the FEDERAL REGISTER through an appropriate amendment to 39 CFR 111.3.

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Title 40—Protection of Environment

CHAPTER I—ENVIRONMENTAL PROTECTION AGENCY

SUBCHAPTER N—EFFLUENT GUIDELINES AND STANDARDS

[FRL 702-7]

PART 419—PETROLEUM REFINING POINT SOURCE CATEGORY PRETREATMENT STANDARDS FOR EXISTING SOURCES

Final Regulations

Pretreatment standards for existing sources set forth in interim final form below are hereby promulgated by the Environmental Protection Agency (EPA or Agency). On May 9, 1974, EPA promulgated a regulation adding Part 419 to Chapter 40 of the Code of Federal Regulations (39 FR 16560). That regulation, with subsequent amendments on May 20, 1975 (40 FR 21939), established effluent limitations and guidelines for existing sources and standards of performance and pretreatment standards for new sources for the petroleum refining point source category. Pretreatment standards for existing sources in the petroleum refining point source category were proposed May 9, 1974 (39 FR 16574). The regulations established here have been substantially modified from the form in which they were proposed and, therefore, are being established in interim final form here so that further comments can be received. The regulation set forth below will amend 40 CFR 419 petroleum refining point source category by adding § 419.14 to the topping subcategory (Subpart A), § 419.24 to the cracking subcategory (Subpart B), § 419.34 to the petrochemical subcategory (Subpart C), § 419.44 to the lube subcategory (Subpart D), and § 419.54 to the integrated subcategory (Subpart E) pursuant to section 307(b) of the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 and 1317(b); 86 Stat. 816 et seq.; Pub. L. 92-500) (the Act).

(a) *Legal Authority.* Section 307(b) of the Act requires the establishment of pretreatment standards for pollutants introduced into publicly owned treatment works (POTW) and 40 CFR 128 establishes that the Agency will propose specific pretreatment standards at the time effluent limitations are established for point source discharges. The regulations promulgated herein are a result of further analyses subsequent to proposal of pretreatment regulations for existing sources in the petroleum refining industry (39 FR 16574). Sections 419.14, 419.24, 419.34, 419.44 and 419.54 set forth below establish in interim form pretreatment standards for existing sources within the petroleum refining point source category.

(b) *Summary and Basis of Pretreatment Standards for Existing Sources.* The regulation set forth below establishes pretreatment standards for pollutants discharged to publicly owned treatment works from existing sources within the subparts set forth in paragraph (a) above. This regulation establishes two sets of pretreatment standards under the authority of section 307(b) of the Act. The first set, known as prohibited discharge standards, are designed to prevent inhibition or interference with the municipal treatment works by prohibiting the discharge of pollutants of such nature or quantity that the mechanical or hydraulic integrity of the publicly owned treatment works is endangered. These prohibited discharge standards with minor changes are identical to the prohibitions contained in the general pretreatment regulation now found at 40 CFR 128.131. The second set, known as categorical pretreatment standards, apply to existing sources in this specific industrial subcategory. These standards contain numerical limitations based upon available technologies to prevent the discharge of any pollutant into POTW which pollutant may interfere with, pass through, or otherwise be incompatible with such works.

With respect to the subcategories governed by this regulation, the general pretreatment requirements set forth in 40 CFR Part 128 are superseded. Those requirements were proposed on July 19, 1973 (38 FR 19236) and published in final form on November 8, 1973 (38 FR 30982). They limit the discharge of pollutants which pass through or interfere with the operation of publicly owned treatment works, but do not set numerical limitations or explicitly list particular pollutants to be regulated. The provisions of the present regulation overlap to a considerable degree with the language of the general pretreatment requirements while at the same time setting specific numerical limitations on certain pollutants. For the purpose of clarity, sources affected by the present regulation are exempted from 40 CFR Part 128. This decision is particularly warranted because the provisions of 40 CFR Part 128 have sometimes been a source of confusion in the past, and because new general pretreatment regulations have been proposed (42 FR 6476, February 2, 1977) which will revoke and replace 40 CFR Part 128 upon promulgation. In other words, all pretreatment requirements established by the Agency which are currently applicable to the subcategories listed in paragraph (a) above are included in the regulation set forth below. When the general pretreatment regulations are promulgated, these standards will be reviewed for consistency with the general policy stated therein.

The regulations establish the maximum concentrations of ammonia and oil and grease allowed to be discharged by petroleum refineries to publicly owned treatment works (POTW). In addition, attachment A to the preamble of this regulation provides guidance to the operators of POTW relative to pollutants such as chromium, sulfides, and phenolic compounds, which, on a case-by-case basis, may prove harmful to or not be adequately treated by POTW.

A supplemental technical study was made to determine the levels of pretreatment requirements which are appropriate considering the limitations established for direct dischargers under sections 301 and 304 and the requirements of section 307(b). The findings of this study and the technical rationale for the establishment of pretreatment standards are summarized in Attachment A to this preamble.

The report entitled "Supplement for Pretreatment to the Development Document for the Petroleum Refining Industry; Existing Point Source Category" details the additional technical analysis undertaken in support of the interim final regulation set forth herein and is available for inspection at the EPA Public Information Reference Unit, Room 2922 (EPA Library), Waterside Mall, 401 M St. SW., Washington, D.C. 20460, at all EPA Regional offices and at State water pollution control offices. A supplementary analysis prepared for EPA of the possible economic effects of the regulation is also available for inspection at these locations. Copies of both of these documents are being sent to persons or institutions affected by the regulation or who have placed themselves on a mailing list for this purpose (see EPA's Advance Notice of Public Review Procedures, 38 FR 21202, August 6, 1973). An additional limited number of copies of both reports are available. Persons wishing to obtain a copy may write the Environmental Protection Agency, Effluent Guidelines Division, Washington, D.C. 20460, Attention: Distribution Officer, WH-552.

When this regulation is promulgated in final rather than interim form, revised copies of the technical documentation will be available from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. Copies of the economic analysis document will be available through the National Technical Information Service, Springfield, VA. 22151.

(c) *Public Participation.* Prior to this publication, many agencies and groups were consulted and given an opportunity to participate in the development of these standards. As a result of comments received following publication of the proposed regulation and further consideration by the Agency, pretreatment requirements for the petroleum refining point source category have been further studied. Immediately prior to this rulemaking, the results of this study were circulated for additional comments to persons known to be interested. In addition, a public meeting was held on January 21, 1977, to enable further public participation. A summary of public participation in this rulemaking, public comments and the Agency's response, and reconsideration of these is contained in Attachment B of this preamble.

(a) *Economic Impact and Inflationary Impact Analysis.* The Agency has studied the economic and inflationary effects of these standards and has made the following estimates. Twenty-three of the 26 indirect dischargers that were identified are anticipated to incur some treatment costs for ammonia and oil and grease removal. The total investment

necessary is estimated to be $6.0 million with an annual cost of $2.2 million, where the annual cost includes depreciation, cost of capital, operating, and maintenance costs. This would increase the cost per barrel of crude oil processed from $.02 for small plants to $.002 for large plants. The additional cost of treatment is estimated to be no more than 1 percent of the value added by the refinery. The user charges that are incurred by these plants are expected to be less than $.01 per barrel of crude oil capacity. When user charges and estimated pretreatment costs are combined, the resulting cost per barrel is still less than the $.16 per barrel costs that many direct discharging refineries must pay for wastewater treatment. This regulation will reduce but not eliminate the competitive advantage of the indirect discharging refineries. They would have a slightly lower return on investment and a reduction in nonenvironmental investment of no more than $6.0 million. No changes in production, prices, or employment are expected to result from these standards.

The Agency recommends that sulfides, phenol, and chromium be controlled as needed on an individual basis by local authority. Therefore, an analysis was performed considering the costs of controlling these additional pollutants. The investment cost is estimated to be an additional $14.9 million, with a corresponding annual cost of $6.1 million, if all identified indirect dischargers were required to control sulfides, phenol, and chromium. The five indirect discharging refineries with the greatest potential for economic effects would incur pretreatment and user charge costs of no more than $.06 per barrel of crude oil processed. This cost remains below the $.16 per barrel that many direct discharging refineries must pay for wastewater treatment. For those individual cases in which sulfides, phenol, or chromium might be controlled, there is no expected change in price, production, or employment.

Executive Order 11821 (November 27, 1974) requires that major proposals for legislation and promulgation of regulations and rules by agencies of the executive branch be accompanied by a statement certifying that the inflationary impact of the proposal has been evaluated. The Administrator has directed that all regulatory actions that are likely to result in (1) annualized costs of more than $100 million, (2) additional costs of production of more than 5 percent of the selling price, or (3) an energy consumption increase equivalent to 25,000 barrels of oil per day will require a certified inflationary impact statement. None of these criteria are likely to be exceeded due to these standards; however, the analysis that was performed meets all the requirements of an inflation impact statement. It is hereby certified that the economic and inflationary effects of the proposal have been evaluated in accordance with Executive Order 11821.

(e) *Compliance Date.* Section 301 of the Act anticipates that pretreatment standards for existing sources would be established and compliance would be required before July 1, 1977, while section 307(b) specifies "a time for compliance not to exceed three years from the date of promulgation" of the standard. In view of this conflict of statutory language and the fact that the pretreatment standards are only now being promulgated, the Agency believes that the compliance deadline as set forth in section 307(b) should apply. The time for compliance with the categorical pretreatment standards will be within the shortest reasonable time but not later than three years from the effective date. However, this does not preclude a Regional Administrator or local or State authority from establishing a more expeditious compliance date on an individual basis where it is appropriate. Compliance with the prohibited discharge standards is required immediately upon the effective date of these regulations since these standards are essentially the same as 40 CFR 128.131 and since the deadline for compliance with 40 CFR 128.131 has passed.

The Agency is subject to an order of the United States District Court for the District of Columbia entered in *Natural Resources Defense Council (NRDC) v. EPA*, 8 E.R.C. 2120 (D.D.C. 1976) which requires the promulgation of pretreatment standards for this industry category no later than February 15, 1977. The court order which was entered by the United States Court for the District of Columbia on June 8, 1976, following a consent agreement among the parties to four lawsuits, placed EPA on rigid timetables for the preparation and publication of water pollution regulations for 21 broad industry categories and 65 families of water pollutants.

It has not been practical to develop and republish regulations for this category in a second proposed form and to provide a 30-day comment period within the time constraints imposed by the court order referred to above. Accordingly, the Agency has determined pursuant to 5 USC 553(b) that notice and comment on the interim final regulations prior to promulgation would be impractical and contrary to the public interest.

Interested persons are encouraged to submit written comments. Comments should be submitted in triplicate to the Environmental Protection Agency, 401 M St., SW., Washington, D.C. 20460, Attention: Distribution Officer, WH-552. Comments on all aspects of the regulation are solicited. In the event comments are in the nature of criticisms as to the adequacy of data which are available, or which may be relied upon by the Agency, comments should identify and, if possible, provide any additional data which may be available and should indicate why such data suggest amendment or modification of the regulation. In the event comments address the approach taken by the Agency in establishing pretreatment standards, EPA solicits suggestions as to what alternative approach should be taken and why and how this alternative better satisfies the detailed requirements of section 307(b) of the Act.

A copy of all public comments will be available for inspection and copying at the EPA Public Information Reference Unit, Room 2922 (EPA Library) Waterside Mall, 401 M Street SW., Washington, D.C. 20460. A copy of the technical study and economic study referred to above, and certain supplementary materials will be maintained at this location for public review and copying. The EPA information regulation, 40 CFR Part 2, provides that a reasonable fee may be charged for copying.

All comments received within sixty days of publication will be considered. The Agency especially solicits comments concerning those refineries not identified in the present study and those refineries for which hook-up to POTW is planned. Steps previously taken by the Environmental Protection Agency to facilitate public response within this time period are outlined in the advance notice concerning public review procedures published on August 6, 1973 (38 FR 21202).

In addition, section 8 of the FWPCA authorizes the Small Business Administration, through its economic disaster loan program, to make loans to assist any small business concerns in effecting additions to or alterations in their equipment, facilities, or methods of operation so as to meet water pollution control requirements under the FWPCA, if the concern is likely to suffer a substantial economic injury without such assistance.

For further details on this Federal loan program write to EPA, Office of Analysis and Evaluation, WH-586, 401 M St., S.W., Washington, D.C. 20460.

In consideration of the foregoing, 40 CFR Part 419 is hereby amended as set forth below.

This rulemaking becomes effective March 23, 1977.

Dated: March 11, 1977.

DOUGLAS M. COSTLE,
Administrator.

ATTACHMENT A

TECHNICAL SUMMARY AND BASIS FOR REGULATIONS

This attachment summarizes the basis of interim final pretreatment standards for existing sources.

(1) General methodology. The pretreatment standards set forth herein were developed in the following manner. The point source category was first studied for the purpose of determining whether separate pretreatment standards are appropriate for different segments within the category. This analysis included a determination of whether differences in raw materials used, products produced, manufacturing processes employed, age, size, wastewater constituents, and other factors require development of separate standards for different segments of the point source category. The raw waste characteristics for each such segment were then identified. This

included an analysis of the source, flow and volume of water used in the processes employed, the sources of waste and wastewaters in the operation, and the constituents of all wastewater. The constituents of the wastewaters which should be subject to pretreatment standards were identified. In addition, the Agency assessed the extent to which the constituents discharged would pass through or interfere with POTW.

The control and treatment technologies existing within each segment were identified. This included an identification of distinct control and treatment technologies, including both in-plant and end-of-process technologies. It also included an identification of the effluent level resulting from the application of each of the technologies, in terms of the amount of constituents and the chemical, physical, and biological characteristics of pollutants. The problems, limitations and reliability of each treatment and control technology were also identified. In addition, the nonwater quality environmental impact, such as the effects of the application of such technologies upon other pollution problems, including air, solid waste, noise and radiation were identified. The energy requirements of each control and treatment technology were determined as well as the cost of the application of such technologies.

The information, as outlined above, was then evaluated in order to determine what levels of technology constitute the best practicable pretreatment technology. In identifying such technologies, various factors were considered. These included the total cost of application of the technology, the age of equipment and facilities involved, the processes employed, the engineering aspects of the application of various types of control techniques, process changes, nonwater quality environmental impact (including energy requirements) and other factors.

The data upon which the above analysis was performed included EPA inspections, consultant reports, and industry and POTW submissions.

(2) Summary of conclusions with respect to sections of the petroleum refining point source category.

(i) Categorization. The petroleum refining point source category was subcategorized, in support of the direct discharge limitations, primarily on process considerations. In the course of establishing a subcategorization scheme for the indirect discharging segment of this industry, it was determined upon analysis of location, age, economic status, size, wastewater characteristics, and manufacturing processes of indirect versus direct dischargers, that there are no fundamental differences that would warrant a different method of subcategorization for the indirect discharge segment of the petroleum refining industry. However, it was further concluded that all indirect dischargers should be subject to the same pretreatment standards. This conclusion resulted from the fact that the pretreatment standards recommended herein are imposed on a concentration basis, as opposed to the mass basis utilized for direct dischargers. Additionally, the pollutants of concern for pretreatment purposes are common to all refineries' wastewaters regardless of the subcategorization scheme previously established.

While it has been determined that the indirect dischargers should be subject to the same standards, the regulations presented below are structured in the same manner as the direct discharging segment. This approach was taken to keep the regulation (40 CFR Part 419) straightforward and understandable. These pretreatment standards may, however, be subject to revision in the future in view of the order of the United States District Court for the District of Columbia entered in *NRDC v. EPA*, 8 E.R.C. 2120 (D.D.C. 1976). Upon this consideration, it may become appropriate to revise the pretreatment standards in such a manner as to require subcategorization. Possible revisions to the pretreatment standards that may require different subcategorization include: (1) the promulgation of mass limitations, which could involve the use of flow models similar to those for the BPCTCA regulations (40 CFR Part 419); or (2) the addition of specific problem pollutants to the list of compounds limited by these regulations.

(ii) Waste characteristics. The volume of process wastewater generated by the indirect discharge segment of the industry was found to be generally the same (per thousand barrels of feed stock) as the direct discharge segment of the industry. Total effluent flows for indirect dischargers range from 0.006 million gallons per day (MGD) to 7.64 MGD, with the average flow rate equal to 1.42 MGD.

Materials present in refinery effluent wastewaters include BOD, COD, oil and grease, suspended solids, sulfides, ammonia, phenolic compounds, and chromium. The current study indicated that the mean concentrations of these pollutants are as follows: BOD5—165 mg/l; COD—923 mg/l; oil and grease—49.4 mg/l; sulfides—7.81 mg/l; ammonia—87.8 mg/l; phenols—27.0 mg/l; and chromium—0.84 mg/l. These values are based upon all the data received for these pollutants, whether or not best practicable pretreatment technology existed at the refineries when the data were obtained.

(iii) Origin of wastewater pollutants. Wastewaters emanate from a number of sources within a refinery. Analysis of the data collected shows that the major source of ammonia, sulfide, and phenol is the sour water waste stream. Sour waters are produced when steam is used as a stripping medium in the various cracking processes present in a refinery.

The major sources of oil and grease are waste streams that, when combined, are referred to as the oily sewer. These wastewaters are normally generated by many operations within a refinery, including pad washings, tank bottom washings, and contaminated storm runoff.

The major source of chromium is cooling tower blowdown when chromium compounds are used as corrosion inhibitors in a refinery's cooling water system.

(iv) Treatment and control technology. Wastewater treatment and control technologies have been studied for this industry to determine what should be considered as the best practicable pretreatment technology. The pretreatment study showed that the sources and concentrations of pollutants are generally similar between all subcategories of the petroleum refining industry. Therefore, the same control and pretreatment technologies are available to the entire industrial segment regardless of subcategorization.

Petroleum refinery wastes are generally treated by biological treatment. Prior to biological treatment, various pretreatment techniques are employed at direct discharging petroleum refineries. These pretreatment steps include (1) oil and grease removal through the application of API separators and dissolved air flotation units or other similar processes and (2) sulfide and ammonia removal through steam stripping of sour water waste streams. These pretreatment technologies are employed to protect biological treatment systems.

Sound pretreatment practice includes the segregation of major wastewater streams. Segregation can drastically reduce the size of equipment needed for pretreatment. These wastewater streams include: Storm water runoff, spent caustic, sour waters, and cooling tower blowdowns.

Newer refineries are being designed or modified with reduction of water use and pollutant loading as a major part of the design criteria. Some of these techniques are used by current indirect dischargers, or may be planned with future modifications.

Achievement of the pretreatment limitations for this industry will generally require the following control and pretreatment technologies which are identical to those generally employed by direct dischargers: (1) The use of sour water strippers for the removal of ammonia from the sour water waste streams; and (2) the use of dissolved air flotation (DAF), or similar processes, in addition to the use of API separators, for oil and grease removal. At the present time, all indirect dischargers have API separators as part of their pretreatment schemes.

The Agency also recommends that sulfides, phenol, and chromium be controlled as needed on an individual basis by local authority. The data available to the Agency at the present time do not support the implementation of uniform national pretreatment standards for these pollutants.

Phenolic compounds are biodegradable by biota which become acclimated to them. Many POTW are able to accept industrial effluents containing phenol without experiencing either upset or pass-through problems. The limited data available relative to treatment of phenolic-bearing petroleum refinery wastewaters by POTW indicate that the removal efficiency of phenol by individual POTW should be considered in the development of pretreatment standards for

this parameter. Therefore, pretreatment standards for phenol should be established on an individual basis by a POTW receiving refinery wastewater. In those cases where it is demonstrated that the POTW is unable to adequately treat a specific refinery's phenolic wastewaters, a phenol limitation of .35 mg/l (daily maximum) can be achieved and is included as guidance for the purpose of assisting local authorities. The model technology which supports this limitation is biological treatment of segregated sour water stripper bottoms. Detailed discussion and supporting data are included in the Development Document for Effluent Limitations Guidelines for the Petroleum Refining Point Source Category, and its Supplement for Pretreatment Standards.

It was judged at this time to be inappropriate to set a specific national pretreatment standard for chromium. Currently, there is no specific pretreatment technology practiced in the industry for removal of this pollutant, and, therefore, removal data for specific technologies were not available. This pollutant will be studied more thoroughly in light of the order of the U.S. District Court for the District of Columbia entered in *NRDC* v *EPA*, 8 E.R.C. 2120 (D.D.C. 1976).

In those individual cases where chromium levels are judged to be having a significant detrimental effect on a POTW, by creating either upset or pass-through problems, a total chromium limitation of 1.0 mg/l (daily maximum) can be achieved and is included as guidance for the purpose of assisting local authorities. The model technology which supports this limitation is the treatment of segregated cooling tower blowdown by clarification, subsequent to reduction of hexavalent chromium to trivalent with sulfur dioxide. This technology is discussed in the Supplement for Pretreatment to the Development Document for the Petroleum Refining Industry.

Sulfides discharged by refineries may interfere with the operation of a POTW, particularly with regard to corrosion of concrete pipes that are used to convey effluent to the treatment plant itself. In those individual cases where sulfide levels are judged to have a significant detrimental effect on a POTW, a sulfide limitation of 3.0 mg/l (daily maximum) can be achieved and is included as guidance for the purpose of assisting local authorities. The model technology which supports this limitation is steam stripping of sour water waste streams. Detailed discussion and supporting data are included in the Development Document for Effluent Limitations Guidelines for the Petroleum Refining Point Source Category, and its Supplement for Pretreatment Standards.

(v) Cost estimates for control of wastewater pollutants. Since the indirect discharge segment of the industry has been specifically identified, along with most of its pretreatment operations, total investment costs for compliance with pretreatment standards have been developed on a plant-by-plant basis. The total investment costs for all identified indirect discharging refineries are summarized by pollutant parameter as follows:

Ammonia	$3,787,000
Oil and grease	2,460,000
Totals	6,244,000

These figures represent estimates of the maximum costs that would be experienced if all identified indirect discharging refineries not having best practicable pretreatment technology were forced to implement technologies for ammonia and secondary oil removal. In actuality, the economic impact of pretreatment standards on the industry should be significantly less than the total costs shown, since it is anticipated that many refineries may not require all the equipment in the pretreatment model in order to meet pretreatment standards for these two parameters.

The cost estimates presented above do not include land costs, and assume that ample space is available for the pretreatment systems. In addition, the estimates also assume that no unusual foundation or other site-specific problems exists. The land requirements are relatively minimal compared to those for refinery process equipment, and the land areas required should generally be available to petroleum refineries.

Total annual operating costs for the removal of sulfides, ammonia, and oil and grease were developed with the use of model, or typical-sized, plants. A summary of the total annual operating costs for these model plants are as follows:

Ammonia (barrels per day):	Per-year
20,000	$50,500
95,000	371,000
150,000	503,000
Oil and grease (MGD):	
0.08	$33,600
1.0	87,400
4.4	217,000
6.2	284,000

The total annual operating costs presented above include chemical (including steam), pumping, labor, depreciation of investment, and maintenance costs. In regard to sulfide and ammonia removal, other operating costs, such as treatment of the off-gases and pH adjustment of the sour waters, are not included due to the difficulty in determining a representative value for the entire industrial segment. While these factors may have an effect on the total operating cost of implementing sour water stripping technology, they are not expected to have a significant effect on the conclusions of the economic impact study.

Costs were developed for the removal of sulfide, phenol, and chromium to complement the guidance values described above. The costs presented below for phenol removal are based upon the use of biological treatment for removing phenols directly from the segregated sour water stripper bottoms. The costs for chromium removal are based upon treatment of the cooling tower blowdown stream by reduction of hexavalent chromium to trivalent chromium with sulfur dioxide, followed by clarification. The costs for chromium removal represent a maximum expenditure, since chromium is removed in many refineries by virtue of the reducing environment in the plant sewers and the detention time afforded by the API separator. The costs for sulfide removal are based upon steam stripping of sour water waste streams.

Barrels per day	Total investment costs	Total annual costs
Phenol removal:		
20,000	$[illegible],000	$23,[illegible]50
95,000	350,000	97,500
Chromium removal:		
15,000	175,000	47,000
50,000	229,000	73,000
110,000	423,000	160,000
Sulfide removal:		
20,000	423,000	125,000
95,000	922,000	523,000
150,000	1,170,000	713,000

(vi) Energy requirements and nonwater quality environmental impacts. The energy requirements related to the implementation of these regulations are limited to pumping requirements for liquid transfer, steam generation for sulfide and ammonia stripping, and energy to operate various pumping and mixing equipment associated with dissolved air flotation. Energy requirements for sour water stripping can range from 1,000,000 BTU/hr for a 20,000 bbl/day refinery to 33,000,000 BTU/hr for a 150,000 bbl/day refinery. Energy requirements for DAF can range from 6 horsepower (H.P.) for a 20,000 bbl/day refinery to 180 H.P. for a 200,000 bbl/day refinery.

Nonwater quality considerations associated with pretreatment primarily relate to the gaseous stream from sour water strippers. Generally, the gaseous stream from a sour water stripper is either incinerated or directed to a recovery facility. If a second stripper is added in series for ammonia removal, it is not anticipated that the disposition of the gaseous stream will create serious problems within the refinery. In fact, the use of two strippers in series allows for the production of high purity sulfide and ammonia off-gases which can be recovered and disposed of more readily. In some refineries, ammonia is recovered in the aqueous or anhydrous form and sold as a by-product of the stripping operation. The Agency solicits information which provides cost and other data regarding sulfide and ammonia off-gas recovery and disposal.

Sludges created by a biological system for phenol removal could be combined with other semi-solid wastes generated in the refinery. This sludge should not be offensive in nature, since it will not contain sanitary sewage. Similarly, sludge generated by a DAF system could be combined with API separator sludge for treatment and disposal. The oily froth could be directed to the refinery slop oil system or disposed of by incineration.

In most cases the sludges described above are nonhazardous substances requiring only minimal custodial care. However, some constitutents may be

hazardous and may require special consideration. In order to insure long term protection of the environment from these hazardous or harmful constituents, special consideration of disposal sites must be made. All landfill sites where such hazardous wastes are disposed should be selected so as to prevent horizontal and vertical migration of these contaminants to ground or surface waters. In cases where geologic conditions may not reasonably ensure this, adequate legal and mechanical precautions (e.g., impervious liners) should be taken to ensure long term protection to the environment from hazardous materials. Where appropriate, the location of solid hazardous materials disposal sites should be permanently recorded in the appropriate office of legal jurisdiction.

Other nonwater quality aspects, such as noise levels, will not be perceptively affected. Most refineries generate fairly high noise levels (85–95 dB(A)) within the battery limits because of equipment such as pumps, compressors, steam jets, flare stacks, etc. Equipment associated with in-process or end-of-pipe control systems would not add significantly to these levels. There are no radioactive nuclides used in the industry, other than in instrumentation. Thus, no radiation problems will be expected. Compared to the odor emissions possible from other refinery sources, odors from the wastewater treatment plants are not expected to create a significant problem. However, odors are possible from the wastewater facilities, especially from the possible stripping of ammonia and sulfides in the air flotation units.

In summary, it is not anticipated that any serious non-water quality environmental impact will result from wastewater pretreatment processes.

(vii) Economic and inflationary impact analysis. The Agency has evaluated the inflationary and economic impacts of these regulations in accordance with Executive Order 11821 that requires inflation impact statements for major actions. The primary approach in studying the effects of these pretreatment standards was to assess each indirect discharger's relative competitive condition as compared to direct discharging refineries. Since indirect dischargers form only about 10 percent of all refineries, the prices and returns on investment are primarily set by direct dischargers. The only major difference between this group of indirect dischargers and other refineries is that they will incur user charges and pretreatment costs rather than the costs of meeting the 1977 and 1983 regulations for direct dischargers. The relative competitive advantage can be assessed by comparing the differences in cost. The economic analysis considered the installation of treatment equipment that would control sulfides, oil and grease, and ammonia. Since these standards do not require the control of sulfides, the following estimates have excluded the costs of controlling sulfides.

The 23 plants that would need to improve their treatment systems are expected to incur an aggregate investment cost of $6.0 million for treating ammonia, and oil and grease. The aggregate annual cost is estimated to be $2.2 million, where the annual cost consists of depreciation, cost of capital, operating, and maintenance costs. This would increase the cost per barrel of crude processed from $.02 for small plants to $.002 for large plants. The additional cost of treatment is estimated to be no more than 1 percent of the value added by the refinery. When these costs are combined with the payments to the municipal system, which are expected to be less than $0.01 per barrel of crude capacity, the resulting cost per barrel is still less than the water pollution treatment costs for direct discharging refineries, which will generally be more than $.16 per barrel for small refineries. This regulation will reduce but not eliminate the competitive advantage of the indirect discharging refineries. They would then have a slightly lower return on investment and a reduction in non-environmental investment of no more than $6.0 million. No changes in production, prices, or employment are expected to result from the application of these standards. There is a strong economic incentive to become an indirect discharger, and it is expected that refineries will continue to move to municipal systems when possible. Although the costs on which the analysis was based were developed for the Gulf Coast States, geographical differences in costs are not expected to be so large as to change the conclusions of the analysis.

The Agency recommends that sulfides, phenol, and chromium be controlled as needed on an individual basis by local authority. An examination of the costs of treatment indicates that control of any or all of these pollutants is economically feasible. The investment cost is estimated to be an additional $14.9 million, with a corresponding annual cost of $6.1 million, if all identified indirect dischargers were required to control these pollutants. The five indirect discharging refineries with the greatest potential for experiencing economic effects would incur user charges and pretreatment costs of no more than $.06 per barrel of crude oil processed. This cost remains well below the $.16 per barrel that many direct discharging refineries must pay for wastewater treatment.

ATTACHMENT B

SUMMARY OF PUBLIC PARTICIPATION

Prior to this publication, copies of the draft development document ("Draft Supplement for Pretreatment to the Development Document for the Petroleum Refining Industry; Existing Point Source Category," December, 1976) were sent to industry trade groups, environmental interest groups, Federal agencies, and State, local, and territorial pollution control agencies, and ESWQIAC (the Effluent Standards and Water Quality Information Advisory Committee established under section 515 of the FWPCA). In addition, copies were sent to each petroleum refinery known to be discharging to a POTW. These persons were given an opportunity to participate in the development of pretreatment standards by submitting written comments. In addition, a public meeting was held on January 21, 1977, at EPA headquarters in Washington, D.C., at which interested persons were invited to express their views publicly. Public comments were also solicited when existing source pretreatment standards for this industry were proposed in the FEDERAL REGISTER on May 9, 1975 (39 FR 16574).

The following organizations responded with comments: U.S. Department of Commerce; County Sanitation Districts of Los Angeles County; Metropolitan Sanitary District of Greater Chicago; Gulf Coast Waste Disposal Authority; American Petroleum Institute; Ashland Oil, Inc.; Atlantic Richfield Co.; Betz Laboratories, Inc.; Chevron, U.S.A., Inc.; Clark Oil and Refining Corp.; Marathon Oil Co.; Mobil Oil Corp.; Shell Oil Co.; Texaco, Inc.; and Union Oil Co. of California.

The major issues raised by commenters during the development of the interim final pretreatment standards and the resolution of these issues are as follows:

(1) The establishment of national pretreatment standards was criticized. Many commenters suggested that pretreatment standards be established on a case-by-case basis at the local level.

The Act requires that pretreatment standards be established on a uniform national level, although individual municipalities may establish more stringent standards. The standards are established on the basis of treatability and the tendency of the regulated pollutants to pass through or interfere with the operation of POTW. The national standards for oil and grease and ammonia reflect the application of currently available technology as implied in section 307(b)(2) of the Act. Rather than establishing national standards at this time for chromium, phenol, and sulfides, limitations are presented in Attachment A of the preamble to this regulation to serve as guidance to local authorities implementing pretreatment programs.

(2) Several commenters indicated that the use of chromium-based corrosion inhibitors in cooling systems is more effective and economical than the suggested use of organic-based corrosion inhibitors.

The Agency recognizes that the use of chromium-based corrosion inhibitors can be more economical than the use of organic-based inhibitors. However, chromium and its compounds are included on the list of pollutant parameters to be studied pursuant to an order of the United States District Court for the District of Columbia entered in *NRDC v EPA*, 8 E.R.C. 2120 (D.D.C. 1976). At this time, a national pretreatment standard for chromium is not recommended. The use of organic-based corrosion inhibitors and better control of cooling tower blowdown flows are encouraged for elimination or reduction of chromium discharges. As indicated in the response to comment #1, guidance for the control of chromium discharges is presented in

Appendix A. This guidance limitation and attendant costs for compliance are based on reduction of hexavalent chromium from the segregated cooling tower blowdown stream, rather than the use of organic-based corrosion inhibitors. However, the Agency intends to reassess the need for a national pretreatment standard for chromium during the process of developing the final pretreatment regulation for the petroleum refining industry.

(3) Several commenters indicated that the current cost of steam is considerably higher than the cost figure used by EPA for costing purposes.

The Agency has reassessed the cost of steam. The interim final development document for pretreatment and the economic report include steam costs at $3.00/1,000 lb. rather than the $1.50/1,000 lb. estimate used in the draft document.

(4) One commenter argues that there should be no national pretreatment standard for ammonia because some biological systems have substantial removal capability for ammonia and that the Agency should take this into account if it promulgates a numerical standard.

The Agency recognizes that, at relatively low concentration levels, ammonia serves as a nutrient in the bio-oxidation process. However, excessively high levels of ammonia exhibit inhibitory effects on the bio-oxidation process and will pass through POTW untreated. The direct discharging segment of the petroleum refining industry typically "pretreats" sour waters by steam stripping prior to biological treatment (e.g., activated sludge, aerated lagoons) to minimize, among other things, excessive ammonia loadings in the biological system. The national pretreatment standard for ammonia in the present regulation is based on the need to protect POTW from excessive ammonia loadings and is established at levels achievable by technology in common use today.

(5) Several commenters indicated that costs for downstream ammonia and sulfur recovery were not adequately addressed in the draft development document.

The Agency recognizes that sufficient data were not available during the study to include meaningful cost estimates of downstream ammonia and sulfur recovery. The Agency solicits cost information on the types and capacities of ammonia and sulfur recovery systems associated with removal of these materials from refinery wastewaters. In addition, the Agency solicits explanations and evaluations of existing or potential problems relative to non-water quality impacts from ammonia and sulfide treatment processes (especially air pollution). These comments will be carefully considered in the development of the final pretreatment regulation for this industry.

(6) Two commenters indicated that they presently have plants discharging to POTW which were not identified in the study.

The Agency acknowledges that these refineries were not identified by the study and is proceeding to solicit relevant information from these two refineries for inclusion in the data base prior to promulgation of the final regulation. In addition, the Agency solicits information on other petroleum refineries which were not contacted during this study; this includes refineries which are presently discharging to POTW and those which are firmly committed to future POTW tie-ins.

(7) Several commenters argued that the factor used for adjusting costs from 1972 to 1976 dollars (1.35) was unrealistically low.

A cross-check of three additional cost indices—CE plant costs, M&S equipment costs, and ENR construction costs—yields a cost adjustment factor range of 1.30 to 1.40 which comports with the cost adjustment factor used in the study.

(8) Several commenters indicated that their costs incurred for installation of water pollution control facilities similar to those considered in this study were considerably higher than those presented in the draft development document.

The draft development document includes an explanation that such cost estimates did not include land costs, unusual foundation or site preparation costs, or other unusual site-specific costs. Those commenters who argued that cost estimates were understated did not present detailed information to enable direct comparisons. The Agency solicits detailed cost estimates which include itemized cost breakdowns (i.e., land costs, site preparation costs, foundation costs, equipment costs, installation costs, etc.). Based on the responses to this request, the Agency will reassess, if necessary, the costs and economic impacts prior to final promulgation of this regulation.

Sections 419.14, 419.24, 419.34, 419.44, 419.54 are added as follows:

§ 419.14 Pretreatment standards for existing sources.

For the purpose of establishing pretreatment standards under section 307(b) of the Act for a source within the topping subcategory, the provisions of 40 CFR 128 shall not apply. The pretreatment standards for an existing source within the topping subcategory are set forth below.

(a) No pollutant (or pollutant property) introduced into a publicly owned treatment works shall interfere with the operation or performance of the works. Specifically, the following wastes shall not be introduced into the publicly owned treatment works:

(1) Pollutants which create a fire or explosion hazard in the publicly owned treatment works.

(2) Pollutants which will cause corrosive structural damage to treatment works, but in no case pollutants with a pH lower than 5.0, unless the works is designed to accommodate such pollutants.

(3) Solid or viscous pollutants in amounts which would case obstruction to the flow in sewers, or other interference with the proper operation of the publicly owned treatment works.

(4) Pollutants at either a hydraulic flow rate or pollutant flow rate which is excessive over relatively short time periods so that there is a treatment process upset and subsequent loss of treatment efficiency.

(b) In addition to the general prohibitions set forth in paragraph (a) of this section, the following pretreatment standard establishes the quality or quantity of pollutants or pollutant properties controlled by this subsecttion which may be introduced into a publicly owned treatment works by a source subject to the provisions of this subpart.

Pollutant or pollutant property:	*Pretreatment standard—maximum for any 1 day (milligrams per liter)*
Ammonia (as *N*)	100
Oil and grease	100

(c) Any owner or operator of any source to which the pretreatment standards required by § 419.14(a) are applicable, shall be in compliance with such standards upon the effective date of such standards. The time for compliance with standards required by § 419.14(b) shall be within the shortest time but not later than three years from the effecive date of such standards.

§ 419.24 Pretreatment standards for existing sources.

For the purpose of establishing pretreatment standards under section 307(b) of the Act for a source within the cracking subcategory, the provisions of 40 CFR 128 shall not apply. The pretreatment standards for an existing source within the cracking subcategory are set forth below.

(a) No pollutant (or pollutant property) introduced into a publicly owned treatment works shall interfere with the operation or performance of the works. Specifically, the following wastes shall not be introduced into the publicly owned treatment works:

(1) Pollutants which create a fire or explosion hazard in the publicly owned treatment works.

(2) Pollutants which will cause corrosive structural damage to treatment works, but in no case pollutants with a pH lower than 5.0, unless the works is designed to accommodate such pollutants.

(3) Solid or viscous pollutants in amounts which would cause obstruction to the flow in sewers, or other interference with the proper operation of the publicly owned treatment works.

(4) Pollutants at either a hydraulic flow rate or pollutant flow rate which is excessive over relatively short time periods so that there is a treatment process upset and subsequent loss of treatment efficiency.

(b) In addition to the general prohibitions set forth in paragraph (a) of this section, the following pretreatment standard establishes the quality or quan-

tity of pollutants or pollutant properties controlled by this subsection which may be introduced into a publicly owned treatment works by a source subject to the provisions of this subpart.

Pollutant or pollutant property:	*Pretreatment standard—maximum for any 1 d (milligrams per liter)*
Ammonia (as *N*)	100
Oil and grease	100

(c) Any owner or operator of any source to which the pretreatment standards required by § 419.24(a) are applicable, shall be in compliance with such standards upon the effective date of such standards. The time for compliance with standards required by § 419.24 (b) shall be within the shortest time but not later than three years from the effective date of such standards.

§ 419.34 Pretreatment standards for existing sources.

For the purpose of establishing pretreatment standards under Section 307 (b) of the Act for a source within the petrochemical subcategory, the provisions of 40 CFR 128 shall not apply. The pretreatment standards for an existing source within the petrochemical subcategory are set forth below.

(a) No pollutant (or pollutant property) introduced into a publicly owned treatment works shall interfere with the operation or performance of the works. Specifically, the following wastes shall not be introduced into the publicly owned treatment works:

(1) Pollutants which create a fire or explosion hazard in the publicly owned treatment works.

(2) Pollutants which will cause corrosive structural damage to treatment works, but in no case pollutants with a pH lower than 5.0, unless the works is designed to accommodate such pollutants.

(3) Solid or viscous pollutants in amounts which would cause obstruction to the flow in sewers, or other interference with the proper operation of the publicly owned treatment works.

(4) Pollutants at either a hydraulic flow rate or pollutant flow rate which is excessive over relatively short time periods so that there is a treatment process upset and subsequent loss of treatment efficiency.

(b) In addition to the general prohibitions set forth in paragraph (a) of this section, the following pretreatment standard establishes the quality or quantity of pollutants or pollutant properties controlled by this subsection which may be introduced into a publicly owned treatment works by a source subject to the provisions of this subpart.

Pollutant or pollutant property:	*Pretreatment standard—maximum for any 1 d (milligrams per liter)*
Ammonia (as *N*)	100
Oil and grease	100

(c) Any owner or operator of any source to which the pretreatment standards required by § 419.34(a) are applicable, shall be in compliance with such standards upon the effective date of such standards. The time for compliance with standards required by § 419.34(b) shall be within the shortest time but not later than three years from the effective date of such standards.

§ 419.44 Pretreatment standards for existing sources.

For the purpose of establishing pretreatment standards under section 307 (b) of the Act for a source within the lube subcategory, the provisions of 40 CFR 128 shall not apply. The pretreatment standards for an existing source within the lube subcategory are set forth below.

(a) No pollutant (or pollutant property) introduced into a publicly owned treatment works shall interfere with the operation or performance of the works. Specifically, the following wastes shall not be introduced into the publicly owned treatment works:

(1) Pollutants which create a fire or explosion hazard in the publicly owned treatment works.

(2) Pollutants which will cause corrosive structural damage to treatment works, but in no case pollutants with a pH lower than 5.0, unless the works is designed to accommodate such pollutants.

(3) Solid or viscous pollutants in amounts which would cause obstruction to the flow in sewers, or other interference with the proper operation of the publicly owned treatment works..

(4) Pollutants at either a hydraulic flow rate or pollutant flow rate which is excessive over relatively short time periods so that there is a treatment process upset and subsequent loss of treatment efficiency.

(b) In addition to the general prohibitions set forth in paragraph (a) of this section, the following pretreatment standard establishes the quality or quantity of pollutants or pollutant properties controlled by this subsection which may be introduced into a publicly owned treatment works by a source subject to the provisions of this subpart.

Pollutant or pollutant property:	*Pretreatment standard—maximum for any 1 day (milligrams per liter)*
Ammonia (as *N*)	100
Oil and grease	100

(c) Any owner or operator of any source to which the pretreatment standards required by § 419.44(a) are applicable, shall be in compliance with such standards upon the effective date of such standards. The time for compliance with standards required by § 419.44(b) shall be within the shortest time but not later than three years from the effective date of such standards.

§ 419.54 Pretreatment standards for existing sources.

For the purpose of establishing pretreatment standards under Section 307 (b) of the Act for a source within the integrated subcategory, the provisions of 40 CFR 128 shall not apply. The pretreatment standards for an existing source within the integrated subcategory are set forth below.

(a) No pollutant (or pollutant property) introduced into a publicly owned treatment works shall interfere with the operation or performance of the works. Specifically, the following wastes shall not be introduced into the publicly owned treatment works:

(1) Pollutants which create a fire or explosion hazard in the publicly owned treatment works.

(2) Pollutants which will cause corrosive structural damage to treatment works, but in no case pollutants with a pH lower than 5.0, unless the works is designed to accommodate such pollutants.

(3) Solid or viscous pollutants in amounts which would cause obstruction to the flow in sewers, or other interference with the proper operation of the publicly owned treatment works.

(4) Pollutants at either a hydraulic flow rate or pollutant flow rate which is excessive over relatively short time periods so that there is a treatment process upset and subsequent loss of treatment efficiency.

(b) In addition to the general prohibitions set forth in paragraph (a) of this section, the following pretreatment standard establishes the quality or quantity of pollutants or pollutant properties controlled by this subsection which may be introduced into a publicly owned treatment works by a source subject to the provisions of this subpart.

Pollutant or Pollutant property:	*Pretreatment standard—maximum for any 1 d (milligrams per liter)*
Ammonia (as *N*)	100
Oil and grease	100

(c) Any owner or operator of any source to which the pretreatment standards required by S19.54(a) are applicable, shall be in compliance with such standards upon the effective date of such standards. The time for compliance with standards required by § 419.54(b) shall be within the shortest time but not later than three years from the effective date of such standards.

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[FRL 702-8]

PART 423—STEAM ELECTRIC POWER GENERATING POINT SOURCE CATEGORY PRETREATMENT STANDARDS FOR EXISTING SOURCES

Interim Regulations

Notice is hereby given that pretreatment standards for existing sources set forth in interim final form below are