00
8.5 to 8.99	1.10
9.0 to 9.49	1.20
9.5 to 9.99	1.30
10.0 to 10.49	1.42
10.5 to 10.99	1.54
11.0 to 11.49	1.68
11.5 to 11.99	1.83
12.0 to 12.49	1.99
12.5 to 12.99	2.17
13.0 or greater	2.26

(3) See the comprehensive example in Subpart D, § 419.42(b)(3).

(c) The provisions of § 419.13(c) apply to discharges of process wastewater pollutants attributable to ballast water by a point source subject to the provisions of this subpart.

(d) The quantity and quality of pollutants or pollutant properties controlled by this paragraph, attributable to once-through cooling water, are excluded from the discharge allowed by paragraph (b) of this section. Once-through cooling water may be discharged with a total organic carbon concentration not to exceed 5 mg/l.

(e) Effluent Limitations for Runoff—[Reserved].

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

§ 419.55 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 403 and achieve the following pretreatment standards for existing sources (PSES). The following standards apply to the total refinery flow contribution to the POTW:

Pollutant or pollutant property	Pretreatment standards for existing sources—maximum for any 1 day
	Milligrams per liter (mg/l)
Oil and grease	100
Ammonia (as N)	[1]100

[1] Where the discharge to the POTW consists solely of sour waters, the owner or operator has the option of complying with this limit or the daily maximum mass limitation for ammonia set forth in § 419.53 (a) and (b).

§ 419.56 Standards of performance for new sources (NSPS).

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

Pollutant or pollutant property	NSPS effluent limitation	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed
	Metric units (kilograms per 1,000 m^3 of feedstock)	
BOD5	41.6	22.1
TSS	28.1	17.9
COD [1]	295.0	152.0
Oil and grease	12.6	6.7
Phenolic compounds	0.30	0.14
Ammonia as N	23.4	10.7
Sulfide	0.26	0.12
Total chromium	0.64	0.37
Hexavalent chromium	0.052	0.024
pH	[2]	[2]
	English units (pounds per 1,000 bbl of feedstock)	
BOD5	14.7	7.8
TSS	9.9	6.3
COD [1]	104.0	54.0
Oil and grease	4.5	2.4
Phenolic compounds	0.105	0.051
Ammonia as N	8.3	3.8
Sulfide	0.093	0.042
Total chromium	0.220	0.13
Hexavalent chromium	0.019	0.0084
pH	[2]	[2]

[1] See footnote following table in § 419.13(c).
[2] Within the range 6.0 to 9.0.

(b) The limits set forth in paragraph (a) of this section are to be multiplied by the following factors to calculate the maximum for any one day and maximum average of daily values for thirty consecutive days.

(1) Size factor.

1,000 bbl of feedstock per stream day	Size factor
Less than 124.9	0.73
125.0 to 149.9	0.76
150.0 to 174.9	0.83
175.0 to 199.9	0.91
200 to 224.9	0.99
225 or greater	1.04

(2) Process factor.

Process configuration	Process factor
Less than 6.49	0.75
6.5 to 7.49	0.82
7.5 to 7.99	0.92
8.0 to 8.49	1.00
8.5 to 8.99	1.10
9.0 to 9.49	1.20
9.5 to 9.99	1.30
10.0 to 10.49	1.42
10.5 to 10.99	1.54
11.0 to 11.49	1.68
11.5 to 11.99	1.83
12.0 to 12.49	1.99
12.5 to 12.99	2.17
13.0 or greater	2.26

(3) See the comprehensive example in Subpart D, § 419.42(b)(3).

(c) The provisions of § 419.15(c) apply to discharges of process wastewater pollutants attributable to ballast water by a point source subject to the provision of this subpart.

(d) The quantity and quality of pollutants or pollutant properties controlled by this paragraph, attributable to once-through cooling water, are excluded from the discharge allowed by paragraph (b) of this section. Once-through cooling water may be discharged with a total organic carbon concentration not to exceed 5 mg/l.

(e) Effluent Limitations for Runoff—[Reserved].

§ 419.57 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 achieve the following pretreatment standards for new sources (PSNS).

(a) The following standards apply to the total refinery flow contribution to the POTW:

Pollutant or pollutant property	Pretreatment standards for new sources—maximum for any 1 day
	Milligrams per liter (mg/l)
Oil and grease	100
Ammonia (as N)	[1]100

[1] Where the discharge to the POTW consists solely of sour waters, the owner or operator has the option of complying with this limit or the daily maximum mass limitation for ammonia set forth in § 419.56 (a) and (b).

(b) The following standard is applied to the cooling tower discharge part of the total refinery flow to the POTW by multiplying: (1) The standards; (2) by the total refinery flow to the POTW; and (3) by the ratio of the cooling tower discharge flow to the total refinery flow.

Pollutant or pollutant property	Pretreatment standards for new sources—maximum for any 1 day
	Milligrams per liter (mg/1)
Total chromium	1

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