ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 420

[FRL–6897–8]

RIN 2040–AC90

Effluent Limitations Guidelines, Pretreatment Standards, and New Source Performance Standards for the Iron and Steel Manufacturing Point Source Category

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: This action presents the Agency's proposed effluent limitations guidelines and standards for wastewater discharges from iron and steel facilities. The proposed regulation revises technology-based effluent limitations guidelines and standards for wastewater discharges associated with the operation of new and existing iron and steel facilities. This action covers sites that generate wastewater while performing the following industrial activities: Metallurgical cokemaking, ironmaking, integrated steelmaking, non-integrated steelmaking, hot forming, steel finishing including electroplating, and other operations including direct iron reduction, briquetting, and forging.

EPA estimates that compliance with this regulation as proposed would reduce the discharge of priority and non-conventional pollutants by at least 210 million pounds per year and would cost an estimated $56.5 million to $61.4 million (1999 $, pre-tax) on an annual basis, with the range reflecting two options proposed for comment. In addition, EPA expects that discharges of conventional pollutants would be reduced, by at least 31.3 million pounds per year. EPA has estimated that the annual quantifiable benefits of the proposal would range from $1.1 million to $2.7 million.

DATES: EPA must receive comments on the proposal by midnight of February 26, 2001. EPA will conduct a public hearing on February 20, 2001 at 9:00 a.m. For information on the location of the public hearing, see **SUPPLEMENTARY INFORMATION.**

ADDRESSES: The public hearing will be held at the EPA auditorium in Waterside Mall, 401 M Street SW, Washington, DC.

Submit written comments to Mr. George M. Jett, Office of Water, Engineering and Analysis Division (4303), U.S. EPA, 1200 Pennsylvania Avenue, NW, Washington, DC 20460. For hand-deliveries or federal express, please send comments to Room 607a West Tower, 401 M Street SW, Washington 20460. For additional information on how to submit comments, see ''Supplementary Information, How to Submit to submit comments''.

The public record for this proposed rulemaking has been established under docket number W–00–25 and is located in the Water Docket East Tower Basement, Room EB57, 401 M St. SW, Washington, DC 20460. The record is available for inspection from 9:00 a.m. to 4:00 p.m., Monday through Friday, excluding legal holidays. For access to the docket materials, call (202) 260–3027 to schedule an appointment. You may have to pay a reasonable fee for copying.

FOR FURTHER INFORMATION CONTACT: For technical information concerning today's proposed rule, contact Mr. George M. Jett at (202) 260–7151 or Mr. Kevin Tingley at (202) 260–9843. For economic information contact Mr. William Anderson at (202) 260–5131.

SUPPLEMENTARY INFORMATION:

Regulated Entities

Entities potentially regulated by this action include:

Category	Examples of regulated entities	Primary SIC and NAICS codes
Industry	• Facilities engaged in metallurgical cokemaking, ironmaking, integrated steelmaking, non-integrated steelmaking, hot forming, steel finishing including electroplating, and other operations including direct iron reduction, briquetting, and forging.	SIC • 3312 • 3316 NAICS • 3311 • 3312

The preceding table is not intended to be exhaustive, but rather provides a guide for readers regarding entities likely to be regulated by this action. This table lists the types of entities that EPA is now aware could potentially be regulated by promulgation of this proposed rule. Other types of entities not listed in the table could also be regulated. To determine whether your facility would be regulated by promulgation of this proposed rule, you should carefully examine the applicability criteria in § 420.1 of today's proposed rule and in the applicability subsection of each proposed subpart. You should also examine the description of the proposed scope of each subpart elsewhere in this document. If you still have questions regarding the applicability of this proposed action to a particular entity, consult one of the persons listed for technical information in the preceding **FOR FURTHER INFORMATION CONTACT** section.

How To Submit Comments

EPA requests an original and three copies of your comments and enclosures (including references). Commenters who want EPA to acknowledge receipt of their comments should enclose a self-addressed, stamped envelope. No facsimiles (faxes) will be accepted. Please submit any references cited in your comments.

Comments may also be sent via e-mail to jett.george@epa.gov. Electronic comments must specify docket number W–00–55 and must be submitted as an ASCII, Word, or WordPerfect file avoiding the use of special characters and any form of encryption. Electronic comments on this notice may be filed online at many Federal Depository Libraries. No confidential business information (CBI) should be sent via e-mail.

Protection of Confidential Business Information (CBI)

EPA notes that certain information and data in the record supporting the proposed rule have been claimed as CBI and, therefore, are not included in the record that is available to the public in the Water Docket. Further, the Agency has withheld from disclosure some data not claimed as CBI because release of this information could indirectly reveal information claimed to be confidential. To support the proposed rulemaking, EPA is presenting in the public record certain information in aggregated form or, alternatively, is masking facility identities or employing other strategies in order to preserve confidentiality claims. This approach assures that the

information in the public record both explains the basis for today's proposal and allows for a meaningful opportunity for public comment, without compromising CBI claims.

Some tabulations and analyses of facility-specific data claimed as CBI are available to the company that submitted the information. To ensure that all data or information claimed as CBI is protected in accordance with EPA regulations, any requests for release of such company-specific data should be submitted to EPA on company letterhead and signed by a responsible official authorized to receive such data. The request must list the specific data requested and include the following statement, ''I certify that EPA is authorized to transfer confidential business information submitted by my company, and that I am authorized to receive it.''

Overview

The preamble describes the background documents that support this proposed regulation; the legal authority for the proposal; a summary of the proposal; background information; the technical and economic methodologies used by the Agency to develop these proposed regulations and, in an appendix, the definitions, acronyms, and abbreviations used in this notice. This preamble also solicits comment and data on specific areas of interest.

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I. Legal Authority

These regulations are proposed under the authority of sections 301, 304, 306, 307, 308, 402, and 501 of the Clean Water Act, 33 U.S.C.1311, 1314, 1316, 1317, 1318, 1342, and 1361.

II. Legislative Background

A. Clean Water Act

Congress adopted the Clean Water Act (CWA) to ''restore and maintain the chemical, physical, and biological integrity of the Nation's waters.'' Section 101(a), 33 U.S.C. 1251(a). To achieve this goal, the CWA prohibits the discharge of pollutants into navigable waters except in compliance with the statute. The Clean Water Act confronts the problem of water pollution on a number of different fronts. Its primary reliance, however, is on establishing restrictions on the types and amounts of pollutants discharged from various industrial, commercial, and public sources of wastewater.

Congress recognized that regulating only those sources that discharge effluent directly into the nation's waters would not be sufficient to achieve the CWA's goals. Consequently, the CWA requires EPA to promulgate nationally applicable pretreatment standards that restrict pollutant discharges from facilities that discharge wastewater indirectly through sewers flowing to publicly owned treatment works (POTWs). See section 307(b) and (c), 33 U.S.C. 1317(b) & (c). National pretreatment standards are established for those pollutants in wastewater from indirect dischargers that may pass through, interfere with or are otherwise incompatible with POTW operations. Generally, pretreatment standards are designed to ensure that wastewaters from direct and indirect industrial dischargers are subject to similar levels of treatment. In addition, POTWs are required to implement local treatment limits applicable to their industrial indirect dischargers to satisfy any local requirements. See 40 CFR 403.5.

Direct dischargers must comply with effluent limitations in National Pollutant Discharge Elimination System (NPDES) permits; indirect dischargers must comply with pretreatment standards. Effluent limitations in NPDES permits are derived from effluent limitations guidelines and new source performance standards promulgated by EPA. These effluent limitations guidelines and standards are established by regulation for categories of industrial dischargers and are based on the degree of control that can be achieved using various levels of pollution control technology.

1. Best Practicable Control Technology Currently Available (BPT)—Sec. 304(b)(1) of the CWA

EPA may promulgate BPT effluent limits for conventional, priority, and non-conventional pollutants. (Priority pollutants consist of a specified list of toxic pollutants. For more information, see section IV.D.3 below.) In specifying BPT, EPA looks at a number of factors. EPA first considers the cost of achieving effluent reductions in relation to the effluent reduction benefits. The Agency also considers the age of the equipment and facilities, the processes employed, engineering aspects of the control technologies, application of various types of process changes, non-water quality environmental impacts (including energy requirements), and such other factors as the Administrator deems appropriate. See CWA 304(b)(1)(B). Traditionally, EPA establishes BPT effluent limitations based on the average of the best performances of facilities within the industry, grouped to reflect various ages, sizes, processes, or other common characteristics. Where, however, existing performance is uniformly inadequate, EPA may establish limitations based on higher levels of control than currently in place in an industrial category if the Agency determines that the technology is available in another category or subcategory, and can be practically applied.

2. Best Control Technology for Conventional Pollutants (BCT)—Sec. 304(b)(4) of the CWA

The 1977 amendments to the CWA required EPA to identify additional levels of effluent reduction for conventional pollutants associated with BCT technology for discharges from existing industrial point sources. In addition to other factors specified in Section 304(b)(4)(B), the CWA requires

that EPA establish BCT limitations after consideration of a two part ''cost-reasonableness'' test. EPA explained its methodology for the development of BCT limitations in July 1986 (51 FR 24974).

Section 304(a)(4) designates the following as conventional pollutants: biochemical oxygen demand (BOD_5), total suspended solids (TSS), fecal coliform, pH, and any additional pollutants defined by the Administrator as conventional. The Administrator designated oil and grease as an additional conventional pollutant on July 30, 1979 (44 FR 44501).

3. Best Available Technology Economically Achievable (BAT)—Sec. 304(b)(2) of the CWA

In general, BAT effluent limitations guidelines represent the best economically achievable performance of plants in the industrial subcategory or category. The CWA establishes BAT as a principal national means of controlling the direct discharge of toxic and nonconventional pollutants. The factors considered in assessing BAT include the cost of achieving BAT effluent reductions, the age of equipment and facilities involved, the process employed, potential process changes, and non-water quality environmental impacts including energy requirements, and such other factors as the Administrator deems appropriate. The Agency retains considerable discretion in assigning the weight to be accorded these factors. An additional statutory factor considered in setting BAT is economic achievability. Generally, EPA determines economic achievability on the basis of total costs to the industry and the effect of compliance with BAT limitations on overall industry and subcategory financial conditions. As with BPT, where existing performance is uniformly inadequate, BAT may reflect a higher level of performance than is currently being achieved based on technology transferred from a different subcategory or category. BAT may be based upon process changes or internal controls, even when these technologies are not common industry practice.

4. New Source Performance Standards (NSPS)—Sec. 306 of the CWA

New Source Performance Standards reflect effluent reductions that are achievable based on the best available demonstrated control technology. New facilities have the opportunity to install the best and most efficient production processes and wastewater treatment technologies. As a result, NSPS should represent the most stringent controls attainable through the application of the best available control technology for all pollutants (that is, conventional, nonconventional, and priority pollutants). In establishing NSPS, EPA is directed to take into consideration the cost of achieving the effluent reduction and any non-water quality environmental impacts and energy requirements.

5. Pretreatment Standards for Existing Sources (PSES)—Sec. 307(b) of the CWA

Pretreatment Standards for Existing Sources are designed to prevent the discharge of pollutants that pass through, interfere with, or are otherwise incompatible with the operation of publicly owned treatment works (POTW). Pretreatment standards are technology-based and are analogous to BAT effluent limitations guidelines.

The General Pretreatment Regulations, which set forth the framework for the implementation of categorical pretreatment standards, are found at 40 CFR part 403. These regulations contain a definition of pass-through that addresses localized rather than national instances of pass-through and establishes pretreatment standards that apply to all non-domestic dischargers. See 52 FR 1586 (Jan. 14, 1987).

6. Pretreatment Standards for New Sources (PSNS)—Sec. 307(c) of the CWA

Section 307(c) of the Act requires EPA to promulgate pretreatment standards for new sources at the same time it promulgates new source performance standards. Such pretreatment standards must prevent the discharge of any pollutant into a POTW that may interfere with, pass through, or may otherwise be incompatible with the POTW. EPA promulgates categorical pretreatment standards for existing sources based principally on BAT technology for existing sources. EPA promulgates pretreatment standards for new sources based on best available demonstrated technology for new sources. New indirect dischargers have the opportunity to incorporate into their plants the best available demonstrated technologies. The Agency considers the same factors in promulgating PSNS as it considers in promulgating NSPS.

B. Section 304(m) Consent Decree

Section 304(m) requires EPA to publish a plan every two years that consists of three elements. First, under section 304(m)(1)(A), EPA is required to establish a schedule for the annual review and revision of existing effluent guidelines in accordance with section 304(b). Section 304(b) applies to effluent limitations guidelines for direct dischargers and requires EPA to revise such regulations as appropriate. Second, under section 304(m)(1)(B), EPA must identify categories of sources discharging toxic or nonconventional pollutants for which EPA has not published BAT effluent limitations guidelines under 304(b)(2) or new source performance standards under section 306. Finally, under 304(m)(1)(C), EPA must establish a schedule for the promulgation of BAT and NSPS for the categories identified under subparagraph (B) not later than three years after being identified in the 304(m) plan. Section 304(m) does not apply to pretreatment standards for indirect dischargers, which EPA promulgates pursuant to sections 307(b) and 307(c) of the Clean Water Act.

On October 30, 1989, Natural Resources Defense Council, Inc., and Public Citizen, Inc., filed an action against EPA in which they alleged, among other things, that EPA had failed to comply with CWA section 304(m). Plaintiffs and EPA agreed to a settlement of that action in a consent decree entered on January 31, 1992. The consent decree, which has been modified several times, established a schedule by which EPA is to propose and take final action for eleven point source categories identified by name in the decree and for eight other point source categories identified only as new or revised rules, numbered 5 through 12. After completing a preliminary study as required by the decree, EPA selected the iron and steel industry as the subject for New or Revised Rule #5. Under the decree, as modified, the Administrator was required to sign a proposed rule for the iron and steel industry no later than October 31, 2000, and must take final action on that proposal no later than April 30, 2002.

III. Scope/Applicability of the Proposed Regulation

EPA solicits comments on various issues specifically identified in the preamble as well as any other applicability issues that are not specifically addressed in today's notice.

A. Facilities Subject to 40 CFR Part 420

EPA is proposing effluent limitations guidelines and standards for seven subcategories of Iron and Steel facilities. Generally speaking, the universe of facilities that would be potentially subject to EPA's proposed guideline include facilities engaged in iron and steel making, whether through the use of blast furnaces and basic oxygen furnaces (BOFs), or through electric arc

furnaces (EAFs); metallurgical cokemaking facilities; stand-alone facilities engaged in hot forming and/or finishing of steel, including electroplating; and facilities engaged in other related operations such as direct iron reduction, forging, and iron briquetting.

A detailed discussion of Iron and Steel wastewaters is provided in Section IV.F. In summary, all wastewater discharges to a receiving stream or the introduction of wastewater to a publicly owned treatment works from a facility that falls within the scope of one of the proposed subparts would be subject to the provisions of this proposed rule unless specifically excluded as discussed in the following sections.

The following proposed technology options serve as the basis for the effluent limitations guidelines and standards being proposed today for the iron and steel industry. For descriptions of the subcategories, see Section IV.E. For descriptions of the technologies, see Section V.A.

Subcategory (segment)	Regulatory level	Option chosen	Technical components
Subpart A. Cokemaking:			
(By-Product Recovery)	BAT/NSPS/PSES/PSNS	BAT–3(PSES–3)	tar removal, equalization, ammonia stripping, temperature control, equalization, single-stage biological treatment with nitrification, alkaline chlorination, and sludge dewatering.
	co-proposed PSES	PSES–1	tar removal, equalization, ammonia stripping.
(Non-Recovery)	BAT/NSPS/PSES/PSNS	zero discharge	no wastewater generated.
Subpart B. Ironmaking: (Blast Furnaces) and (Sintering).	BAT/NSPS	BAT–1	solids removal with high-rate recycle and metals precipitation, alkaline chlorination, mixed-media filtration of the blowdown wastewater, and sludge dewatering.
	PSES/PSNS	PSES–1	solids removal with high-rate recycle and metals precipitation, and sludge dewatering.
Subpart C. Integrated Steelmaking	BAT/NSPS/PSES/PSNS	BAT–1	solids removal and high-rate recycle, with metals precipitation for blowdown wastewater, cooling towers for process wastewaters from vacuum degassing or continuous casting operations, and sludge dewatering.
Subpart D. Integrated and Stand Alone Hot Forming:.			
(Carbon & Alloy Steel)	BAT/NSPS	BAT–1	scale pit with oil skimming, roughing clarifier, cooling tower with high rate recycle, mixed-media filtration of blowdown, and sludge dewatering.
	PSES/PSNS	N/A	no proposed modification from existing PSES/PSNS.
(Stainless Steel)	BAT/NSPS	BAT–1	scale pit with oil skimming, roughing clarifier, cooling tower with high rate recycle, mixed-media filtration of blowdown, and sludge dewatering.
	PSES/PSNS	N/A	no proposed modification from existing PSES/PSNS.
Subpart E. Non-Integrated Steelmaking and Hot Forming:			
(Carbon & Alloy Steel)	BAT	BAT–1	solids removal, cooling tower, high rate recycle, mixed-media filtration of recycled flow or of low volume blowdown flow, and sludge dewatering.
	PSES	N/A	no proposed modification from existing PSES.
	NSPS/PSNS	zero discharge	water re-use, evaportion, or contract hauling.
(Stainless Steel)	BAT/PSES	BAT–1	solids removal, cooling tower, high-rate recycle, mixed-media filtration of recycled flow or of low volume blowdown flow, and sludge dewatering.
	NSPS/PSNS	zero discharge	water re-use, evaportion, or contract hauling.
Subpart F. Steel Finishing:			
(Carbon & Alloy Steel)	BAT/NSPS/PSNS	BAT–1	recycle of fume scrubber water, diversion tank, oil removal, hexavalent chrome reduction (where applicable), equalization, metals precipitation, sedimentation, sludge dewatering, and counter-current rinses.
	PSES	N/A	no proposed modification from existing PSES.
(Stainless Steel)	BAT/NSPS/PSNS	BAT–1	recycle of fume scrubber water, diversion tank, oil removal, hexavalent chrome reduction (where applicable), equalization, metals precipitation, sedimentation, sludge dewatering, counter-current rinses, and acid purification.
	PSES		no proposed modification from existing PSES
Subpart G. Other Operations:			
(Direct Reduced Ironmaking)	BPT/BCT/NSPS	BPT–1	solids removal, clarifier, high rate recycle, with filtration of blow-down, and sludge dewatering.
	BAT/PSES/PSNS		reserved.
(Forging)	BPT/BCT/NSPS	BPT–1	high rate recycle, with oil/water separator for blowdown.
	BAT/PSES/PSNS		reserved.

Subcategory (segment)	Regulatory level	Option chosen	Technical components
(Briquetting)	BPT/BCT/BAT/NSPS/ PSES/PSNS.	zero discharge	no wastewater generated

B. Interface With Metal Products and Machinery Rule

In preparation for this rulemaking, the Agency determined that certain facilities currently covered by the current Iron and Steel rule have manufacturing processes that more closely resemble those in facilities to be covered by the Metal Products and Machinery (MP&M) rule than those found in what are normally considered to be steel facilities. So that these facilities might be addressed under a regulation that fits them better, EPA proposes to move these types of facilities into the MP&M category, which will be regulated under part 438. The notice proposing effluent limitations guidelines and standards for the MP&M category was also required to be signed by the Administrator by October 31, 2000. EPA is required to take final action on that rule by December 31, 2002 (eight months later than the date for final action on the iron and steel rule). In developing the MP&M rule, EPA will consider survey data and sampling data collected for these types of facilities under Iron and Steel auspices.

For operations that are currently subject to part 420, EPA proposes to retain certain operations in part 420 but move others to part 438, as follows:

Retained in Part 420 (Iron and Steel)	Moved to Part 438 (MP&M)
Cold forming for steel sheet and strip	Cold forming for steel bar, rod, wire, pipe or tube.
Pipe and tube mills with hot forming	Batch steel electroplating.
Finishing with continuous electroplating of flat products (e.g. plate, sheet, strip).	Continuous electroplating or hot dip coating of long steel products (e.g. wire, rod, bar).
Continuous hot dip coating of flat steel products (e.g. plate, sheet, strip).	Batch hot dip coating of steel.
Hot forming	Wire drawing and coating.

For facilities with both iron and steel operations and MP&M or other operations discharging process wastewaters to the same wastewater treatment system, NPDES permit writers would need to use a building block approach to develop the technology-based effluent limitations. Similarly, pretreatment permit writers would need to use a building block approach or the combined wastestream formula to develop appropriate pretreatment requirements for facilities with process operations in more than one category. Permit writers and pretreatment control authorities should refer to the applicability of the proposed MP&M rule for further clarification.

EPA solicits comment on the proposed applicability of the Iron and Steel (Part 420) rule and on the proposed building block approach in regulating facilities with both iron and steel and MP&M or other operations.

C. Centralized Treatment Provision

Under the applicability section of the current regulation, 40 CFR 420.01(b), EPA identified 21 plants that were temporarily excluded from the provisions of Part 420 because of economic considerations, provided that the owner or operator of the facility requested the Agency to consider establishing alternative effluent limitations and provided the Agency with certain information consistent with 40 CFR 420.01(b)(2) on or before July 26, 1982. See 47 FR 23285 (May 27, 1982).

Today, each of the facilities identified in that section has a permit that includes effluent limitations derived from part 420. Today's proposed rule would establish new BAT limitations that EPA believes are economically achievable for each subcategory as a whole. Therefore, EPA believes that the alternate effluent limitations provisions of § 420.01(b) are no longer necessary for these facilities, and proposes to withdraw this exclusion from part 420.

IV. Rulemaking Background

A. Iron and Steel Industry Effluent Guideline Rulemaking History

EPA promulgated BPT, BAT, NSPS, and PSNS for the iron and steel category in June 1974 for basic steelmaking operations (Phase I). See 39 FR 24114 (June 28, 1974), codified at CFR part 420, subparts A–L. EPA promulgated iron and steel effluent limitations guidelines and standards (Phase II) in March 1976 that established BPT, BAT, NSPS, and PSNS for forming and finishing operations. See 41 FR 12990 (March 29, 1976), codified at 40 CFR part 420, subparts M–Z.

In response to petitions for review, the U.S. Court of Appeals for the Third Circuit remanded portions of the Phase I regulation in November 1975. See *American Iron and Steel Institute, et. al.,* v. *EPA,* 526 F.2d 1027 (3d Cir. 1975). The Court rejected all technical challenges to BPT, but ruled that BAT and NSPS for certain subcategories in Phase I were not demonstrated. The Court also ruled that EPA had not adequately considered the impact of plant age on the cost or feasibility of retrofitting pollution control equipment, did not assess the impact of the regulation on water scarcity in arid and semi-arid regions, and failed to make adequate ''net/gross'' provisions for pollutants found in intake waters.

In response to petitions for review, the U.S. Court of Appeals for the Third Circuit also remanded portions of the Phase II regulation in September 1977. See *American Iron and Steel Institute, et. al.,* v *EPA,* 568 F.2d 284 (3d Cir. 1977). The Court again rejected all technical challenges to BPT; however, it ruled that EPA had not adequately considered age/retrofit and water scarcity issues for BAT. The Court also invalidated the regulation as it applied to the specialty steel industry for lack of proper notice. The Court directed EPA to reevaluate its estimates of compliance costs with regard to certain ''site-specific'' factors and to reexamine its economic impact analysis for BAT. The Court also ruled that EPA had no authority to exempt certain steel facilities located in the Mahoning Valley of Ohio from the regulation.

The current iron and steel rule, 40 CFR part 420, was promulgated in May 1982, see 47 FR 23258 (May 27, 1982), and was amended in May 1984 as part of a Settlement Agreement among EPA, the iron and steel industry, and the Natural Resources Defense Council. See

49 FR 21024 (May 17, 1984). In promulgating part 420 in 1982, aside from the temporary central treatment exclusion for 21 specified steel facilities at 40 CFR 420.01(b), EPA provided no exclusions for facilities on the basis of age, size, complexity, or geographic location as a result of the remand issues. EPA also revised the subcategorization from that specified in the 1974 and 1976 regulations to more accurately reflect major types of production operations and to attempt to simplify implementation of the regulation by permit writers and the industry. The factors EPA considered in establishing the 1982 subcategories were: Manufacturing processes and equipment; raw materials; final products; wastewater characteristics; wastewater treatment methods; size and age of facilities; geographic location; process water usage and discharge rates; and costs and economic impacts. Of these, EPA found that the type of manufacturing process was the most significant factor and employed this factor as the basis for dividing the industry into the twelve process subcategories currently in part 420.

The 1984 amendment to part 420 affected three portions of the rule: The water bubble (see Section X.E), effluent limitations guideline modifications for BPT, BAT, BCT, and NSPS, and modifications to the pretreatment standards for PSES and PSNS for the Sintering, Ironmaking, Acid Pickling, Cold Forming, and Hot Coating Subcategories.

B. Preliminary Study

EPA was required by the terms of the consent decree described in section II.B to initiate preliminary reviews of a number of categorical effluent limitations guidelines and standards on a set schedule. The ''Preliminary Study of the Iron and Steel Category'' (EPA 821–R–95–037) was completed in 1995.

In the preliminary study, EPA assessed the status of the industry with respect to the regulation promulgated in 1982 and amended in 1984; identified better performing facilities that use conventional and innovative in-process pollution prevention and end-of-pipe technologies; estimated possible effluent reduction benefits if the industry were upgraded to the level of better performing facilities; discussed regulatory and implementation issues associated with the current regulation; and identified possible solutions to those issues.

Comparisons of long-term average effluent quality data for a number of better performing facilities (data represent time periods ranging from six months to more than one year) with the long-term average performance data underlying the current effluent limitations in part 420 revealed that, in all subcategories, some facilities are achieving substantially greater reductions than is required by the current regulation. In a limited number of cases, zero discharge of pollutants is being approached through pollution prevention practices. This performance reflects increased high-rate process water recycle, advances in application of treatment technologies, and advances in treatment system operations. At the same time, however, the study showed that a number of facilities fail to achieve the effluent limitations currently required by part 420.

The study also found that, because most process wastewaters from basic steelmaking operations are generated as a result of air emission control and gas cleaning, there are substantial pollutant transfers from the air media to the water and solid waste media. Also, there appear to be many pollution prevention opportunities in the areas of increased process water recycle and reuse, the cascade of process wastewaters from one operation to another, residuals management, and nondischarge disposal methods.

The Preliminary Study can be found on-line at www.epa.gov/OST/ironsteel.

C. Industry Profile

The Agency estimates that in 1997, the iron and steel industry consisted of 252 facilities owned by at least 109 companies. This estimate is based upon responses to EPA's data gathering efforts, as described in Section IV.D. Many of these companies are joint ventures with both domestic and foreign owners, including partners located in Japan, Great Britain, Germany, and India.

Although there are several iron and steel manufacturing processes (described in Section IV.E.3), the Agency has identified nine general types of sites in the Iron and Steel Category based on the operations present at each site. Table IV.C.1 shows the estimated number of facilities for each of the nine types of sites. Each facility is likely to engage in more than one manufacturing process. For instance, integrated facilities engaged in iron and steel making using blast furnaces and basic oxygen furnaces may also have one or more of the manufacturing operations, such as vacuum degassing or continuous casting, on site. Non-integrated sites engaged in steelmaking with the use of electric arc furnaces may also have vacuum degassing, ladle metallurgy, casting, hot forming, and finishing processes on site. On the other hand, stand-alone finishers that produce cold-rolled and/or coated products from hot rolled steel produced elsewhere tend to have only finishing operations on site. Finally, there are stand-alone pipe and tube facilities producing pipe and/or tube from materials manufactured off site. It is worth noting that only those pipe and tube facilities that produce hot formed pipe and tube are to be included in the Iron and Steel Category. These sites have hot forming operations and may also have finishing processes.

TABLE IV.C.1.—GENERAL TYPES OF IRON AND STEEL SITES IN THE UNITED STATES

Type of site	Total Number of sites operating in 1997
Integrated with Cokemaking	9
Integrated without Cokemaking	11
Stand-alone Cokemaking [1]	15
Stand-alone Sintering [2]	2
Stand-alone Direct-Reduced Ironmaking [3]	1
Non-integrated	94
Stand-alone Hot Forming	39
Stand-alone Finishing	70
Stand-alone Pipe and Tube	11
Total	252

[1] One of the stand-alone cokemaking plants is a nonrecovery cokemaking plant. One additional nonrecovery cokemaking plant started operations after 1997 and is not reflected in this table.

[2] One of these stand-alone sinter plants has been shut down indefinitely since 1997.

[3] One additional stand-alone direct-reduced ironmaking plant started operations after 1997.

As shown Table IV.C.1, non-integrated facilities outnumber integrated facilities by more than four to one, and stand-alone finishing facilities form the second largest group. This reflects a trend that has affected the industry for the past 25 years—a shift of steel production from generally larger, older integrated facilities to newer, smaller non-integrated facilities, and the emergence of specialized, stand-alone finishing facilities that process semi-finished sheet, strip, bars, and rods obtained from integrated or non-integrated facilities.

Integrated steel facilities are primarily located east of the Mississippi River in Illinois, Indiana, Michigan, Ohio, Pennsylvania, West Virginia, Maryland, Kentucky, and Alabama; one integrated steel facility operates in Utah. Coke plants, either stand-alone or co-located at integrated steel facilities, are located in Illinois, Indiana, Michigan, Ohio,

New York, Pennsylvania, Virginia, Kentucky, Alabama, and Utah. Non-integrated steel facilities are located throughout the continental U.S., and smaller stand-alone forming and finishing facilities are generally located near steel manufacturing sites. Process wastewater discharges in 1997 ranged from less than 200 gallons per day for a stand-alone finisher to more than 50 million gallons per day for an integrated facility.

D. Summary of EPA Activities and Data Gathering Efforts

1. Industry Surveys

EPA developed an Information Collection Request (ICR) entitled ''U.S. Environmental Protection Agency Collection of 1997 Iron and Steel Industry Data'' that explains the regulatory basis and usefulness of the industry surveys. The ICR was approved by the Office of Management and Budget (OMB) in August 1998. The Agency published three **Federal Register** Notices announcing (1) the intent to distribute the surveys, see 62 FR 54453 (October 20, 1997), (2) the submission of the ICR to the OMB, see 63 FR 16500 (April 3, 1998), and (3) OMB's approval of the survey instrument, see 63 FR 47023 (August 3, 1998). The Agency consulted with the major industry trade associations to develop a useful survey instrument and to ensure an accurate mailing list.

a. *Descriptions.* EPA obtained approval to distribute four industry surveys. The first two surveys were similar in content and purpose; both were designed to collect detailed technical and financial information from iron and steel sites, but they differed in size and were mailed to different facilities. In October 1998, EPA mailed the first survey, entitled ''U.S. EPA Collection of 1997 Iron and Steel Industry Data'' (detailed survey) to 176 iron and steel sites and the second survey, entitled ''U.S. EPA Collection of 1997 Iron and Steel Industry Data (Short Form),'' to 223 iron and steel sites. The short form is an abbreviated version of the detailed survey and was designed for those iron and steel sites known not to produce or process liquid steel (e.g., stand alone hot forming or steel finishing mills). EPA mailed the third and fourth surveys to subsets of facilities to obtain more detailed information on wastewater treatment system costs, analytical data, and facility production. EPA mailed the third survey, entitled ''U.S. EPA Collection of Iron and Steel Industry Wastewater Treatment Capital Cost Data'' (cost survey), to 90 iron and steel sites. EPA mailed the fourth survey, entitled ''U.S. EPA Analytical and Production Data Follow-Up to the Collection of 1997 Iron and Steel Industry Data'' (analytical daily data and production survey), to 38 iron and steel sites.

The detailed survey and short form were divided into two parts: Part A: Technical Information and Part B: Financial and Economic Information. The technical questions in the detailed survey were divided into four sections, with Sections 3 and 4 being combined in the short form:

- Section 1: General site information
- Section 2: Manufacturing process information
- Section 3: In-process and end-of-pipe wastewater treatment and pollution prevention information
- Section 4: Wastewater outfall information

The financial and economic information in the detailed survey was divided into four sections:

- Section 1: Site identification
- Section 2: Site financial information
- Section 3: Business entity financial information
- Section 4: Corporate parent financial information

The financial and economic information part of the short form contained a single section for site identification and financial information.

The general information questions asked the site to identify itself, characterize itself by certain parameters (including manufacturing operations, age, and location), and confirm that it was engaged in iron and steel activities. The Agency used this information to develop the subcategorization of the industry proposed today.

The manufacturing process section included questions about products, types of steel produced, production levels, unit operations, chemicals and coatings used, wastewater discharge from unit operations, miscellaneous wastewater sources, pollution prevention activities, and air pollution control. The Agency used data received in response to these questions to evaluate manufacturing processes, wastewater generation, and to develop regulatory options. EPA also used these data to develop the subcategorization proposed today and to estimate compliance costs and pollutant removals associated with proposed regulatory options.

EPA requested detailed information (including diagrams) on the wastewater treatment systems and discharge flow rates; monitoring analytical data; and operating and maintenance cost data (including treatment chemical usage). The Agency used data received in response to these questions to identify treatment technologies in place, to determine the feasibility of regulatory options, and to estimate compliance costs, pollutant removals, and potential environmental impacts associated with the regulatory options EPA considered for this proposal.

The outfall information questions covered permit information, discharge location, wastewater sources to the outfall, flow rates, regulated parameters and limits, and permit monitoring data. The Agency used this information to calculate the effluent limitations guidelines and standards and pollutant loadings associated with the regulatory options that EPA considered for this proposal.

The financial and economic questions requested general information, such as location and employment, information on the sites's finances, and corporate structure. EPA used data received in response to these questions to estimate economic impacts on sites and companies from the regulatory options EPA considered for this proposal.

EPA used the cost survey to request detailed capital cost data on selected wastewater treatment systems installed since 1993, including equipment, engineering design, and installation costs. EPA incorporated these data into a cost model and used them to calculate compliance costs associated with the regulatory options EPA considered for this proposal.

The analytical and production survey requested detailed daily analytical and flow rate data for selected sampling points and monthly production data and operating hours for selected manufacturing operations. The Agency used the analytical data to estimate baseline pollutant loadings and pollutant removals from facilities with treatment in place resembling projected regulatory options and to evaluate the variability associated with iron and steel industry discharges. The Agency used the production data collected to evaluate the production basis for applying today's proposed rule in NPDES permits and pretreatment control mechanisms.

b. *Development of Survey Mailing List.* EPA has collected industry supplied data from the iron and steel industry through survey questionnaires. The iron and steel industry survey questionnaires were sent by mail to a random sample of facilities that were identified from the following sources:

Association of Iron and Steel Engineers *1997 Directory: Iron and Steel Plants Volume 1, Plants and Facilities;*

Iron and Steel Works of the World (12th edition) directory;

Iron and Steel Society's *Steel Industry of Canada, Mexico, and the United States: Plant Locations* map;

Member lists from the following trade associations:

—American Coke and Coal Chemicals Institute
—American Galvanizers Association
—American Iron and Steel Institute
—American Wire Producers Association
—Cold Finished Steel Bar Institute
—Specialty Steel Industry of North America
—Steel Manufacturers Association
—Steel Tube Industry of North America
—Wire Association International;

Dun and Bradstreet Facility Index database; EPA Permit Compliance System (PCS) database;

EPA Toxic Release Inventory (TRI) database;

Iron and Steelmaker Journal ''Roundup'' editions;

33 Metalproducing Journal ''Roundup'' editions;

33 Metalproducing Journal ''Census of the North American Steel Industry''.

These sources were cross-referenced with one another to obtain site level information and to ensure the accuracy and applicability of each site's information before inclusion in the questionnaire mailing list. Based on these sources, EPA estimated there were 822 facilities generating iron and steel wastewater. These facilities include the ones that EPA proposes to include in the MP&M category regulated under part 438.

c. *Sample Selection.* To minimize the burden on the respondents to the survey questionnaire, EPA grouped the facilities into 12 strata by the type of manufacturing processes that took place in each facility, or if the facility presented a unique feature (strata 5 & 8). EPA intends that each stratum encompasses facilities with similar operations. This grouping of similar facilities is known as stratification. The stratification of the iron and steel industry is described in Table IV.D.1–1.

TABLE IV.D.1—IRON AND STEEL INDUSTRY STRATA

Stratum No.	Stratum name	No. of sites in stratum
1	Integrated steel sites with cokemaking	9
2	Integrated steel sites without cokemaking	12
3	Stand-alone cokemaking sites	16
4	Stand-alone direct-reduced ironmaking and sintering sites	5
5	Detailed survey certainty stratum [1]	60
6	Non-integrated steel sites	69
7	Stand-alone finishing sites and stand-alone hot forming sites	54
8	Short survey certainty stratum [2]	13
9	Stand-alone cold forming sites	62
10	Stand-alone pipe and tubes sites	164
11	Stand-alone hot coating sites	106
12	Stand-alone wire sites	252
Total		822

[1]This straturm encompasses facilities that otherwise would have included within stratum 6 and stratum 7.
[2]This stratum encompasses facilities that otherwise would have been included within strata 9 to 12.

Depending on the amount/type of information EPA determined it needed for this rulemaking and the number of facilities in a stratum, EPA either solicited information from all facilities within a stratum (i.e., performed a census) or selected a random sample of facilities within each stratum. EPA sent a survey to all the facilities in strata 5 and 8 because of the size, complexity, or uniqueness of the steel operations present at these sites. EPA also sent surveys to all the facilities in strata 1 though 4 because of their manageable numbers and because of the size, complexity, and uniqueness of steel operation present. The remaining sites in strata 6, 7, and 9 through 12 were statistically sampled. If the stratum was censused, those facilities based on the facility's probability of selection represent themselves only. For statistically sampled strata, the selected facility is given a survey weight that allows it to represent itself and other facilities, within that stratum, that were not selected to receive a survey questionnaire. See the *Statistical Support Document for the Effluent Limitations Guidelines and Standards for Iron and Steel Industry.*

d. *Survey Response.* Of the 822 facilities generating iron and steel wastewater, 399 facilities were mailed either a detailed survey or a short survey questionnaire.

Eleven sites receiving a survey did not return a completed survey and thus are considered non-respondents. Ten sites receiving surveys were not considered for further review: seven of these sites were closed, two sites were considered part of another site owned by the same company, and one site received two surveys under two mailing addresses. EPA received 378 completed surveys, including 33 sites that certified that they were not engaged in iron and steel activities.

One hundred fifty-four of the completed surveys were from sites that EPA later determined to be within the scope of the MP&M Category; EPA did not consider those responses for this proposal. Similarly, two recipients of MP&M surveys were determined to be within the scope of the Iron and Steel Category. See Section III.B for a discussion of the applicability interface between these two rules. Therefore, 191 completed iron and steel surveys and the two MP&M surveys were used in the development of today's proposed rule.

In addition to the Detailed and Short Form surveys, follow-up surveys regarding treatment system capital costs and analytical and production data were also mailed. Of the 90 Cost Surveys mailed, 88 were completed. All of the 38 Analytical and Production Surveys were completed. EPA has included in the public record all information collected for which the site has not asserted a claim of Confidential Business Information.

2. Wastewater Sampling and Site Visits

EPA visited 70 iron and steel sites in 19 states and Canada between 1997 and 1999 to collect information about each site's operations, process wastewater management practices, and wastewater treatment systems, and to evaluate each facility for potential inclusion in the

sampling program. Site visit selection was based on the type of site (as described in Section IV.C), the manufacturing operations at each facility, the type of steel produced (carbon, alloy, stainless), and the wastewater treatment operations.

EPA collected detailed information from the sites visited such as the operations associated with each manufacturing process, wastewater generation, in-process treatment and recycling systems, end-of-pipe treatment technologies, and, if the facility was a candidate for sampling, the logistics of collecting samples. EPA has included in the public record all information collected during site visits for which the site has not asserted a claim of Confidential Business Information.

Based on the information obtained during site visits, EPA selected 16 facilities to perform wastewater sampling. EPA selected sites for sampling using the following criteria:

- The site performed iron and steel operations representative of iron and steel industry facilities;
- The site performed high-rate recycling, in-process treatment, or end-of-pipe treatment technologies that EPA was considering for technology option development; and
- The site's compliance monitoring data indicated that it was operating among the better performing treatment systems in the industry or that it contained wastewater treatment process for which EPA sought data for option development.

During each sampling episode, EPA collected samples of untreated process wastewater, treatment system effluents, and other samples that would demonstrate the performance of individual treatment units. Samples were analyzed for approximately 300 analytes spanning the following pollutant classes: conventional and nonconventional pollutants, metals, volatile organics, semivolatile organics, and dioxins and furans. Analytical results from untreated samples contributed to EPA's characterization of the industry, development of the list of pollutants of concern, and development of raw wastewater characteristics. EPA used all collected data to evaluate treatment system performance and to develop discharge concentrations, pollutant loadings, and the treatment technology options for the iron and steel industry (see Section V). EPA used data collected from the effluent points to calculate the long-term averages (LTAs) and limitations for each of the proposed regulatory options (see Section IX.A.3); EPA also used industry-provided data from the Analytical and Production Survey to complement the sampling data for these calculations. During each sampling episode, EPA also collected flow rate data corresponding to each sample collected and production information from each associated manufacturing operation for use in calculating pollutant loadings and production-normalized flow rates. EPA has included in the public record all information collected for which the site has not asserted a claim of Confidential Business Information.

3. Analytical Methods

Section 304(h) of the Clean Water Act directs EPA to promulgate guidelines establishing test procedures (methods) for the analysis of pollutants. These methods allow the analyst to determine the presence and concentration of pollutants in wastewater, and are used for compliance monitoring and for filing applications for the NPDES program under 40 CFR 122.21, 122.41, 122.44, and 123.25, and for the implementation of the pretreatment standards under 40 CFR 403.10 and 403.12. To date, EPA has promulgated methods for all conventional and toxic pollutants and for several nonconventional pollutants. Table I–B at 40 CFR part 136 lists the analytical methods approved for the five conventional pollutants. Part 136 also sets forth the analytical methods for toxic pollutants. EPA has listed, pursuant to section 307(a)(1) of the Act, 65 metals and organic pollutants and classes of pollutants as ''toxic pollutants'' at 40 CFR 401.15. From the list of 65 classes of toxic pollutants, EPA identified a list of 126 ''Priority Pollutants.'' This list of Priority Pollutants is shown at 40 CFR part 423, appendix A. The list includes non-pesticide organic pollutants, metal pollutants, cyanide, asbestos, and pesticide pollutants.

Currently approved methods for metals and cyanide are included in the table of approved inorganic test procedures at 40 CFR 136.3, Table I–B. Table I–C at 40 CFR 136.3 lists approved methods for measurement of non-pesticide organic pollutants, and Table I–D lists approved methods for the toxic pesticide pollutants and for other pesticide pollutants. Direct and indirect dischargers must use the test methods approved under 40 CFR 136.3, where available, to monitor pollutant discharges from the Iron and Steel industry, unless specified otherwise in part 420 or by the permitting authority. See 40 CFR 122.44 (i)(1)(iv) and 403.12(b)(5)(vi). Sometimes, methods in part 136 apply only to waste streams from specified point source categories. For pollutants with no methods approved under 40 CFR part 136, the discharger must use the test procedure specified in the permit or, in the case of indirect dischargers, other validated methods or applicable procedures. See 40 CFR 122.44 (i)(1)(iv) and 403.12(b)(5)(vi).

4. Data Sources

EPA evaluated existing data sources to gather technical and financial information and to identify potential survey recipients and facilities for site visits.

The Agency gathered technical information from iron and steel industry trade journals published from 1985 through 1997 as well as information from Iron and Steel Society Conference Proceedings. Trade journals included Iron and Steel Engineer, published by the Association of Iron and Steel Engineers (AISE); Iron and Steelmaker, published by the Iron and Steel Society (ISS); and New Steel (formerly Iron Age), published by Chilton Publications. These sources provided background information on industry storm water and wastewater issues; new and existing wastewater treatment technologies; wastewater treatment and manufacturing equipment upgrades and installations; company mergers, acquisitions, and joint ventures; and identified potential survey recipients and facilities for site visits.

EPA consulted the U.S. Bureau of Census publications, Census Manufacturers—Industry Series and Current Industrial Reports; the Paine Webber publication, World Steel Dynamics; and the American Iron and Steel Institute (AISI) publication, The Annual Statistical Report. These sources provided a variety of financial information, ranging from aggregate data on employment and payroll to steel shipments by product, grade, and market.

The Agency performed searches on the following on-line databases: Pollution Abstracts, Water Resources Abstracts, Engineering Index, Materials Business File, National Technical Information Service (NTIS), Enviroline, Compendex, and Metadex. The Agency also searched EPA's Toxic Release Inventory and Permit Compliance System. In addition, the Agency conducted a review of secondary sources, which include data, reports, and analyses published by government agencies; reports and analyses published by the iron and steel industry and its associated organizations; and publicly available financial information compiled by both government and private organizations.

5. Summary of Public Participation

EPA has strived to encourage the participation of all interested parties throughout the development of the proposed iron and steel effluent limitations guidelines and standards. EPA has conducted outreach with the following trade associations (which represent the vast majority of the facilities that will be affected by this guideline): American Iron and Steel Institute (AISI), Steel Manufacturers Association (SMA), Specialty Steel Industry of North America (SSINA), Cold Finished Steel Bar Institute (CFSBI), the Wire Association International, Incorporated (WAI), the American Wire Producers Association (AWPA), the Steel Tube Institute of North America (STINA), the American Galvanizers Association, Incorporated (AGA), and the American Coke and Coal Chemicals Association (ACCCI). EPA has met on several occasions with various industry representatives, including the AISI, SMA, AWPA, and STINA, to discuss aspects of the regulation development. EPA has also participated in industry meetings, giving presentations on the status of the regulation development on numerous occasions.

Because some facilities affected by this proposal are indirect dischargers, the Agency also conducted outreach to publicly owned treatment works (POTWs). EPA also made a concerted effort to consult with pretreatment coordinators and state and local entities that will be responsible for implementing this regulation.

EPA sponsored five stakeholders' meetings between December 1998 and January 2000. Four were in Washington, DC, and the fifth was in Chicago, IL. The primary objectives of the meetings were to present the Agency's current thinking regarding the technology bases for today's proposed revisions to 40 CFR part 420 and to solicit comments, issues, and new ideas from interested stakeholders, including members of environmental groups such as the Natural Resources Defense Council, the Environmental Defense Fund (now Environmental Defense), Atlantic States Legal Foundation, Friends of the Earth, and Save the Dunes.

During the meetings, EPA presented process flow diagrams showing preliminary technology options and potential best management practices (BMPs) that may be incorporated into a revised part 420 and/or included in National Pollutant Discharge Elimination System (NPDES) permit and pretreatment guidance. The presentations were organized by type of manufacturing process. A discussion period followed each presentation. In addition to soliciting comments on the preliminary options, EPA requested ideas from the stakeholders to identify useful incentives for greater pollution control.

At the meeting, EPA encouraged participants to supplement their oral statements with written comments and supporting data. In that regard, EPA provided a set of data-quality protocols for use when submitting data for this rulemaking effort. This handout, along with all other handouts and meeting summaries, are posted on the EPA Iron and Steel web site at http://www.epa.gov/OST/ironsteel/. All of the materials presented at the stakeholders' meetings, as well as meeting summaries and any written comments from participants, also may be found in the public record for today's proposal.

E. Subcategorization

1. Methodology and Factors Considered in Developing Proposed Subcategorization

The CWA requires EPA, when developing effluent limitations guidelines and standards, to consider a number of different factors. For example, when developing limitations that represent the best available technology economically achievable for a particular industry category, EPA must consider, among other factors, the age of the equipment and facilities in the category, location, manufacturing processes employed, types of treatment technology to reduce effluent discharges, the cost of effluent reductions and non-water quality environmental impacts. See section 304(b)(2)(B) of the CWA, 33 U.S.C. 1314(b)(2)(B). The statute also authorizes EPA to take into account other factors that the Administrator deems appropriate and requires BAT model technology chosen by EPA to be economically achievable, which generally involves consideration of both compliance costs and the overall financial condition of the industry.

EPA took these factors into account in considering whether different effluent limitations guidelines and standards were appropriate for subcategories within the industry. For example, EPA broke down categories of industries into separate classes with similar characteristics. This classification recognized the major differences among companies within an industry that may reflect, for example, different manufacturing processes, economies of scale, or other factors. Subdividing an industry by subcategories results in developing more tailored regulatory standards, thereby increasing regulatory practicability and diminishing the need to address variations among facilities through a variance process. See *Weyerhaeuser Co.* v. *Costle,* 590 F.2d 1011, 1053 (D.C. Cir. 1978).

For this iron and steel rulemaking, EPA used industry survey data and EPA sampling data for the subcategorization analysis. Various subcategorization criteria were analyzed for trends in discharge flow rates, pollutant concentrations, and treatability to determine where subcategorization was warranted. Equipment and facility age were not found to impact wastewater generation or wastewater characteristics; therefore, age was not used as a basis for subcategorization. Location impacts iron and steel facilities only in that facilities located in arid regions tend to experience greater water loss through evaporation, resulting in reduced discharge in some cases. EPA addressed this difference by selecting flow allowances for today's proposed regulation that are achievable in all regions of the country irrespective of climate. Therefore, the Agency deemed location to be insufficient grounds for subcategorization. Size (*e.g.,* acreage, number of employees) was not used as a subcategorization criterion because it did not have an influence on production-normalized wastewater flow rates or pollutant loadings. Economic impacts are discussed in Section VI and with one exception did not show a need for subcategorization on this basis. The exception is subpart E (the Integrated and Stand Alone Hot Forming subcategory) for which EPA is proposing alternative BAT approaches to account for possible economic issues. See Section IX.E.1. While non-water quality environmental characteristics (solid waste and air emission effects) are of concern to EPA, these characteristics did not constitute a basis for subcategorization. Environmental impacts from solid waste disposal and from the transport of potentially hazardous wastewater are dependant on individual facility practices; EPA could not identify any common characteristics particular to a given segment of the industry. Air emissions also provided EPA with no basis for different treatment than those suggested by the prevailing factors.

EPA identified manufacturing processes as the determinative factor for subcategorization. In addition, EPA used manufacturing processes, type of product, and wastewater characteristics (*i.e.,* production-normalized flow rates, pollutants present) to establish segments within each subcategory where

appropriate. The following section describes the iron and steel manufacturing processes.

2. General Description of Manufacturing Processes

The Iron and Steel Category covers sites that generate wastewater while performing one or more of the following industrial activities: Cokemaking, sintering, ironmaking, steelmaking, vacuum degassing, ladle metallurgy, casting, hot forming, finishing processes (which include salt bath descaling, acid pickling, cold rolling, annealing, alkaline cleaning, hot coating, and electroplating), direct-reduced ironmaking, briquetting, and forging. The following is a brief description of each of these manufacturing processes.

Cokemaking: Carbon in the form of metallurgical coke is used to reduce beneficiated iron ores and other forms of iron oxides to metallic iron in blast furnaces. In by-product coke plants, coal is distilled in refractory-lined, slot-type ovens at high temperatures in the absence of air. The moisture and volatile components of the coal are collected and processed to recover by-products, including crude coal tars, crude light oil (aromatics, paraffins, cycloparaffins and naphthenes, sulfur compounds, nitrogen and oxygen compounds), anhydrous ammonia or ammonium sulfate, naphthalene, and sodium phenolate. Wastewater is generated from moisture contained in the coal charge to the coke ovens (waste ammonia liquor) and from some of the by-product recovery operations.

Two cokemaking operations in the U.S. use nonrecovery technology. Both plants use Sun Coke Company's proprietary non-recovery technology. These plants use negative pressure coke ovens to prevent leakage of air/smoke to the atmosphere, and higher temperatures to destroy volatile organics. The organic compounds are destroyed within the oven during the cokemaking process. The nonrecovery cokemaking process does not generate any process wastewater.

Sintering: Sinter plants are used to beneficiate (upgrade the iron content of) iron ores and to recover iron values from wastewater treatment sludges and mill scale generated at integrated steel mills. A mixture of coke breeze (fine coke particles), iron ores, sludges, mill scales, and limestone are charged to a traveling grate furnace. The mixture is ignited and air is drawn through the bed as it travels toward the exit end. Sinter of suitable size and weight is formed for charging to the blast furnace. Wastewaters are generated from wet air pollution control devices on the wind box and discharge ends of the sinter machine.

Ironmaking: Blast furnaces are used to produce molten iron, which makes up about two-thirds of the charge to basic oxygen steelmaking furnaces. The raw materials charged to the top of the blast furnace include coke, limestone, beneficiated iron ores, and sinter. Hot blast (preheated air) is blown into the bottom of the furnace. Molten iron is tapped into refractory-lined cars for transport to the steelmaking furnaces. Molten slag, which floats on top of the molten iron, is also tapped and processed for sale as a by-product.

The hot blast exits the furnace top as blast furnace gas in enclosed piping and is cleaned and cooled in a combination of dry dust catchers and high-energy venturi scrubbers. Direct contact water used in the gas coolers and high-energy scrubbers comprises nearly all of the wastewater from blast furnace operations.

Steelmaking: Steelmaking in the U.S. is conducted either in basic oxygen furnaces (BOFs) or electric arc furnaces (EAFs). BOFs are typically used for high tonnage production of carbon steels at integrated mills; EAFs are used to produce carbon steels and low tonnage alloy and specialty steels at non-integrated mills.

Integrated steel mills use BOFs to refine a metallic charge consisting of approximately two-thirds molten iron and one-third steel scrap by oxidizing silicon, carbon, manganese, phosphorus and a portion of the iron. Oxygen is injected into the molten bath. Off-gases from BOFs in the U.S. are controlled by one of three methods:

Semi-wet: Furnace off-gases are conditioned with moisture prior to processing in electrostatic precipitators;

Wet-open combustion: Excess air is admitted to the off-gas collection system allowing carbon monoxide to combust prior to high-energy wet scrubbing for air pollution control; and

Wet-suppressed combustion: Excess air is not admitted to the off-gas collection system prior to high-energy wet scrubbing for air pollution control.

Non-integrated mills use EAFs to melt and refine a metallic charge of scrap steel. Most EAFs are operated with dry air cleaning systems with no process wastewater discharges. There are a small number of wet and semi-wet systems.

Vacuum degassing: In this batch process, molten steel is subjected to a vacuum for composition control, temperature control, deoxidation, degassing, decarburization, and to otherwise remove impurities from the steel. Oxygen and hydrogen are the principal gases removed from the steel. In most degassing systems, vacuum is provided by barometric condensers; thus, direct contact between the gases and the barometric water occurs.

Ladle metallurgy: In this batch process, molten steel is refined in addition to, or in place of, vacuum degassing. These operations include argon bubbling, argon-oxygen decarburization (AOD), electroslag remelting (ESR), and lance injection. These additional refining operations do not use process water.

Casting: Molten steel is tapped from the BOF or EAF into ladles for transport. From the ladles, the molten steel is either processed in ladle metallurgy stations and/or vacuum degassers prior to casting into semi-finished shapes in continuous casters. Less than ten per cent of the steel produced in the United States is cast into ingots. Steel cast into ingot molds must undergo cooling, mold stripping, reheating, and primary hot rolling to produce the same semi-finished shape that can be produced with continuous casting. The continuous casting machine includes a tundish (receiving vessel for molten steel), water-cooled molds, secondary cooling water sprays, containment rolls, oxygen-acetylene torches for cutoff, and a runout table. Molten steel is transferred from the ladle to the tundish and then to the water-cooled molds at controlled rates. The steel solidifies as it passes through the molds and is cut to length on the runout table. Wastewater is generated by a direct contact water system used for spray cooling and for flume flushing to transport scale from below the caster runout table.

Hot forming: Ingots, blooms, billets, slabs, or rounds are heated to rolling temperatures in gas-fired or oil-fired reheat furnaces, and formed under mechanical pressure with work rolls to produce semi-finished shapes for further hot or cold rolling, or finished shapes for shipment. Process water is used for scale breaking, flume flushing, and direct contact cooling.

Finishing processes: These processes include salt bath and electrolytic sodium sulfate descaling, acid pickling, cold forming, annealing, cleaning, and hot coating and electroplating:

Salt bath descaling—Oxidizing and reducing molten salt baths are used to remove heavy scale from specialty and high-alloy steels. Process wastewaters originate from quenching and rinsing operations conducted after processing in the molten salt baths.

Electrolytic sodium sulfate descaling is performed on stainless steels for

essentially the same purposes as salt bath descaling.

Acid pickling—Solutions of hydrochloric, sulfuric, hydrofluoric/nitric and nitric acids are used to remove oxide scale from the surfaces of semi-finished products prior to further processing by cold rolling, cold drawing, and subsequent cleaning and coating operations. Process wastewaters include spent pickling acids, rinse waters, and pickling line fume scrubbers.

Cold rolling—Cold rolling is conducted on hot rolled and pickled steels at ambient temperatures to impart desired mechanical and surface properties in the steel. Process wastewater results from using synthetic or animal-fat based rolling solutions, many of which are proprietary.

Annealing—Annealing is a heat treatment process performed to relieve stresses, increase softness, ductility, and toughness, and/or to produce a specific microstructure to the steel. It is performed in a batch or continuous process. Batch processes do not use process water. Wastewaters from continuous processes result principally from associated alkaline cleaning operations and quenching.

Hot coating—Immersion of precleaned steel into baths of molten metal. Common metal types include: Tin, zinc (galvanizing), combinations of lead and tin (terne coating), and combinations of aluminum and zinc. Hot coating is typically used to improve resistance to corrosion, and for some products, to improve appearance and paintability. Wastewaters result principally from cleaning operations prior to the molten bath.

Electroplating—Immersion of precleaned steel into baths for the purpose of electrodepositing a metal onto the steel surface. Common metal types include: tin, chromium, zinc, and nickel. Process wastewaters include spent plating baths, rinse waters, and blowdowns from fume scrubbers.

Direct-reduced ironmaking (DRI): This process produces relatively pure iron by reducing iron ore in a furnace below the melting point of the iron produced. DRI is used as a substitute for scrap steel in EAFs to minimize contaminant levels in the melted steel and to allow economic steel production when market prices for scrap are high. Process wastewaters are generated from air pollution control devices.

Briquetting: The process of agglomerating or forming materials into discrete shapes of sufficient size, strength, and weight for charging to a subsequent process (*e.g.,* briquetting wastewater sludges for charging to a blast furnace). Briquetting does not generate process wastewaters.

Forging: A hot forming operation in which a metal piece is shaped by hammering. Process wastewaters are generated in the form of direct contact cooling water.

3. Proposed Subcategories

In today's notice, EPA proposes to discard the current subcategorization scheme and to establish seven new subcategories for the iron and steel industry. The proposed revised subcategorization not only reflects the modern state of the industry, in terms of both process and wastewater management, but it also incorporates the experience that the Agency and other regulatory entities have gained from implementing the current iron and steel effluent limitations guidelines and standards. Additionally, the proposed revised subcategorization simplifies the regulatory structure by reflecting co-treatment of compatible wastewaters, which is currently practiced by the industry. This practice also provides economic advantage because compatible pollutants from different manufacturing processes can be treated in a single treatment unit. The seven revised subcategories proposed for the iron and steel rulemaking are as follows:

- Cokemaking
- Ironmaking
- Integrated Steelmaking
- Integrated Hot Forming—Stand Alone Hot Forming Mills
- Non-Integrated Steelmaking and Hot Forming Operations
- Steel Finishing Operations
- Other Operations

The following table presents a comparison of the current subcategorization scheme and the one being proposed today:

TABLE IV.E.1.—SUBCATEGORY COMPARISON OF CURRENT AND PROPOSED REGULATIONS

Current regulation	Proposed regulation	
A. Cokemaking	A. Cokemaking	
B. Sintering	B. Ironmaking	
C. Ironmaking		
D. Steelmaking	C. Integrated Steelmaking	E. Non-Integrated Steelmaking and Hot Forming
E. Vacuum Degassing		
F. Continuous Casting		
G. Hot Forming	D. Integrated and Stand-Alone Hot Forming	
H. Salt Bath Descaling	F. Steel Finishing	
I. Acid Pickling		
J. Cold Forming		
K. Alkaline Cleaning		
L. Hot Coating		
	G. Other Operations	

Each subcategory is described in more detail immediately below in terms of its manufacturing processes and wastewater characteristics. Some subcategories are further segmented to reflect differences in manufacturing operations, wastewater characteristics, or required treatment technologies.

Cokemaking—Subpart A

Subcategory	Segment
A: Cokemaking Operations.	By-Product Other (Non-recovery, etc.)

Cokemaking is proposed as a subcategory because of the uniqueness of the manufacturing processes within the iron and steel industry and the characteristics of wastewaters generated by by-product cokemaking operations. EPA proposes to drop the current segmentation on the basis of ''iron and steel'' and ''merchant'' coke plants because differences in wastewater flow rates observed in the 1982 rulemaking

are no longer apparent within the current population of by-product coke plants.

Cokemaking operations are segmented into by-product and other operations, which comprise currently non-recovery and heat-recovery coke plants. Any new cokemaking technologies would fall in this segment. This segmentation reflects the fundamental differences in the respective manufacturing processes. The by-product cokemaking technology provides for extensive processing of materials derived from the coal charged to the coke ovens, including coke oven gas and coal tars, as well as light oils and ammonia or ammonia compounds. The cokemaking process itself generates a waste ammonia liquor made up of the moisture from the coal and volatile and semi-volatile organic compounds. Other wastewaters are generated from the by-product recovery operations. Non-recovery and heat-recovery coke plants, on the other hand, do not generate process wastewaters. Only limited amounts of non-process wastewaters in the form of boiler blowdown result from these operations.

Ironmaking—Subpart B

Subcategory	Segment
B: Ironmaking Operations.	Blast Furnace Sintering

The proposed ironmaking subcategory comprises sintering and blast furnace operations. Wastewaters result from wet air pollution control systems at sinter plants and wet gas cleaning systems for blast furnaces. The wastewaters are similar in character in terms of the pollutants present (ammonia, cyanide, phenolic compounds and metals) and are universally co-treated where wet sinter plants are co-located with blast furnaces. The subcategory is segmented to take into account differences in the model treatment system flow rates used to develop the proposed effluent limitations guidelines and standards.

Integrated Steelmaking—Subpart C

The proposed integrated steelmaking subcategory comprises four manufacturing processes: Basic Oxygen Furnace (BOF) steelmaking, ladle metallurgy, vacuum degassing, and continuous casting. Section IV.E.2 describes these processes in more details. The wastewater generated from the integrated steelmaking operations originates from wet scrubbing for air pollution control of the BOF process, direct contact water with gases from the vacuum degassing process, and direct contact water used for spray cooling and for flume flushing to transport scale from the casting process. Although these processes differ in wastewater flow rates per ton of production, their wastewaters can be and are commonly co-treated. The proposed limitations for this subcategory are based on a single treatment technology but reflect different production normalized flow rates for each process.

This proposed subcategory would encompass steelmaking operations at integrated mills and at non-integrated mills operating basic oxygen furnaces. Currently, one BOF shop is operated at a non-integrated mill and would be included in this proposed subcategory.

Integrated and Stand-Alone Hot Forming Mills—Subpart D

Subcategory	Segment
D: Integrated and Stand-Alone Hot Forming Mills.	Carbon and Alloy Stainless

This proposed subcategory would encompass hot forming operations at integrated and stand-alone hot forming mills. The wastewater generated from the proposed integrated and stand-alone hot forming subcategory originates from process water used for scale braking, flume flushing, and direct contact cooling. Although these processes differ in wastewater flow rates per ton of production, their wastewaters can be and are commonly co-treated. The proposed limitations for this subcategory are based on a single treatment technology but reflect different production normalized flow rates for each process.

EPA proposes to divide the integrated and stand-alone hot forming mills subcategory into two segments—carbon and alloy steel and stainless steel—in order to account for the different product types and wastewater characteristics. Both segments produce steel in primary, section, flat, pipe, or tube.

Non-Integrated Steelmaking and Hot Forming Operations—-Subpart E

Subcategory	Segment
E: Non-Integrated Steelmaking and Hot Forming Operations.	Carbon and Alloy Stainless

This proposed subcategory would encompass steelmaking and hot forming operations at non-integrated mills. The wastewater generated from this proposed subcategory originates from the air pollution control process of EAFs, direct contact water with gases in the vacuum degassing process; direct contact water used for spray cooling and for flume flushing to transport scale in the casting process; and process water used for scale braking, flume flushing, and direct contact cooling in the hot forming process. EPA proposes to divide the non-integrated steelmaking and hot forming operations subcategory into two segments—carbon and alloy steel operations and stainless steel operations—because of the difference in product types and in the wastewater characteristics. Each segment encompasses the following manufacturing processes: EAF steelmaking, ladle metallurgy, vacuum degassing, continuous casting, and hot forming. Although these processes differ in wastewater flow rates per ton of production, their wastewaters can be and are commonly co-treated. The proposed limitations for this subcategory are based on a single treatment technology but reflect different production normalized flow rates for each process.

Steel Finishing Operations—Subpart F

Subcategory	Segment
F: Steel Finishing Operations.	Carbon and Alloy Stainless

This proposed subcategory would encompass all finishing operations that take place at integrated, non-integrated, and stand-alone mills. The wastewater generated from the proposed steel finishing subcategory originates from cleaning, rinsing, and quenching operations, spent solution from the acid pickling, alkaline cleaning, and electroplating operations, fume scrubber wastewater, and process water resulting from the use of synthetic or animal-fat based solutions. EPA proposes to segment the steel finishing subcategory into carbon and alloy steel operations and stainless steel operations because of the nature of the steel finishing operations and the associated wastewater characteristics. Each segment may include a combination of the following processes: acid pickling and other descaling, cold forming, alkaline cleaning, hot coating, and electroplating. Section IV.E.2 describes these manufacturing processes in more detail. Although these processes differ in wastewater flow rates per ton of production, their wastewaters can be and are commonly co-treated. The proposed limitations for this subcategory are based on a single treatment technology but reflect different production normalized flow rates for each process.

Other Operations—Subpart G

Subcategory	Segment
G: Other Operations	Direct-Reduced Ironmaking Forging Briquetting

EPA proposes to combine the three remaining iron and steel operations in a single catch-all subcategory with segments for three specific operations: direct-reduced ironmaking (DRI), forging, and briquetting. Section IV.E.2 describes these manufacturing processes in more detail. The three segments differ in manufacturing operations and in waste generation and characteristics. DRI operations currently take place at stand-alone facilities and non-integrated mills. Forging operations take place at stand-alone and non-integrated mills. Briquetting operations take place at integrated and non-integrated mills. The wastewater generated from this proposed subcategory originates from fume scrubbers from the DRI process and direct contact cooling water from the forging process.

F. Wastewater Characterization

The following sections present wastewater sources, pollutants of concern, and flow rates for each proposed subcategory. Estimates for pollutant loadings are presented in Section V.C.

The principal purpose of identifying subcategory-specific pollutants of concern (POCs) is to screen pollutants for possible regulation. Such pollutants may be either conventional, priority, or non-conventional pollutants as defined by the Clean Water Act, and may be limited directly in part 420, or limited indirectly through control of other pollutants. The Agency took the following approach to identify POCs and, thereafter, to narrow that list to those pollutants that are proposed for regulation.

As the first step, EPA conducted a sampling and analytical program at 16 steel industry sites. EPA sampled and analyzed a broad list of pollutants for purposes of identifying pollutants present in wastewaters from each type of process operation and determining their fate in industry wastewater treatment systems. As the next step, EPA determined for each pollutant subject to the sampling and analytical program whether it met the following detection criteria in wastewaters from that subcategory:

- The pollutant was detected at greater than or equal to ten times the analytical minimum level (ML) concentration in at least 10 percent of all untreated process wastewater samples; and
- The mean detected concentration in untreated process wastewater samples was greater than the mean detected concentration in the source water samples.

EPA identified as pollutants of concern all pollutants that met these screening criteria. EPA's final step was to determine which of these pollutants to regulate, either directly through promulgated limitations and standards or indirectly through the control of another pollutant (*e.g.,* an indicator or surrogate). Of the POCs identified by EPA, the Agency is proposing not to regulate those that were detected at environmentally insignificant concentrations; those typically not associated with process wastewaters from specific process operations; and those that were detected at low concentrations, but determined to be below treatability levels for those pollutants.

The Agency considered three pollutants as POCs for all subcategories, independent of the above criteria: total suspended solids (TSS), Oil and Grease measured as hexane extractable material (HEM), and total petroleum hydrocarbons measured as silica gel treated-hexane extractable material (SGT–HEM). These pollutants are present to some degree in nearly all steel industry process wastewaters and are important indicators of overall wastewater treatment system performance. The pH level is also an important wastewater characteristic and an important indicator of wastewater treatment system performance in many applications in the steel industry. Therefore, EPA is proposing to regulate pH in today's proposed rule. However, EPA did not evaluate pH for the purposes of the Agency's effluent reduction benefit or cost-effectiveness analyses, since pH is not expressed in terms of quantity or concentration.

This section also discusses the Agency's methodology for selecting the process wastewater flow rate for each manufacturing operation that corresponds to the best available technology for the particular subcategory or segment. These flow rates are expressed in terms of gallons of water discharged per ton of production (gpt) for all operations except with respect to certain wet air pollution control devices for steel finishing operations where the flow rates are expressed in gallons per minute (gpm).

For those manufacturing operations where high-rate recycle is a principal component of the model BAT, NSPS, PSES, or PSNS treatment systems, the Agency has selected production-normalized flow rates (PNFs) on the basis of best demonstrated flows achievable by the subcategory or segment as a whole. (For some segments, the best demonstrated flow for the subcategory as a whole is zero.) In these systems, the owner or operator directly controls the volume of the discharge by controlling the process water treatment and recycle system. This is accomplished by managing the amounts of make-up water and storm water entering the system; removing and/or minimizing the potential for once-through non-process wastewaters entering the system; and by controlling recirculating water chemistry to prevent fouling and scaling, where necessary. In general, the PNFs for these subcategories/segments have been significantly reduced for the proposed standards, relative to those on which the original standards are based. This means that the proposed mass-based standards are significantly tighter than existing standards, even where the wastewater treatment technology on which the standards are based has not changed. A detailed presentation of the PNFs on which the existing standards are based can be found in Section VII of the Technical Development Document.

For those manufacturing operations where high-rate recycle is not a principal component of the model BAT, NSPS, PSES, or PSNS treatment systems, the Agency has chosen to use a PNF representing the PNFs reported by the better performing facilities in those subcategories and segments. In general, these also represent reductions in the PNFs used to derive the existing standards, although not by as much as for the subcategories/segments where high-rate recycle is part of the proposed technology basis. EPA recognizes that in some cases, the PNFs selected by the Agency may not be appropriate for all mills within a subcategory or manufacturing process subdivision. Therefore, the Agency solicits comments and supporting information and data regarding alternative PNFs that may be appropriate for particular manufacturing operations.

1. Cokemaking

a. *Wastewater Sources.* The proposed Cokemaking Subcategory encompasses segments for by-product and non-recovery cokemaking. Non-recovery cokemaking does not generate process wastewater. Wastewater from by-product cokemaking operations is generated from a number of sources. The greatest volume of wastewater

generated at every by-product site is excess ammonia liquor, which is the condensed combination of coal moisture and volatile compounds liberated from the coal during the coking process. Nearly all sites reported other sources of wastewater, including: coke oven gas desulfurization, crude light oil recovery, ammonia still operation, final gas coolers, NESHAP controls for benzene, barometric condensers, coke oven gas condensates, equipment cleaning, and wet air pollution control devices used to control emissions from coal charging and coke pushing. Excess water used for coke quenching is another wastewater source. Water used for coke quenching is typically plant service water or treated coke plant wastewater. EPA does not advocate the practice of coke quenching with untreated wastewater because of potential air pollution and ground water contamination associated with this practice. Most plants now collect and treat some process area storm water and at least one facility collects and treats contaminated ground water from its coke plant ground water remediation system.

b. *Pollutants of Concern.* From sampling data and industry-provided data from the Analytical and Production Survey, EPA determined that by-product cokemaking wastewaters contain oil & grease, ammonia-N, cyanides, thiocyanates, phenolics, benzene, toluene, xylene, benzo(a)pyrene, and numerous other volatile organic compounds and polynuclear aromatic compounds. From these data, EPA identified 74 POCs for the Cokemaking Subcategory: 4 conventionals, 1 non-conventional metal, 30 non-conventional organics, 10 other non-conventionals, 22 priority organics, 3 priority metals, 1 other priority pollutant (total cyanide), biochemical oxygen demand (BOD), total Kjeldahl nitrogen (TKN), and nitrate/nitrite-N as POCs (the last three because of their importance as indicators of biological treatment effectiveness).

c. Wastewater Flow Rates. The median volume of process wastewater generated at well-operated by-product coke plants is approximately 100 to 110 gallons per ton (gpt) of coke and coke breeze produced. Approximately 30 to 40 gpt is excess ammonia liquor; the remaining flow comprises the other sources listed above. Operators of some direct discharging facilities often add up to 50 gpt of control water to their biological treatment systems to dilute wastewater toxicity and, to some extent, control temperature. The Agency is using a PNF for the by-product recovery cokemaking segment of 158 gpt. EPA is proposing that supplemental allowances be available to sites operating wet coke oven gas desulfurization systems (15 gpt) or NESHAP control systems (10 gpt). EPA believes that these PNFs can be achieved by all by-product recovery coke plants with good water management practices.

The Agency is using a PNF of 0 gpt of process wastewater for the non-recovery cokemaking segment.

2. Ironmaking

a. *Wastewater Sources.* The proposed Ironmaking Subcategory encompasses segments for sintering and blast furnace ironmaking. Wet air pollution control systems are the primary source of process wastewater at sinter plants. All of the sinter plants generating process wastewater reported using scrubbers to control wind box emissions and some sites also used scrubbers to control emissions at the discharge end of the sinter strand.

Gas cleaning systems that utilize high-energy scrubbers and gas coolers are the primary sources of process wastewater for blast furnace operations. Other, relatively minor sources of process wastewater include blast furnace gas seals, blast furnace drip legs. Some sites reported excess water from slag quenching.

b. *Pollutants of Concern.* Based on its analysis sampling data and industry-provided data from the Analytical and Production Survey, EPA determined that sintering wastewaters contain the following principal pollutants: TSS, O&G, ammonia-N, cyanide, phenolic compounds, and metals (principally lead and zinc), while the principal pollutants from blast furnaces are TSS, ammonia-N, cyanides, phenolic compounds, and metals (copper, lead, and zinc). EPA also found that sintering wastewaters contain polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurnas (PCDDs and PCDFs, or dioxins and furans).

EPA identified 28 POCs for the blast furnace segment of the Ironmaking Subcategory: 2 conventionals, 7 non-conventional metals, 1 non-conventional organic, 10 other non-conventionals, 6 priority metals, 1 other priority pollutant (total cyanide), and TKN because of its direct relationship to ammonia-N, a principal pollutant in ironmaking wastewaters.

EPA identified 66 POCs for the sintering segment of the Ironmaking Subcategory: 2 conventionals, 6 non-conventional metals, 24 non-conventional organics, 11 other non-conventionals, 11 priority organics, 10 priority metals, 1 other priority pollutant (total cyanide), and TKN because of its direct relationship to ammonia-N, a principal pollutant in ironmaking wastewaters.

EPA documented dioxins and furans in air emissions from two U.S. sinter plants, one with dry and one with wet air pollution control. These findings of PCDDs/PCDFs (dioxins) in air emissions from sintering are consistent with the results of studies in Europe and Scandinavia during the 1980s. On the basis of process considerations (*e.g.,* feed materials, combustion), EPA sampled for dioxins and furans in wastewaters from the following primary steelmaking operations: by-product coke plants, sinter plants, blast furnaces, and steelmaking basic oxygen furnaces. EPA found several dioxin and furan congeners in one of two sampled sinter plant treatment effluents. EPA did not find 2,3,7,8-TCDD, which is considered to be the most toxic of all dioxin and furan congeners. However, EPA did detect a furan congener in the form of 2,3,7,8-TCDF, as well as other congeners. In order to evaluate the toxicity of all of these congeners, EPA converted the detected quantities into values equivalent to the toxicity of 2,3,7,8-TCDD. Taken together, these dioxin and furan congeners are equivalent in toxicity to 0.09 nanograms/L of 2,3,7,8-TCDD. EPA thus considers these dioxin and furan congeners to be Pollutants of Concern for sinter plants with wet air pollution control technology under the ironmaking subcategory.

c. *Wastewater Flow Rates.* Nearly half of the operating sinter plants use dry air pollution control systems and, therefore, do not generate process wastewater. Discharge flow rates below 75 gpt are demonstrated at two of the six sinter plants with wet air pollution controls. Eight of the 24 blast furnaces achieve blowdown rates of 25 gpt and lower by operating high-rate (>95%) gas cleaning recycle systems. Several sites report zero discharge by using blowdown from gas cleaning systems for slag quenching. EPA does not advocate slag quenching with blast furnace process wastewaters because of documented ground water contamination associated with this practice. EPA is using a 75 gpt PNF for the sintering segment, representing a flow achievable by sites operating their process water systems at recycle rates equal to or greater than 95%, and 25 gpt for the blast furnaces segment, representing a flow achievable by sites operating their process water systems at recycle rates equal to or greater than 98%. The Agency believes that all sites can achieve these selected PNFs through good water management practices in

blast furnace and sinter plant process water treatment and recycle systems.

3. Integrated Steelmaking

a. *Wastewater Sources.* The proposed Integrated Steelmaking Subcategory encompasses the following operations: BOF steelmaking, ladle metallurgy, vacuum degassing and continuous casting. Wet air pollution control systems are the primary process wastewater source from BOF steelmaking. Three types of wet air pollution control systems are used to control BOF emissions: Semi-wet, wet-open combustion, and wet-suppressed combustion. Some sites reported other BOF process wastewater sources including excess slag quenching water, and equipment cleaning water. Vacuum systems (*e.g.,* barometric condensers, steam ejectors) are the process wastewater source from vacuum degassing systems. Spray contact water systems used for product cooling and flume flushing are the largest process wastewater sources from continuous casters. Some sites reported other continuous casting process wastewater sources including torch table water and equipment cleaning water. Other process wastewater sources include intermittent water losses from closed caster mold and machine noncontact cooling water systems.

b. *Pollutants of Concern.* Based on its analysis of sampling data and industry-provided data from the Analytical and Production Survey, EPA determined that the principal pollutants from BOFs are TSS and metals (lead and zinc). Vacuum degassing wastewaters contain low levels of TSS and metals (lead and zinc) which volatilize from the steel. Casting wastewaters typically contain TSS, O&G measured as HEM, and low levels of particulate metals.

Using the POC selection criteria presented above, EPA identified the following 28 POCs for the Integrated Steelmaking Subcategory: 2 conventionals, 9 non-conventional metals, 6 other non-conventionals, 1 priority organic, and 10 priority metals.

c. *Wastewater Flow Rates.* Three types of wet air pollution control systems (semi-wet, wet-suppressed combustion, wet-open combustion) are commonly used in the BOF steelmaking operations, and each system has a different wastewater flow rate. EPA is using a PNF of 10 gpt for BOFs operating semi-wet systems. Half the operating BOFs operating semi-wet systems are discharging less than this amount. Some operators report achieving zero discharge by balancing the applied water for gas conditioning with evaporative losses. Two of eight BOFs operating wet-open combustion gas cleaning systems discharge less than 20 gpt, and two of the seven BOFs operating wet-suppressed combustion gas cleaning systems discharge less than 20 gpt. EPA is using a PNF for recycle system blowdown of 20 gpt at BOFs with wet-open combustion gas cleaning systems, and 20 gpt for BOFs equipped with wet-suppressed combustion gas cleaning systems. A small number of BOFs report achieving zero discharge, or very low discharge, but not all sites are able to achieve this because of safety considerations. Four of 12 sites operating vacuum degassing systems report a flow rate less than 15 gpt, and six of 29 continuous casters report a wastewater discharge rate less than or equal to 20 gpt. EPA is using a PNF of 15 gpt for vacuum degassing operations, and a PNF of 20 gpt for continuous casting operations.

4. Integrated and Stand-Alone Hot Forming

a. *Wastewater Sources.* The proposed Integrated and Stand-Alone Hot Forming subcategory consists of two segments: Carbon and alloy, and stainless. The primary process wastewater source for facilities in both segments is contact water systems used for scale removal, roll cooling, product cooling, flume flushing, and other line operations. Some sites reported other wastewater sources, including roll shops, basement sumps, lubricating oil conditioning systems, strip coilers, scarfer water, wet air pollution control systems, and equipment cleaning water.

b. *Pollutants of Concern.* Based on its analysis of sampling data and industry-provided data from the Analytical and Production Survey, EPA determined that the principal pollutants from integrated and stand-alone hot forming facilities are TSS, O&G measured as HEM, and low levels of particulate metals.

EPA identified the following 12 POCs for the carbon and alloy segment of the Integrated and Stand-Alone Hot Forming Subcategory: 1 conventional metal, 4 non-conventional metals, 4 other non-conventionals, and 3 priority metals. EPA identified the following 16 POCs for the stainless segment of the Integrated and Stand-Alone Hot Forming Subcategory: 2 conventionals, 4 non-conventional metals, 4 other non-conventionals, and 6 priority metals. Although EPA found lead at relatively low concentrations in sampled hot forming wastewaters, lead is considered as a POC for both segments of this subcategory because extensive industry-supplied data indicates lead exists in appreciable quantities in many hot forming wastewaters across the industry.

c. *Wastewater Flow Rates.* High-rate recycle, with recycle rates in excess of 95%, is a standard pollution prevention technique for all types of hot forming operations. Twenty-one of 68 integrated and stand-alone hot forming mills have reported flow rates less than or equal to 100 gpt. EPA is using a 100 gpt PNF at integrated and stand-alone hot forming mills. EPA has determined that 100 gpt PNF represents the best demonstrated flows at integrated and stand-alone hot forming mills that operate at a 95% recycle rate.

5. Non-Integrated Steelmaking and Hot Forming

a. *Wastewater Sources.* The proposed Non-Integrated Steelmaking and Hot Forming Subcategory consists of two segments: carbon and alloy, and stainless. These segments encompass the following operations: EAF (electric arc furnace) steelmaking, ladle metallurgy, vacuum degassing, continuous casting, and hot forming. All but one EAF in the United States are equipped with dry or semi-wet air pollution controls and operate with no process wastewater discharges. The process wastewater source from the one EAF with a wet air pollution control system is the scrubber water; however that facility is being converted to a dry air cleaning system, and no new EAFs are likely to be constructed with wet air controls. Accordingly, the Agency is not proposing separate limits for EAFs with wet air pollution controls. Any EAF constructed in the future with wet air controls will have to meet the limits for dry systems. The wastewater sources for non-integrated vacuum degassing, non-integrated continuous casting, and non-integrated hot forming are the same as those listed for operations at integrated and stand-alone facilities.

b. *Pollutants of Concern.* From sampling data and industry-provided data from the Analytical and Production Survey, EPA determined that the principal pollutants for vacuum degassing operations, continuous casters and hot forming mills are TSS and metals. O&G (measured as HEM and SGT–HEM) is found in process wastewaters from continuous casting and hot forming operations.

EPA identified the following 11 POCs for the carbon and alloy segment of the Non-Integrated Steelmaking and Hot Forming Subcategory: 2 conventionals, 1 non-conventional metal, 5 other non-conventionals, and 3 priority metals. EPA selected lead as a POC for the reasons set out above for integrated and stand-alone hot forming mills. EPA

identified the following 23 POCs for the stainless segment of the Non-Integrated Steelmaking and Hot Forming Subcategory: 2 conventionals, 6 non-conventional metals, 7 other non-conventionals, 1 priority organic, and 7 priority metals. EPA selected lead as a POC for the reasons set out above for integrated and stand-alone hot forming mills.

c. *Wastewater Flow Rates.* Non-integrated mills have demonstrated lower discharge volumes than hot forming at integrated and stand alone mills because less water is used at these mills. Two types of air pollution control systems (semi-wet, and dry) are commonly used in the EAF steelmaking operations, and each system has a different wastewater flow rate. Dry air cleaning systems generate no process wastewater. In addition, the hot-forming manufacturing process produces steel in primary, section, flat, pipe, or tube; each product type generates a different wastewater flow rate. Ten of 25 non-integrated vacuum degassing systems and 30 of 73 non-integrated continuous casting systems reported discharge rates less than 10 gpt. EPA is using PNFs for non-integrated vacuum degassing systems and continuous casters of 10 gpt each. Forty-two of 94 non-integrated hot forming operations report flows less than or equal to 50 gpt. EPA is using a PNF of 50 gpt for non-integrated hot forming operations, which represents the best demonstrated flows for non-integrated hot forming operations operating at a 95% recycle rate. Many non-integrated sites report zero discharge of process wastewater using high-rate recycle systems for the entire mill and alternative disposal methods, although available data suggests that it would not be economically achievable for the entire subcategory, or even any definable sub-group of the existing facilities, to be able to achieve zero discharge of process wastewater.

6. Steel Finishing

a. *Wastewater Sources.* The proposed Steel Finishing Subcategory consists of two segments: Carbon and Alloy Steels and Stainless Steels. The Carbon and Alloy segment comprises acid pickling (typically with hydrochloric or sulfuric acids), cold forming, alkaline cleaning, hot coating, and electroplating operations. The Stainless segment includes salt bath and electrolytic sodium sulfate (ESS) descaling, acid pickling (typically with sulfuric, nitric, and nitric/hydrofluoric acids), cold forming, and alkaline cleaning. Salt bath descaling process wastewaters are generated from quenching and rinsing operations conducted after the steel is processed in the molten salt baths and from fume scrubbers. ESS descaling wastewaters result from spent baths, rinse waters, and fume scrubbers. Acid pickling process wastewaters include spent pickling acids, rinse waters, and pickling line fume scrubbers. Process wastewaters from cold rolling processes result from spent synthetic or animal-fat based rolling solutions and equipment cleaning. Continuous annealing wastewaters originate from associated alkaline cleaning operations. Alkaline cleaning process wastewaters include cleaning solution and rinse water blowdown. Wastewaters from hot coating operations result from product rinses, fume scrubbers, and cleaning operations. Wastewaters from electroplating operations result from acid and alkaline cleaning operations, plating solution losses, plating solution conditioning and treatment, and fume scrubbers. Tank clean-outs and equipment cleaning are other wastewater sources reported by a number of sites.

b. *Pollutants of Concern.* Based on its analysis of sampling data and industry-provided data from the Analytical and Production Survey, EPA determined that the principal pollutants from salt bath descaling in the stainless segment are TSS, cyanides, hexavalent and trivalent chromium, and nickel. The principal pollutants from acid pickling in both segments are TSS and metals, although for carbon steel operations, the principal metals are lead and zinc; and for stainless steel, chromium and nickel. The principal pollutants in cold rolling wastewaters are TSS, O&G measured as HEM, and metals (lead and zinc for carbon steels and chromium and nickel for stainless steels; chromium may also be a contaminant from cold rolling of carbon steels resulting from wear on chromium-plated work rolls). Toxic organic pollutants including naphthalene, other polynuclear aromatic compounds, and chlorinated solvents have been found in cold rolling wastewaters.

Because alkaline cleaning baths do not attack or dissolve the surface of the steel processed, the principal pollutants generated from alkaline cleaning operations are O&G removed from the steel. There is the potential for the presence of low levels of toxic organic pollutants found in cold rolling solutions. The principal hot coating pollutants are usually those associated with the coating metal or metal combinations and hexavalent chromium for lines with chromium brightening or passivation operations. Typical electroplating pollutants are TSS and O&G generated from the precleaning operations and the plated metals from plating solution losses, rinsing, and fume scrubbers.

In addition to these pollutants which EPA identified through its POC selection criteria process, EPA selected sulfate and total cyanide as POCs because these pollutants are present in sulfuric acid pickling wastewaters and reducing salt bath descaling wastewaters, respectively. (EPA did not sample these two wastewaters during the sampling program and therefore did not apply its POC selection criteria.)

EPA identified a total of 38 POCs for the carbon and alloy segment of the Steel Finishing Subcategory: 2 conventionals, 10 non-conventional metals, 7 non-conventional organics, 9 other non-conventionals, 2 priority organics, and 8 priority metals. EPA identified a total of 51 POCs for the stainless segment of the Steel Finishing Subcategory: 11 non-conventional metals, 17 non-conventional organics, 9 other non-conventionals, 4 priority organics, 9 priority metals, and one other priority pollutant (total cyanide).

c. *Wastewater Flow Rates.* EPA subdivided manufacturing operations by product type to capture differences in flow associated with different types of products and different metals coated. This approach should address product quality issues associated with water use. Although a number of mills engaging in certain finishing operations claim to need a relatively high PNF, information in today's record did not support a different PNF for the subcategory as a whole.

The acid pickling, other descaling, and alkaline cleaning operations are performed on various steel products such as sheet, strip, coil, bar, billet, rod, pipe, tube, and plate; and each product type generates a different wastewater flow rate. For cold forming, the manufacturing process could be conducted in either single or multiple mill stands, and the rolling solutions can be applied in a once-through, recirculated, or a combined manner; and the various application technique generates a different wastewater flow rate. For the electroplating process, either chrome/tin or other metals can be applied to sheet, strip, coil, and plate; and each product type generates a different wastewater flow rate.

No stand-alone salt bath descaling lines were found during the analysis of the iron and steel industry, and the industry did not report isolated flows for salt bath descaling lines that are co-located with combination acid pickling lines. Therefore, flow rates for salt bath descaling are included in the flow rates for combination acid pickling.

Wastewater discharge rates for acid pickling vary by product and steel type. Wastewater discharge rates for acid pickling vary by product and steel type, as well as acid used (in the case of carbon and alloy steels). For hydrochloric acid pickling of carbon and alloy steel, EPA is using a PNF of 50 gpt for sheet and strip (achieved by 18 of 47 lines), 490 gpt for bar, billet, rod, and coil, and 1020 gpt for pipe and tube. For sulfuric acid pickling of carbon and alloy steel, EPA is using a PNF of 230 gpt for strip and sheet (achieved by five of nine lines), 280 gpt for bar, billet, rod, and coil, and 500 gpt for pipe and tube. For acid pickling of stainless steel, EPA is using a PNF of 230 gpt for bar and billet (representing the median flow rate), 700 gpt for sheet and strip (achieved by 19 of 50 lines), and 35 gpt for plate (representing the median flow rate). For all pickling operations with fume scrubbers, EPA is using a normalized flow rate of 15 gallons per minute (gpm). The PNFs for hydrochloric and sulfuric acid pickling for bar, billet, rod, and coil and pipe and tube are retained from the 1982 Iron and Steel regulation. The Agency obtained current PNFs for the other four pickling operations. EPA is using a PNF of 100 gpm for acid regeneration.

Wastewater discharge rates for cold forming vary by the number of mill stands, steel type, and whether rolling solutions are recirculated. EPA is using the following PNFs: single stand, direct application—3 gpt; single stand, recirculation—1 gpt; multi-stand, direct application—275 gpt; multi-stand, recirculation—25 gpt; multi-stand, combination—143 gpt. EPA is using a PNF for the alkaline cleaning sections of continuous annealing lines of 20 gpt (achieved by seven of 16 stand alone annealing lines). Wastewater discharge rates for alkaline cleaning vary by product and steel type. For carbon and alloy steel, EPA is using a PNF of 350 gpt for sheet and strip and 20 gpt for pipe and tube. EPA is using a PNF of 2,500 gpt for stainless sheet and strip. EPA is using a PNF of 550 gpt for hot dip coating operations. With the exception of continuous annealing, each of these represents the median of PNFs observed.

Discharge rates for electroplating vary by the type of metal applied. EPA is using a PNF of 1,100 gpt for tin and chromium sheet and strip lines; 550 gpt for other sheet and strip lines. EPA is using a PNF of 35 gpt for electroplating of steel plate. Each of these represents the median of PNFs observed. For all electroplating operations with fume scrubbers, EPA is using a normalized flow rate of 15 gpm.

7. Other Operations

a. *Wastewater Sources.* The subcategory EPA proposes for other operations encompasses segments for direct-reduced ironmaking, forging, and briquetting. Wet air pollution control systems are the primary process wastewater source for DRI operations. Contact water comprises the majority of the process wastewater from forging operations. Some sites identified equipment cleaning as another source of wastewater from forging operations. Briquetting operations use dry air pollution controls and do not generate process wastewater.

b. *Pollutants of Concern.* EPA has only limited sampling and industry-provided data from the Analytical and Production Survey for forging, briquetting, and DRI operations. EPA solicits comments and additional data for these operations.

Based on all available data, EPA found that the principal pollutant parameter from DRI facilities is TSS. For forging, the principal pollutants are TSS, O&G measured as HEM, and metals. All briquetting operations are dry.

Using the POC selection criteria presented above, EPA identified 8 POCs for the Other Operations Subcategory: 1 conventional, 4 non-conventional metals, and 3 other non-conventionals.

c. *Wastewater Flow Rates.* The Agency found forging operations to be similar to other hot forming operations, and therefore used a 96% recycle rate, as demonstrated for other hot forming operations, as the basis for PNF determination, giving a PNF for forging operations of 100 gpt. EPA is using a PNF for DRI operations of 90 gpt, which was demonstrated by two of three DRI plants engaged in high rate recycling of their scrubber wastewater.

V. Technology Options, Costs, and Pollutant Reductions

A. Introduction

This section describes the technology options and associated costs and pollutant reductions that EPA evaluated in developing the effluent limitations guidelines and standards proposed today for the seven subcategories. To determine the technology basis and performance level for the proposed regulations, EPA developed a database consisting of daily effluent data collected from the Analytical and Production Survey and the EPA wastewater sampling program. EPA used this database to support the BPT, BAT, NSPS, PSES, and PSNS effluent limitations guidelines and standards proposed today. While EPA has proposed effluent limitations guidelines and standards based on a combination of processes and treatment technologies, EPA is not proposing to require a discharger to use those processes or technologies in treating the wastewater. Rather, the processes and technologies used to treat iron and steel wastewaters are left to the discretion of each facility; EPA would require only that the numerical discharge limits are achieved.

In order to establish the proposed limits, EPA reviewed data from treatment systems in operation at a number of iron and steel facilities and used the data to calculate concentration limits that are achievable based on a well-operated system using the proposed model processes and wastewater treatment technologies. In Section C below, EPA presents a summary of the technology options EPA considered for the proposed effluent limitations guidelines and standards in each subcategory.

1. Focused Rulemaking Approach

EPA is developing this regulation using a focused rulemaking approach, which involves conducting several aspects of data gathering and analysis activities in parallel and assessing only a limited number of regulatory options. This is unlike the traditional approach where EPA conducts these efforts in a serial manner and considers a wider range of regulatory options. The focused rulemaking approach is feasible for the iron and steel regulation because the Agency has acquired a good understanding of the industry, its associated pollutants, and the available control and treatment technologies from its prior rulemaking efforts. Furthermore, EPA also adopted the focused approach for the iron and steel regulation in order to meet a court-ordered schedule (see Section II.B). In general, the focused approach allows EPA to have a more focused data gathering process and reduces the time spent investigating marginal regulatory options. EPA then evaluates each option it identifies in accordance with the statutory factors, *e.g.,* the removal efficiencies and economic achievability of various model treatment technologies.

A successfully implemented focused rulemaking process involves a combination of early analysis of available information, focused data collection effort, and extensive stakeholder involvement. A key component of the data gathering process was using a questionnaire distributed under authority of section 308 of the Clean Water Act. See Section IV.D. EPA worked with stakeholders in developing

this questionnaire, which was approved by the Office of Management and Budget. For the iron and steel rulemaking, EPA utilized its 1997 questionnaire results from individual facilities, in conjunction with EPA's field sampling data, to assess the wastewater characteristics and the effectiveness of various pollution control and treatment technologies for the industry. In addition, EPA also supplemented the database with information voluntarily submitted by industry, permitting and pretreatment authorities, and vendors. Furthermore, by involving the stakeholders early in the rulemaking, the Agency also developed a good understanding of the experience that the industry has gained from pollution control technologies implemented since the 1980's, when the current rule was promulgated.

In addition to early information gathering and analysis, extensive stakeholder involvement is also an important element of the focused rulemaking process. EPA met with the industry, environmental groups and other stakeholders at various stages of the rulemaking process to discuss the preferred options and identify issues of concern. For instance, between December 1998 and January 2000, EPA sponsored five stakeholder meetings to present the technology bases for the Agency's preliminary options and to solicit comments and ideas from the stakeholders. Section IV.D.5 contains additional information regarding the various stakeholder meetings. EPA also expects to gather additional information through the public comment process.

As the result of this focused process, the Agency is proposing a streamlined group of seven subcategories that will be used as the framework for revising the existing effluent limitations guidelines and standards. Section IV.E explains the basis for the proposed subcategorization. Section V.C and IX contain detailed information on technology options that were considered and the selected technologies, respectively.

During the public comment period on today's proposed rule, EPA plans to continue its data gathering and analysis efforts for support of the final rule. EPA may publish in the **Federal Register** a subsequent notice of data availability for data and information that the Agency may use to support the final rule. Such data may be generated by EPA or submitted by stakeholders in response to this proposal.

EPA encourages full public participation in developing the final Iron and Steel Effluent Limitations Guidelines and Standards. EPA welcomes comment on all options and issues and encourages commenters to submit additional data during the comment period. EPA also is willing to talk with interested parties during the comment period to ensure that EPA considers the views of all stakeholders and the best possible data upon which to base a decision for the final regulation. EPA will conduct a public hearing during the public comment period.

2. Available Technologies

The treatment technologies used by the iron and steel industry consist of in-process treatment and reuse of process solutions and process waters, and end-of-pipe physical-chemical and biological treatment.

The in-process, physical-chemical, and biological treatment technologies in use at Iron and Steel facilities include:

- *Acid purification:* An in-process resin technology applied to spent acid baths to adsorb acid and allow contaminants to pass into a waste stream. The process produces an acid which is reused for acid pickling.
- *Acid Regeneration:* Thermal decomposition of spent pickle liquor, which contains free hydrochloric acid, ferrous chloride, and water.
- *Alkaline Chlorination:* Chemical addition of chlorine in a two-stage, pH-adjusted system to oxidize cyanide, ammonia, phenols, and other organic compounds.
- *Biological Treatment:* There are several forms of biological treatment. For the purpose of this regulation, biological treatment refers to an activated sludge system with nitrification; a continuous flow, aerobic treatment process which employs suspended-growth aerobic microorganisms to biodegrade organic contaminants and oxidize ammonia to nitrate. A portion of the biomass is collected and returned to the activated sludge system.
- *Clarification:* Usually a circular, cone-bottom steel or concrete tank with a center stilling well and mechanical equipment at the bottom for settling and subsequent removal of suspended solids from the wastewater stream.
- *Classification:* Any device, such as a dragout tank or screw classifier, used to aggregate and remove large suspended solids from wastewater.
- *Coagulation/flocculation:* Coagulation/flocculation causes small suspended solids such as precipitated metal hydroxides and biological mixed liquor solids to aggregate into larger particles with a density greater than water. The particles are then separated from the wastewater by gravity settling.
- *Cooling Tower:* Direct cooling through evaporative heat transfer to lower the temperature of non-contact cooling water or process water prior to further treatment or recycle.
- *Countercurrent Rinses:* The use of a series of rinse tanks to minimize the amount of water used to clean the surface of steel products. Rinse water overflows from one tank to another in a direction opposite the flow of steel product.
- *Cyanide Precipitation:* Cyanide precipitation combines free cyanide with iron to form an insoluble iron-cyanide complex that can be precipitated and removed by gravity settling.
- *Diversion Tank:* Tank used to handle hydraulic or waste loading surges in cases of emergency overflow.
- *Emulsion Breaking:* Addition of de-emulsifying agents such as heat, acid, metal coagulants, polymers, and clays to oily wastewaters to break down emulsions and produce a mixture of water and free oil and/or an oily floc.
- *Equalization:* Equalization through proper retention and mixing in a tank dampens variation in hydraulic and pollutant loadings, thereby reducing shock loads and increasing treatment facility performance.
- *Free and Fixed Ammonia Still:* Ammonia distillation is the transfer of gas (ammonia) dissolved in a liquid (coke plant excess flushing liquor) into a gas stream (steam). In the coke industry, flushing liquor is pumped to the top of a tray-type distillation tower while steam is injected into the base. As the rising steam passes through the boiling flushing liquor moving down the tray tower, ammonia is transferred from the liquid to the gas phase, eventually passing out the top of the tower. A ''free'' still operates with steam only, with no alkali addition, to remove ammonia and acid gases (hydrogen cyanide, hydrogen sulfide). A ''fixed'' still is similar to a ''free'' still except lime or sodium hydroxide is added to the liquor to convert the water soluble ammonium ion to ammonia which can be removed as a gas.
- *Granular Activated Carbon :* The use of granular activated carbon to remove dissolved organic compounds from wastewater. When the attractive forces at the carbon surface overcome the attractive forces of the liquid, organic pollutants adsorb to the carbon particle surface. Pollutants in the water phase will continue to bond to the activated carbon until all surface bonding sites are occupied. When all bonding sites are occupied, the carbon is considered to be ''spent'' and is either disposed or regenerated.

• *Heat Exchanger:* Device which allows indirect cooling through the use of noncontact cooling water to lower the temperature of wastewater prior to biological treatment.

• *Hexavalent Chromium Reduction:* The use of a reducing agent to convert hexavalent chromium to trivalent chromium.

• *High-Rate Recycle:* A system of pumps and piping which return treated and temperature adjusted process water back to a steel manufacturing process or air pollution control unit. For purposes of this proposed rule, high-rate recycle means recycle of the circulating flow at 95 percent or higher.

• *Metals Precipitation:* The removal of metal contaminants from aqueous solutions by converting soluble, metal ions to insoluble metal hydroxides. The precipitated solids are then removed from solution by coagulation/flocculation (see definition above) followed by clarification and/or filtration. Precipitation is caused by the addition of chemical reagents such as sodium hydroxide, lime or magnesium hydroxide to adjust the pH of the water to the minimum solubility of the metal.

• *Mixed-media Filtration:* Mixed-media filtration involves a fixed (gravity or pressure) or moving bed of porous media that traps and removes suspended solids from water passing through the media.

• *Oil/water Separation:* Oil/water separators are usually long rectangular tanks in which free oil floats to the surface, where it can be skimmed off. Often inclined parallel plates are added to serve as collecting surfaces for oil globules. Oil/water separation is typically preceded by emulsion breaking (see definition above).

• *pH Control:* The use of chemical addition and mixing to adjust the pH of wastewater to a desired pH level, usually in the range of 8.5 to 9.0 for effective metals precipitation.

• *Roughing Clarifiers:* High surface loading clarifiers designed to remove settleable solids from wastewater prior to filtration or other treatment.

• *Scale Pit:* An in-ground basin constructed of concrete for recovery of scale from process wastewaters used in hot forming and continuous casting operations.

• *Sludge Dewatering:* Gravity thickening is first accomplished in a tank equipped with a slowly rotating rake mechanism which breaks the bridge between sludge particles, thereby increasing settling and compaction. A sludge dewatering device such as a belt pressure filter, plate-and-frame pressure filter, or vacuum filter is then used to mechanically remove excess water from the sludge.

• *Tar/oil Removal:* Tar and oils are recovered from coke plant flushing liquor by gravity separation in a flushing liquor decanter and subsequent tar separation devices including storage tanks or filtration systems.

B. Methodology for Estimating Costs and Pollutant Reductions Achieved by Model Treatment Technologies

EPA estimated industry-wide compliance costs and pollutant reductions associated with today's proposed rule from data collected through survey responses, site visits, sampling episodes, data collected from state agencies, comments submitted during the stakeholder process, and computerized cost and pollutant loadings models developed for each of the technology options considered. EPA calculated facility specific compliance costs and pollutant reductions for facilities in the Cokemaking, Ironmaking, Steelmaking, and Integrated and Stand Alone Hot Forming Subcategories. For all other subcategories, EPA used statistically calculated survey weights to develop national estimates of these results.

EPA evaluated wastewater treatment technology performance for each survey respondent using effluent data provided in the Detailed and Short Form Surveys, effluent data collected from state agencies for sites that have made significant wastewater treatment modifications since 1997, and effluent data collected during Agency site visits and sampling episodes conducted from 1996 to 1999. EPA assumed that facilities whose current pollutant loadings exceeded the pollutant loadings associated with each technology option would incur costs as a result of compliance with that option. To determine the wastewater treatment upgrades or modifications necessary for each facility to achieve compliance, the Agency performed an analysis of wastewater treatment technology in place using data provided in the Detailed and Short Form Surveys and information collected during Agency site visits and sampling episodes conducted from 1996 through 1999. Based on this evaluation, EPA developed a computerized design and cost model to estimate the following capital costs and one-time consulting fees for each technology option under consideration.

• Major equipment: purchased equipment costs, including freight.

• Installation: mechanical equipment installation, piping installation, civil/structural (site preparation/grading, foundations, etc.), and electrical and process control.

• Indirect costs: costs for temporary facilities, spare parts, engineering procurement and contract management and other costs.

• Contingency: additional costs included in estimate to account for unforeseen items in vendor and/or contractor estimates.

• Consultant costs: single-occurrence costs associated with hiring an outside consultant to upgrade wastewater treatment system performance (*e.g.,* improve operating and maintenance to optimize biological treatment system performance).

EPA developed major equipment costs using data from the Cost Survey and vendor quotes. An engineering and design firm that has performed wastewater treatment installations for the iron and steel industry estimated indirect costs, installation, and contingency. Based on Cost Survey data and the estimates provided by the engineering and design firm, the Agency estimated installation costs separately for each technology option; indirect costs were assumed to be 28% of total direct costs; contingency costs were assumed to be 20% of total direct and indirect costs. EPA used engineering judgment to estimate consultant costs, based on its review of consultant costs.

The Agency also designed the cost model to estimate incremental operating and maintenance costs associated with the following cost items:

• Labor (operating and maintenance)

• Maintenance (materials and vendors)

• Chemical costs

• Energy costs

• Steam costs

• Sludge/residuals (hazardous/nonhazardous) disposal costs

• Oil disposal costs

• Sampling/monitoring costs

EPA developed incremental operating and maintenance costs using data provided in the Detailed and Short Form Surveys, Perry's Chemical Engineers Handbook—Sixth Edition, U.S. Department of Energy—Average Industrial Electrical Costs in 1998, the 1998 Bureau of Labor Statistics, and the 1997 Chemical Market Reporter.

EPA evaluated the hydraulic capacity of the process water treatment and recycle systems. Where the system was found to be capable of recirculating the incremental flow necessary to achieve the model BAT discharge flow, EPA assigned no investment cost for new equipment in the main treatment and recycle circuit. In most instances, the increase in recycle rate was only a few percent of the total recirculating flow

rate. For these cases, EPA assigned a one-time cost of $50,000 for consultant and mill services to conduct an evaluation of the treatment and recycle system and to modify water management practices and operations to achieve the model BAT discharge flow rate.

For those mills described above where one-time costs were assigned to achieve the model BAT discharge flow rate for the main process water treatment and recirculation circuit, incremental operation and maintenance costs were not assigned. The Agency assumed the increased costs associated with modifying the recycle rate (power costs) would be minimal and offset by likely savings in recirculating process water chemical treatment.

EPA requests that interested stakeholders comment on this costing approach and offer suggestions for improvements.

To determine the pollutant loading reduction associated with process and treatment upgrades, EPA estimated the baseline load and the post-compliance load expected from sites after treatment improvements and process changes associated with each technology option. The post-compliance reduction in pollutant mass is attributable to both improved treatment and process changes, most notably high-rate recycle for several subcategories. Improved treatment resulted in lower concentrations for some pollutants. EPA estimated that sites with high-rate recycle have a lower discharge flow and a subsequent lower pollutant mass discharged. EPA calculated the pollutant loading reduction as the difference between the estimated baseline load and the post-compliance load for each technology option. All pounds reported below are annual estimates.

EPA compared production normalized flows, as described in Section IV.F, with the facilities' actual process wastewater flow rates to determine what level of additional treatment facilities would have to add to achieve the level of pollution control described in the technology options (*e.g.,* through reducing flow rates). This was especially important when a component of the technology option was high rate recycle. In this way a facility's flow rate had a direct impact on both the expected cost to the facility and on the pollutant removal EPA estimated for the facility.

Information on EPA's compliance cost and pollutant loading estimates and methodologies, including the cost curves for all treatment technologies considered as the basis for today's proposed rule, is located in the public record. Some of the information EPA used to estimate compliance costs and pollutant loadings was claimed by survey recipients as CBI. This information is not in the public record. However, EPA provides in the public record a number of publicly available documents that set forth its methodology, assumptions and rationale for developing its cost estimates and that also present as much data as possible through the use of aggregations, summaries and other techniques to mask CBI. EPA encourages all interested parties to refer to the record and to provide comment on any aspect of the methodology or the data used to estimate compliance costs associated with today's proposal.

C. Technology Options, Regulatory Costs, and Pollutant Reductions

The Agency estimated the costs and pollutant loading reductions associated with iron and steel facilities to achieve compliance for each proposed technology option under consideration. This section summarizes the proposed technology options under consideration and the estimated costs and pollutant reductions associated with each option, by subcategory. For each option the capital cost, operating and maintenance costs, and other one-time costs are presented. See Section VI for a listing of total annualized costs by subcategory. All cost estimates in this section are expressed in terms of pre-tax 1997 dollars. Note that BPT technology options are discussed where applicable.

1. Cokemaking

a. *By-product cokemaking.* For the by-product cokemaking segment of this subcategory, EPA considered several different BAT, PSES, NSPS, and PSNS technologies.

EPA estimates that by-product cokemaking sites currently discharge approximately 2.3 million pounds of conventional pollutants (BOD, TSS, and O&G) directly. By-product cokemaking operations discharge approximately 2.7 million pounds of total priority and non-conventional pollutants directly and approximately 550,000 pounds indirectly.

Table V.C.1–1 presents the various options considered for by-product cokemaking, Table V.C.1–2 presents the associated costs, and Table V.C.1–3 presents the associated pollutant reduction estimates.

TABLE V.C.1.–1.—PROPOSED BY-PRODUCT COKEMAKING BAT/PSES TECHNOLOGY OPTIONS

Technology units	Treatment options							
	BAT–1	BAT–2	BAT–3	BAT–4	PSES–1	PSES–2	PSES–3	PSES–4
Tar/oil removal	X	X	X	X	X	X	X	X
Equalization/still feed tank	X	X	X	X	X	X	X	X
Free and fixed ammonia still	X	X	X	X	X	X	X	X
Heat exchanger	X	X	X	X	.....	.....	X	X
Cyanide precipitation	.....	X	.....	.....	.....	X	.....	.....
Equalization tank	X	X	X	X	.....	.....	X	X
Biological treatment with secondary clarification	X	X	X	X	.....	.....	X	X
Sludge dewatering	X	X	X	X	.....	X	X	X
Alkaline chlorination	.....	.....	X	X	.....	.....	.....	X
Mixed-media filtration	.....	.....	.....	X	.....	X	.....	.....
Granular activated carbon	.....	.....	.....	X	.....	.....	.....	.....

TABLE V.C.1–2.—COST OF IMPLEMENTATION FOR COKEMAKING

[In millions of pre-tax 1997 dollars]

	Treatment options							
	BAT–1	BAT–2	BAT–3	BAT–4	PSES–1	PSES–2	PSES–3	PSES–4
Number of mills	14	.....	.....	.....	8	.....	.....	.....
Capital costs	8.0	12.4	42.3	66.5	0	6.0	18.6	32.1
Annual O&M costs	0.1	3.0	7.2	14.9	0.3	1.8	3.3	5.8
One-time costs	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2

TABLE V.C.1–3.—ESTIMATED POLLUTANT LOADING REDUCTION FOR COKEMAKING

[In million pounds/year]

	Treatment options							
	BAT–1	BAT–2	BAT–3	BAT–4	PSES–1	PSES–2	PSES–3	PSES–4
Incidental Removal of Conventional Pollutants (BOD, TSS, and O&G)	0.21	0.21	0.21	0.68	.....	.....	.....	.....
Removal of Priority and Non-conventional Pollutants	0.39	0.39	0.43	0.43	0.18	0.18	0.54	0.54

i. BAT

The technology option identified as BAT–1 consists of the same technologies and processes comprising the current BAT for by-product cokemaking, but with significant improvements in design and operation. Each of the other BAT options builds on this foundation. Under the first BAT option, water usage can be reduced by 1.6 million gallons per year from current levels and the rate of removing non-conventional pollutants can increase by 14% over those levels. The second BAT option results in no further reduction in flow beyond BAT–1 levels, but does result in the additional removal of 24% of the total cyanide from direct discharging cokemaking wastestreams through the use of cyanide precipitation. The third BAT option also results in no further reduction in flow beyond BAT–1 levels, but does result in the additional removal of 29% of the total cyanide (as well as additional removal of other pollutants) from direct discharging cokemaking wastestreams beyond BAT–1 levels through the use of alkaline chlorination. The fourth BAT option, which was included in the analysis as a potential means to achieve significant pollutant reduction, results in no further reduction in flow beyond that to be achieved by any of the BAT options, and does not lead to significant additional pollutant removal beyond that to be achieved by BAT–3.

EPA performed a preliminary assessment of including non-recovery cokemaking as a technology option for this segment. While this technology would result in a zero discharge of process wastewater and would reduce air emissions, the Agency did not consider it as an option for this segment for the following reasons:

—Non-recovery cokemaking has not reliably demonstrated the ability to produce foundry coke. Therefore, it is not an available technology for the segment as a whole.

—Non-recovery cokemaking processes preclude the production of coal by-products. Therefore, it is not an available technology for facilities in this segment that produce these by-products.

—Choosing non-recovery cokemaking processes as BAT to the exclusion of by-product processes would have significant adverse secondary economic effects on coal by-products markets and consuming industries. For example, the domestic coal tar refining industry, which consists of 5 companies with 13 facilities in 10 states as of 1997, is dependent upon the coke by-product production of crude coal tar as a feedstock.

—The estimated capital cost of replacing current cokemaking capacity with non-recovery coke plants is at least $3 billion. The estimate does not include full scale heat recovery for power generation and flue gas scrubbing. The estimated additional capital cost for heat recovery co-generation is at least $2.5 billion.

—The estimated operating costs are uncertain. The recently constructed non-recovery coke plant with associated heat recovery was the final coke plant to qualify for a federal alternative energy tax credit, which expired in June 1998. The presence of this tax credit clouds comparisons of operating costs between traditional by-product cokemaking and non-recovery cokemaking. Further, it is uncertain whether heat recovery co-generation is a necessary component of non-recovery cokemaking in the comparison of relative operating costs of by-product and non-recovery cokemaking.

—The economic viability of non-recovery cokemaking is impacted by site-specific factors, including land availability and local energy markets. For example, the local cost of electricity is a key determinant of the economic viability of heat recovery co-generation. Economic viability also depends on the presence of a large industrial energy user that would purchase electrical power and/or steam from co-generation. In cases where steel production and coke production are co-located, this condition is met; however, a number of existing coke plants are not co-located with steel production.

ii. PSES

Table V.C.1–1 shows the technical bases for the PSES options EPA examined. Except as noted, the technology basis for PSES–1 consists of the same technologies and processes comprising the current PSES for cokemaking with significant improvements in design and operation. This technology option would control the pollutants EPA has determined pass through. See Section IX. Unlike the current PSES model technology, however, PSES–1 does not include a dephenolizer. EPA collected information through its sampling program and technical surveys that shows that a dephenolizer is unnecessary to control the pollutants that EPA has determined pass through.

The technology basis for PSES–2 consists of PSES–1 plus cyanide precipitation, sludge dewatering, and mixed-media filtration. The technology basis for PSES–3 is identical to BAT–1. The technology basis for PSES–4 is identical to BAT–3.

The technology options for BAT and PSES are different because they are designed to control different parameters, based on EPA's pass-through analysis (see Section IX.A.2). For a discussion of the different technologies, refer to Section V.A.3.

Under PSES–1, water use can be reduced by 30% over the current levels, and the rate of removal of ammonia can increase by 62% over current levels. Under PSES–2, water use can be decreased by an additional 3.5% over that expected under PSES–1, and removal of cyanide can increase by 45% over that expected under PSES–1. Under PSES–3, the removal of ammonia can increase by 95% over that expected under PSES–2. Under PSES–4, there are virtually no additional removals.

iii. NSPS/PSNS

The technology options EPA considered for new sources are identical to those it considered for existing dischargers because no other treatment technologies are demonstrated. The Agency, however, did perform a preliminary assessment of non-recovery cokemaking as a technology option for NSPS for the by-product cokemaking segment but did not consider it as an option for the reasons discussed in the BAT section (Section V.C.1.a.i). Therefore, all technology options presented as BAT or PSES options also describe NSPS and PSNS options.

b. *Non-recovery cokemaking.* For the non-recovery cokemaking segment of this subcategory, EPA considered only one BPT, BAT, PSES, NSPS and PSNS technology option, i.e., the technology in place at the two sites currently using the non-recovery method for cokemaking. For a discussion of this technology, see Section 4 of the technical development document. The non-recovery cokemaking process results in zero discharge because the non-recovery cokemaking process does not generate process wastewater.

2. Ironmaking

This proposed subcategory encompasses two segments: sintering and blast furnace operations. The subcategory is segmented to take into account differences in the model treatment system flow rates used to develop the proposed effluent limitations guidelines and standards. However, EPA considered the same technologies for both segments (with the exception of cooling towers, which are not used for sinter operations). EPA did so because, where co-located, the wastewaters from both these processes are generally co-treated. BAT and PSES technologies would apply to either separate or combined treatment of wastewater from sintering and blast furnace operations. Technology options, costs, and pollutant loading reduction estimates for these two segments are presented on a combined basis below because of co-treatability of the wastewaters.

EPA estimated that Ironmaking operations discharge approximately 2.4 million pounds of conventional pollutants (TSS and O&G) directly. Ironmaking operations directly discharge approximately 5 million pounds of total priority and non-conventional pollutants. The Agency does not present results for indirect dischargers, because there is only one indirect discharger in this proposed subcategory and data aggregation or other masking techniques are insufficient to avoid disclosure of information claimed as confidential business information.

Table V.C.2–1 presents the options considered, Table V.C.2–2 presents the associated costs, and Table V.C.2–3 presents the associated pollutant reduction estimates.

a. Blast Furnaces. Some blast furnace operations achieve zero discharge by evaporating wastewater on slag. EPA does not advocate the practice of slag quenching with blast furnace wastewater because runoff from the process can lead to documented ground water contamination; therefore, the various treatment options do not include slag quenching. The Agency considered sites performing slag quenching to be zero discharge sites in the cost and pollutant reduction estimates because that practice, however undesirable, would allow them to achieve compliance with today's proposed effluent limitations guidelines and standards for the blast furnace segment.

b. Sintering. The source of pollutants in sinter wastewater is from the sinter plant's air pollution control system. Of the eight sinter plants operating in 1997, three have achieved zero discharge by using baghouses in place of wet air pollution control. The other five sinter plants generate wastewater as a result of wet air pollution control and therefore have installed treatment systems for that wastewater. The various components of typical treatment systems are identified in Table V.C.2–1. EPA considered whether to explore baghouses as a technology option, in place of wet air pollution controls, in an effort to achieve zero discharge. EPA concluded that the use of baghouses would not be a viable option because of significant retrofit costs and the potential for adverse non-water quality environmental impacts, which are discussed in detail in the iron and steel technical development document.

i. BAT

The technology option identified as BAT–1 consists of the same technologies and processes comprising the current BAT for ironmaking, but with significant improvements in design and operation. EPA intended to evaluate a second BAT option, building on this foundation by including granular activated carbon to the blowdown treatment. However, EPA did not pursue the option because all significant POCs in the effluent after application of BAT–1 system are projected to exist at levels too low to be further treated by this or any other add-on technology.

TABLE V.C.2–1.—IRONMAKING TECHNOLOGY OPTIONS

Treatment units	Technology options	
	BAT–1	PSES–1
Solids removal	X	X
Sludge dewatering	X	X
Cooling tower[1]	X	X
High-rate recycle	X	X
Blowdown treatment		
Metals precipitation	X	X
Alkaline chlorination	X	

TABLE V.C.2–1.—IRONMAKING TECHNOLOGY OPTIONS—Continued

Treatment units	Technology options	
	BAT–1	PSES–1
Mixed-media filtration	X	

[1] Applies to blast furnace process wastewater only

TABLE V.C.2–2.—COST OF IMPLEMENTING FOR IRONMAKING

[In millions of pre-tax 1997 dollars]

	Technology options (BAT–1 and PSES–1)
Number of mills	15
Capital costs	25.8
Annual O&M costs	2.7
One-time costs	0.7

Data aggregated to protect confidential business information.

TABLE V.C.2–3.—ESTIMATED POLLUTANT LOADING REDUCTION FOR IRONMAKING

[In million pounds/year]

	Technology options (BAT–1 and PSES–1)
Incidental Removal of Conventional Pollutants (TSS and O&G)	2.3
Removal of Priority and Non-Conventional Pollutants	3.5

Data aggregated to protect confidential business information.

Under BAT–1, water usage can be reduced by 5% from current levels, and total loadings of toxic and non-conventional pollutants can be reduced by 68%.

ii. PSES

The technology option identified as PSES–1 consists of the same technologies and processes comprising the current PSES for ironmaking, but with significant improvements in design and operation. This technology option would control the pollutants EPA has determined pass through. See Section IX. Unlike the current PSES model technology or BAT–1, however, PSES–1 does not include alkaline chlorination or mixed-media filtration. Data from EPA's iron and steel sampling program and survey responses indicated that alkaline chlorination and mixed-media filtration are unnecessary to control the pollutants that EPA has determined pass through.

iii. NSPS/PSNS

The technology options EPA considered for new sources are identical to those it considered for existing dischargers because no other treatment technologies are demonstrated. Therefore, all technology options presented in Table V.C.2–1 as BAT or PSES options also describe NSPS and PSNS options.

3. Integrated Steelmaking

EPA is not proposing to further segment this subcategory. EPA considered BAT and PSES technologies for treatment of wastewater for this subcategory. EPA estimates that integrated steelmaking operations directly discharge approximately 2.5 million pounds of conventional pollutants (TSS and (O&G) and approximately 6.2 million pounds of total priority and non-conventional pollutants. The Agency does not present results for indirect dischargers, because there is only one indirect discharger in this proposed subcategory and data aggregation or other masking techniques are insufficient to avoid disclosure of information claimed as confidential business information.

Table V.C.3–1 presents the options considered for integrated steelmaking, Table V.C.3–2 presents the associated costs, and Table V.C.3–3 presents the associated pollutant reduction estimates.

TABLE V.C.3–1.—INTEGRATED STEELMAKING TECHNOLOGY OPTIONS

Treatment units	Technology options	
	BAT–1	PSES–1
Solids removal with classifier and clarifier	X	X
Sludge dewatering	X	X
Cooling tower[1]	X	X
High-rate recycle	X	X
Blowdown treatment		
Metals precipitation	X	X

[1] Cooling tower is part of the treatment system where necessary and was costed accordingly.

TABLE V.C.3–2.—COST OF IMPLEMENTATION FOR INTEGRATED STEELMAKING

[In millions of pre-tax 1997 dollars]

	Technology options (BAT–1 and PSES–1)
Number of mills	21
Capital costs	16.8
Annual O&M costs	2.9
One-time costs	2.1

Data aggregated to protect confidential business information.

TABLE V.C.2–3.—ESTIMATED POLLUTANT LOADING REDUCTION FOR STEELMAKING

[In million pounds/year]

	Technology options (BAT-land PSES–1)
Incidental Removal of Conventional Pollutants (TSS and O&G)	19
Removal of Priority and Non-Conventional Pollutants	4.1

Data aggregated to protect confidential business information.

a. *BAT.* The technology option identified as BAT–1 consists of the same technologies and processes comprising the current BAT for steelmaking, but with significant improvements in design and operation. EPA intended to evaluate a second BAT option, building on this foundation by including mixed-media filtration to the blowdown treatment. However, EPA did not pursue the option because all significant POCs in the effluent after application of BAT–1 system are projected to exist at levels too low to be further treated by this or any other add-on technology.

Under the BAT–1, water usage can be reduced by 83% over current levels, and total loadings of toxic and non-conventional pollutants can be reduced by 66%. b.

b. *PSES.* The technology option identified as PSES–1 consists of the same technologies and processes comprising the current PSES for steelmaking (which is also the same technical basis as BAT–1), but with improvements to design and

performance. This technology option would control the pollutants EPA determined pass through. See Section IX.

c. *NSPS/PSES.* The technology options EPA considered for new sources are identical to those it considered for existing dischargers because no other treatment technologies are demonstrated. Therefore, all technology options presented in Table V.C.3–1 as BAT or PSES options also describe NSPS and PSNS options.

4. Integrated and Stand Alone Hot Forming

EPA proposes dividing this subcategory into two segments: carbon and alloy steels, and stainless steels. See Section IV.E above. The treatment options for the two segments are identical. For this proposed subcategory, EPA considered BAT and PSES technologies for treatment of wastewater from hot forming operations located at integrated and stand-alone facilities.

Table V.C.4.–1 presents the options considered for integrated and stand-alone hot forming, Table V.C.4–2 presents the associated costs, and Table V.C.4–3 presents the associated pollutant reduction estimates.

TABLE V.C.4–1.—INTEGRATED AND STAND-ALONE HOT FORMING TECHNOLOGY OPTIONS

Treatment units	Technology options	
	BAT–1	PSES–1
Carbon and Alloy Steels		
Scale pit with oil skimming	X	X
Roughing clarifier with oil removal	X	X
Sludge dewatering	X	X
Mixed-media filtration [1]	X	X
High-rate recycle	X	X
Blowdown treatment		
Mixed-media filtration [1]	X	X
Stainless Steels		
Scale pit with oil skimming	X	X
Roughing clarifier with oil removal	X	X
Sludge dewatering	X	X
Mixed-media filtration [1]	X	X
High-rate recycle	X	X
Blowdown treatment		
Mixed-media filtration [1]	X	X

[1] Mixed-media filtration of recycled flow or low-volume blowdown flow.

TABLE V.C.4–2.—COST OF IMPLEMENTATION FOR INTEGRATED AND STAND-ALONE HOT FORMING

[In millions of pre-tax 1997 dollars]

	Technology options	
	BAT–1	PSES–1
Carbon and Alloy Steels		
Number of mills	44	7
Capital costs	115.3	0.3
Annual O&M costs	16.1	0.1
Stainless Steels		
Number of mills	0	3
Capital costs	0	1.1
Annual O&M costs	0	0.2
One-time costs	0	0.1

TABLE V.C.4–3.—ESTIMATED POLLUTANT LOADING REDUCTION FOR INTEGRATED AND STAND-ALONE HOT FORMING

[In million pounds/year]

	Technology options	
	BAT–1	PSES–1
Carbon and Alloy Steels		
Incidental Removal of Conventional Pollutants (TSS and 22— O&G)	22	-
Removal of Priority and Non-Conventional Pollutants	5.2	0.02

TABLE V.C.4–3.—ESTIMATED POLLUTANT LOADING REDUCTION FOR INTEGRATED AND STAND-ALONE HOT FORMING—Continued

[In million pounds/year]

	Technology options	
	BAT–1	PSES–1
Stainless Steels		
Incidental Removal of Conventional Pollutants (TSS and 01— O&G)	[1] 0	-
Removal of Priority and Non-Conventional Pollutants	[1] 01	0.001

[1] No direct discharging stainless facilities exist in this subcategory.

a. *Carbon and Alloy Steels*. EPA estimates that carbon and alloy steel hot forming operations sites directly discharge approximately 26 million pounds of conventional pollutants (TSS and O&G). These operations also discharge directly approximately 12 million pounds of total priority and non-conventional pollutants and approximately 0.038 million pounds indirectly.

i. BAT

Currently, effluent limitations guidelines exists only at the BPT level. The technical basis of BPT is comprised of a scale pit with oil skimming, a roughing clarifier, sludge dewatering, and filtration. EPA analyzed BAT–1 using the current BPT as a base, but adding on high rate recycle and mixed-media filtration of blowdown. This BAT option resembles the technical basis of the current NSPS, but with improved design and operation in terms of reduced flows and pollutant concentration. EPA estimates that implementation of limitations based on BAT–1 will result in a flow reduction of 84% over current conditions, and a reduction of 43% of toxic and non-conventional pollutants.

ii. PSES

The technology option for PSES is identical to that for BAT–1. The technical basis of PSES–1 is comprised of a scale pit with oil skimming, a roughing clarifier, sludge dewatering, filtration, and high rate recycle, with mixed-media filtration of blowdown. This technology option would control the pollutants EPA determined pass through. See Section IX. EPA estimates that this would result in a flow reduction of 74% over current conditions, and a 53% reduction in discharge of toxic and non-conventional pollutants.

iii. NSPS/PSNS

The technology options EPA considered for new sources are identical to those it considered for existing dischargers because no other treatment technologies are demonstrated. Therefore, all technology options presented in Table V.C.4–1 as BAT or PSES options also describe NSPS and PSNS options.

b. *Stainless Steels*. Stainless steel integrated and stand-alone hot forming operations discharge indirectly approximately 5,000 pounds of total priority and non-conventional pollutants. No stainless steel hot forming sites discharge wastewater directly.

i. BAT

As stated above, there are no direct discharging stainless facilities in this subcategory, and therefore there are no anticipated pollutant reductions or costs associated with proposing options for BAT. However, EPA is proposing BAT for this segment in the event that a new stainless facility commences operation or if an indirect discharger changes its status to direct before EPA promulgates this rule. Any such dischargers would be subject to BAT (not NSPS) because under 306(b) and EPA's implementing regulations a source is a ''new source'' subject to NSPS only if it commences construction after the promulgation of the final rule in April 2002.

As with the Carbon and Alloy segment, the technology basis of BAT–1 for the Stainless segment consists of a scale pit with oil skimming, a roughing clarifier, sludge dewatering, filtration, and high rate recycle, with mixed-media filtration of blowdown. This BAT option resembles the technology basis of the current NSPS for integrated steelmaking and stand-alone hot forming, but with improved design and operation in terms of reduced flows and pollutant concentration. In addition to BAT–1, EPA intended to analyze a second BAT option, BAT–1 plus metals precipitation of the blowdown, for this segment. However, EPA did not fully develop the costing information for this option because data indicated that adding on metals precipitation for this type of wastestream would not result in additional pollutant loadings removals in systems with well-operated BAT–1 technology in place.

ii. PSES

The PSES–1 option is the same as the BAT–1 option described above. This technology option would control the pollutants EPA determined pass through. See Section IX. EPA estimates that PSES–1 would result in a reduction of 90% of the flow from current levels, and a 66% removal of toxic and non-conventional pollutants.

iii. NSPS/PSNS

The technology options EPA considered for new sources are identical to those it considered for existing dischargers because no other treatment technologies are demonstrated. Therefore, all technology options presented in Table V.C.4–1 as BAT or PSES options also describe NSPS and PSNS options.

5. Non-Integrated Steelmaking and Hot Forming

For this proposed subcategory, EPA considered BAT and PSES technologies for two segments: Carbon and Alloy Steels, and Stainless Steels. The treatment options for the two segments are identical except for the addition of metals precipitation of blowdown for the proposed Stainless Steels segment as BAT–2. Table V.C.5–1 presents the various options considered for non-integrated steelmaking and hot forming, Table V.C.5–2 presents the associated costs, and Table V.C.5–3 presents the associated pollutant reduction estimates.

TABLE V.C.5–1 NON-INTEGRATED STEELMAKING TECHNOLOGY OPTIONS

Treatment unit	Technology options	
	BAT–1	PSES–1
Carbon & Alloy Steels		
Solids removal with clarifier	X	X
Cooling tower [1]	X	X
Mixed-media filtration [2]	X	X
Sludge dewatering	X	X
High-rate recycle	X	X
Blowdown treatment:		
Mixed-media filtration [2]	X	X

[1] Cooling tower is part of the treatment system where necessary and was costed accordingly
[2] Mixed-media filtration of recycled flow or low-volume blowdown flow of hot forming wastewater

Treatment unit	Technology options		
	BAT–1	BAT–2	PSES–1
Stainless Steels			
Solids removal with clarifier	X	X	X
Cooling tower [1]	X	X	X
Mixed-media filtration [2]	X	X	X
Sludge dewatering	X	X	X
High-rate recycle	X	X	X
Blowdown treatment:			
Metals precipitation		X	
Mixed-media filtration [2]	X	X	X

[1] Cooling tower is part of the treatment system where necessary and was costed accordingly
[2] Mixed-media filtration of recycled flow or low-volume blowdown flow of hot forming wastewater

TABLE V.C.5–2 COST OF IMPLEMENTATION FOR NON-INTEGRATED STEELMAKING AND HOT FORMING

[In millions of pre-tax 1997 dollars]

	Technology options	
	BAT–1	PSES–1
Carbon & Alloy Steels		
Number of mills	39	15
Capital costs	18.9	2.5
Annual O&M costs	2.0	0.4
One-time costs	3.9	0.8

	Technology options		
	BAT–1	BAT–2	PSES–1
Stainless Steels			
Number of mills	4	4	4
Capital costs	0.4	3.7	0
Annual O&M costs	0.1	0.6	0
One-time costs	0.2	0.2	0.4

TABLE V.C.5–3 ESTIMATED POLLUTANT LOADING REDUCTION FOR NON-INTEGRATED STEELMAKING AND HOT FORMING

[In million pounds/year]

	Technology options	
	BAT–1	PSES–1
Carbon & Alloy Steels		
Incidental Removal of Conventional Pollutants (TSS andO&G)	2.6	.....
Priority and Non-Conventional Pollutants	0.34	0.001

	Technology options		
	BAT–1	BAT–2	PSES–1
Stainless Steels			
Incidental Removal of Conventional Pollutants (TSS and O&G)	0.10	0.10	—
Priority and Non-Conventional Pollutants	0.018	0.018	0.012

a. *Carbon and Alloy Steels.* EPA estimated that carbon and alloy steel operations directly discharge approximately 0.18 million pounds of conventional pollutants (TSS and O&G). These operations also discharge approximately 53,000 pounds of total toxic and non-conventional pollutants directly and approximately 14,000 pounds indirectly.

i. BAT

The technology option identified as BAT–1 consists of the same technologies and processes comprising the current BAT for non-integrated steelmaking, but with significant improvements in design and operation resulting in lower flow and reduced discharge of pollutants of concern. EPA also investigated zero discharge as the basis for BAT because some facilities do achieve zero discharge. However, EPA believes it is not feasible for the segment as a whole or any identifiable subsegment to achieve zero discharge because of site-specific circumstances, most significantly the ability to manage effectively process area storm water. Accordingly, the investment cost to retrofit zero discharge at such sites is likely to be too high to be economically achievable for the segment as a whole.

EPA estimates that the BAT–1 technology would result in a reduction of 90% of flow and a 72% reduction in the discharge of toxic and non-conventional pollutants.

ii. PSES

The technology basis for PSES–1 is the same as described as BAT–1. The technological basis for PSES–1 is solids removal, a cooling tower, mixed-media filtration, sludge dewatering, high-rate recycle, and mixed-media filtration of blowdown. This technology option would control the pollutants EPA determined pass through. See Section IX. EPA concludes that all existing indirect discharging facilities in this segment have the equipment in place to achieve this level of performance, and would also not incur additional operating and maintenance costs. See Section V.B for discussion of why EPA concludes that facilities can achieve pollutant reduction without incurring capital or O&M costs. EPA has included in its estimate of costs a one-time fee for facilities to ascertain the changes in water management needed, and to implement them.

EPA estimates that the PSES–1 technology would result in a reduction of flow of 32%, and the reduction in the discharge of toxic and non-conventional pollutants by 33%.

iii. NSPS/PSNS

For NSPS/PSNS in the Carbon & Alloy segment of the Non-Integrated Steelmaking and Hot Forming subcategory, EPA identifies process water and water pollution control technologies that would result in zero discharge. The model NSPS/PSNS technologies consist of treatment and high-rate recycle systems, management of process area storm water, and disposal of low-volume blowdown streams by evaporation through controlled application on electric furnace slag, direct cooling of electrodes in electric furnaces, and other evaporative uses. Operators of 24 existing non-integrated steel mills (in the subcategory as a whole) have reported zero discharge of process wastewater. These facilities are located in various states and produce various products such as bars, beams, billets, flats, plate, rail, rebar, rod, sheet, slabs, small structurals, strip, and specialty sections. EPA has determined that new facilities can easily incorporate new process water treatment and water pollution control at the design stage, thus providing avoiding costs associated with retrofit situations. Consequently, the Agency has identified zero discharge as an appropriate NSPS/PSNS for non-integrated steelmaking and hot forming operations located in any area of the United States and producing any product.

b. *Stainless Steels.* Stainless steel operations discharge directly approximately 180,000 pounds of total conventional pollutants (TSS and O&G). Stainless steel operations discharge approximately 53,000 pounds of total priority and non-conventional pollutants directly and approximately 14,000 pounds indirectly.

i. BAT

With one exception, the technology option identified as BAT–1 consists of the same technologies and processes comprising the current BAT for integrated steelmaking but with significant improvements in design and operation. Unlike the current BAT, however, BAT–1 does not have metals precipitation. In addition to BAT–1, EPA analyzed a second BAT option, BAT–2, which consists of the BAT–1 technology but with metals precipitation. Although metals precipitation of blowdown is part of both the current BAT and BAT–2, EPA's data indicated no additional decrease in pollutant loadings as a result of metals precipitation. EPA also investigated zero discharge as the basis for BAT because some facilities do achieve zero discharge. However, EPA believes it is not feasible for the segment as a whole or any identifiable subsegment to achieve zero discharge because of site-

specific circumstances, most significantly the ability to manage effectively process area storm water. Accordingly, the investment cost to retrofit zero discharge at such sites is likely too high to be economically achievable for the segment as a whole.

EPA estimates that selection of the BAT–1 option as the technology basis would result in the reduction of flow by this segment of the non-integrated steelmaking and hot forming subcategory by 52%, and the reduction in the discharge of toxic and non-conventional pollutants by 34%.

ii. PSES

The current technological basis for PSES is solids removal, a cooling tower, mixed-media filtration, sludge dewatering, high-rate recycle, and metals precipitation of blowdown. The technical basis for PSES–1 is the same as described as BAT–1. This technology option would control the pollutants EPA determined pass through. See Section IX.

EPA estimates that the PSES–1 technology would result in a reduction of flow of 89%, and the reduction in the discharge of toxic and non-conventional pollutants by 86%.

iii. NSPS/PSNS

Like the Carbon and Alloy segment, EPA identifies technologies that result in zero discharge as NSPS/PSNS for the Stainless segment of the Non-Integrated Steelmaking and Hot Forming subcategory. See discussion under Section V.C.5.a.iii above. The Agency has identified zero discharge as an appropriate NSPS for non-integrated steelmaking and hot forming operations located in any area of the United States and producing any product.

6. Steel Finishing

For the proposed Steel Finishing subcategory, EPA considered BAT and PSES technologies for the Carbon and Alloy segment, and Stainless segment. The treatment options for the two segments are identical except for the addition of acid purification units for the proposed stainless steels segment. Table V.C.6–1 presents the options considered for steel finishing, Table V.C.6–2 presents the associated costs, and Table V.C.6–3 presents the associated pollutant reduction estimates.

TABLE V.C.6–1 STEEL FINISHING TECHNOLOGY OPTIONS

Treatment units	Technology options	
	BAT–1	PSES–1
Carbon and Alloy Steels		
In-Process Controls:		
Countercurrent rinses	X	X
Recycle of fume scrubber water	X	X
Wastewater Treatment:		
Diversion tank	X	X
Oil/water separation	X	X
Equalization	X	X
Hexavalent chromium reduction [1]	X	X
Multiple-stage pH control for metals precipitation	X	X
Clarification	X	X
Sludge dewatering	X	X

[1] For sites with hexavalent chromium-bearing wastewater.

Treatment units	Technology options	
	BAT–1	PSES–1
Stainless Steels		
In-Process Controls:		
Countercurrent rinsesX	X	
Recycle of fume scrubber water	X	X
Acid purification units [1]	X	X
Wastewater Treatment:		
Diversion tank	X	X
Oil/water separation	X	X
Equalization	X	X
Hexavalent chromium reduction [2]	X	X
Multiple-stage pH control for metals precipitation	X	X
Clarification	X	X
Sludge dewatering	X	X

[1] Applies to sites with sulfuric and nitric/hydrofluoric acid baths for stainless products.
[2] For sites with hexavalent chromium-bearing wastewater.

TABLE V.C.6–2 COST OF IMPLEMENTATION FOR STEEL FINISHING

[in millions of pre-tax 1997 dollars]

	Technology options	
	BAT–1	PSES–1
Carbon and Alloy Steels		
Number of mills	51	31
Capital costs	16.0	6.0
Annual O&M costs	2.5	1.2
One-time costs	1.6	0.8

	Technology options	
	BAT–1	PSES–1
Stainless Steels		
Number of mills	18	14
Capital costs	16.4	4.0
Annual O&M costs	(1.1)	0.2
One-time costs	0.8	0.4

( ) denotes cost savings due to acid purification.

TABLE V.C.6–3 ESTIMATED POLLUTANT LOADING REDUCTION FOR STEEL FINISHING

[in million pounds/year]

	Technology options	
	BAT–1	PSES–1
Carbon Steels		
Incidental Removal of Conventional Pollutants (TSS and O&G)	2.8	.....
Removal of Non-Conventionals	0.24	0.0017

	Technology options	
	BAT–1	PSES–1
Stainless Steels		
Incidental Removal of Conventional Pollutants (TSS and O&G)	0.72	.....
Removal of Non-Conventionals	14	0.031

a. *Carbon and Alloy Steels.* EPA estimated that carbon and alloy steel operations directly discharge approximately 4.6 million pounds of conventional pollutants (TSS and O&G). Carbon and alloy steel operations discharge approximately 1.7 million pounds of total priority and non-conventional pollutants directly and approximately 0.017 million pounds indirectly.

i. BAT

The technical basis of the current BAT limitations consists of recycle of fume scrubber water, a diversion tank, oil/water separation, equalization, hexavalent chrome reduction (where applicable), metals precipitation, clarification, and sludge dewatering. The technical basis for BAT–1 is the same as that for the existing BAT limitations, but with the addition of counter-current rinsing. BAT–1 also reflects significant improvements in design and operation that have occurred in the industry, which result in lower flow and reduced discharge of pollutants of concerns. EPA intended to evaluate a second BAT option, building on this foundation by including mixed-media filtration. However, EPA did not pursue the option because all significant POCs in the effluent after application of BAT–1 system are projected to exist at levels too low to be further treated by this or any other add-on technology. EPA considered zero discharge of regulated pollutants as a third BAT option, since certain facilities have demonstrated the ability to achieve zero discharge. These facilities generally have low production rates and are achieving zero discharge by off-site disposal of a small quantity of wastewater. EPA's data indicates that zero discharge would not be economically achievable for low production facilities as a whole, since availability of affordable off-site hauling and disposal may not be certain, and therefore proposes not to further subcategorize this segment. Zero discharge through off-site disposal would also be cost prohibitive for larger facilities.

EPA estimates that, under BAT–1, flow from the Carbon and Alloy segment of the Steel Finishing subcategory would decrease by 59%, and the amount of toxic and non-conventional pollutants discharged would decrease by 14%.

ii. PSES

The technology basis for the current PSES for steel finishing is the same as that for the current BAT. The PSES–1 technology is the same as the BAT–1 technology. This technology option would control the pollutants EPA determined pass through. See Section IX. EPA estimates that, under PSES–1, flow from this segment of the Steel Finishing subcategory would decrease by 30%, and the amount of toxic and non-conventional pollutants discharged would decrease by 10%.

iii. NSPS/PSNS

The technology options EPA considered for new sources are identical to those it considered for existing dischargers because no other treatment technologies are demonstrated (since availability of affordable off-site hauling and disposal may not be certain.) Therefore, all technology options presented in Table V.C.6–1 as BAT or PSES options also describe NSPS and PSNS options.

b. *Stainless Steels.* Stainless steel operations discharge directly approximately 1.2 million pounds of total conventional pollutants (TSS and O&G). Stainless steel operations discharge directly approximately 31 million pounds of total priority and non-conventional pollutants and approximately 0.31 million pounds indirectly.

i. BAT

Like the Carbon & Alloy segment of the Steel Finishing subcategory, the technology basis of the BAT limitations currently applicable to Stainless Steel mills consists of recycle of fume scrubber water, a diversion tank, oil/water separation, equalization, hexavalent chrome reduction (where applicable), metals precipitation, clarification, and sludge dewatering. The technical basis for BAT–1 of the Stainless segment is the same as that for the current BAT limitations, but with the addition of counter-current rinsing and acid purification units. BAT–1 also reflects significant improvements in design and operation that have occurred in the industry, which result in lower flow and reduced discharge of pollutants of concern. EPA intended to evaluate a second BAT option, building on this foundation by including mixed-media filtration. However, EPA did not pursue the option because all significant POCs in the effluent after application of BAT–1 system are projected to exist at levels too low to be further treated by this or any other add-on technology. EPA considered zero discharge of regulated pollutants as a third BAT option, since certain facilities have demonstrated the ability to achieve zero discharge. EPA's data indicates that zero discharge would not be economically achievable for low production facilities as a whole, since availability of affordable off-site hauling and disposal may not be certain, and therefore proposes not to further subcategorize this segment. Zero discharge through off-site disposal would be cost prohibitive for larger facilities.

EPA estimates that, under BAT–1, flow from this segment of the Steel Finishing subcategory would decrease by 47%, and the amount of toxic and non-conventional pollutants discharged would decrease by 45%. EPA did not perform a detailed pollutant removal or costing analysis for BAT–2 because data indicated that mixed-media filtration achieved no projected pollutant reduction beyond that seen at well-operated facilities with BAT–1.

ii. PSES

The technology basis for the current PSES for steel finishing is the same as that for the current BAT. The PSES–1 technology is the same as the BAT–1 technology. This technology option would control the pollutants EPA determined pass through. See Section IX. EPA estimates that, under PSES–1, flow from the stainless segment of the Steel Finishing subcategory would decrease by 23%, and the amount of toxic and non-conventional pollutants discharged would decrease by 10%.

iii. NSPS/PSNS

The technology options EPA considered for new sources are identical to those it considered for existing dischargers because no other treatment technologies are demonstrated. EPA's data indicates that zero discharge would not be economically achievable for low production facilities as a whole, since availability of affordable off-site hauling and disposal may not be certain. Zero discharge through off-site disposal would be cost prohibitive for larger facilities. Therefore, all technology options presented in Table V.C.6–1 as BAT or PSES options also describe NSPS and PSNS options.

7. Other Operations

The Agency considered BPT and PSES technologies for treatment of wastewater from three segments of this subcategory: Briquetting, Direct-reduced ironmaking (DRI), and Forging operations. There are no existing BPT limitations for these operations.

a. *Briquetting.* Briquetting facilities do not generate process wastewater; therefore, BPT, PSES, PSNS, and NSPS technology options for briquetting are those that result in zero discharge.

b. *DRI.* EPA identified one option for this segment, BPT/BCT–1, which consists of solids removal, clarifier, and high rate recycle with filtration for blowdown wastewater. EPA did not identify a separate BCT technology because nothing more advanced that the BPT technology was cost-reasonable as required by statute. The Agency did not identify BAT limits since the only POCs for the DRI segment are conventionals. Table V.C.7–1 presents the option considered for DRI, Table V.C.7–2 presents the associated costs, and Table V.C.7–3 presents the associated pollutant reduction estimates. The Agency does not present pollutant removal or costing results for DRI facilities, because there are only two mills in this segment and data aggregation or other masking techniques are insufficient to avoid disclosure of information claimed as confidential business information.

TABLE V.C.7–1 DIRECT-REDUCED IRONMAKING BPT/BCT TECHNOLOGY OPTIONS

Treatment units	Technology options
	BPT/BCT
Solids removal with classifier and clarifier	X
Cooling tower	X
Sludge dewatering	X
High-rate recycle	X
Blowdown treatment:	
Mixed-media filtration	X

TABLE V.C.7–2 COST OF IMPLEMENTATION FOR DIRECT-REDUCED IRONMAKING

	Technology option
	BPT
Number of mills	2
Capital costs	*
Annual O&M costs	*
One-time costs	*

*Data aggregation or other masking techniques are insufficient to protect confidential business information.

TABLE V.C.7–3 ESTIMATED POLLUTANT LOADING REDUCTION FOR DIRECT-REDUCED IRONMAKING

[In pounds/year]

	Technology options
	BPT
Total Conventionals (TSS and O&G as HEM)	*
Reduction of Priority and Non-Conventional Pollutants	*

*Data aggregation or other masking techniques are insufficient to protect confidential business information.

c. *Forging.* For forging operations, EPA estimated that sites discharge approximately 1,100 pounds of O&G directly. EPA identified one option for this segment, BPT/BCT, which is an oil/water separator. EPA did not identify a separate BCT technology because nothing more advanced that the BPT technology was cost-reasonable as required by statute. The Agency did not identify BAT limits since the only POCs for the forging segment are conventionals. Table V.C.7–4 presents the option considered for forging, Table V.C.7–5 presents the associated costs, and Table V.C.7–6 presents the associated pollutant reduction estimates.

i. BPT/BCT

EPA estimates that there will be a reduction of O&G of 40% from direct discharging forging operations as a result of implementation of this BPT/BCT option. See Section V.B for discussion of why EPA concludes that facilities can achieve pollutant reduction without incurring capital or O&M costs.

ii. PSES

EPA is not proposing PSES for the forging segment because EPA determined that pollutants present in forging wastewaters do not pass through.

iii. NSPS/PSNS

Since no other treatment technologies have been demonstrated, EPA identifies the same technology basis for NSPS as would be used for BPT. EPA is not identifying PSNS because EPA determined that pollutants present in forging wastewaters do not pass through.

TABLE V.C.7–4 FORGING TECHNOLOGY OPTIONS

Treatment units	Technology options
	BPT/BCT
High-rate recycle	X
Blowdown treatment:	
Oil/water separator	X

TABLE V.C.7–5 COST OF IMPLEMENTATION FOR FORGING

	Technology options
	BPT/BCT
Number of mills	8
Capital costs	0
Annual O&M costs	0
One-time costs	0.1

TABLE V.C.7–6 ESTIMATED POLLUTANT LOADING REDUCTION FOR FORGING

[in pounds/year]

	Technology options
	BPT/BCT
Total Conventionals (O&G as HEM)	440
Reduction of Priority and Non-Conventional Pollutants	0

VI. Economic Analysis

A. Introduction and Overview

This section describes the capital investment and annualized costs of compliance with the proposed effluent limitations guidelines and standards for the iron and steel industry and the potential impacts of these compliance costs on the industry. EPA's economic assessment is presented in detail in the report titled ''Economic Analysis of the Proposed Effluent Limitations Guidelines and Standards for Iron and Steel Manufacturing'' (hereafter ''EA'') and in the rulemaking record. The EA estimates the economic effect of compliance costs on subcategory operations at a site, the combined cost for all subcategory operations at a site for selected cost combinations, aggregate costs for all sites owned by each company, impacts on employment and output, domestic and international markets, and environmental justice issues. EPA also conducted a small business analysis, which estimates effects on small entities, and a cost-effectiveness analysis of all evaluated options.

B. Economic Description of the Iron and Steel Industry and Baseline Conditions

The United States is the third largest steel producer in the world with 12 percent of the market, an annual output of approximately 105 million tons per year, and nearly 145,000 employees. Major markets for steel are service centers and the automotive and construction industries. A service center is an operation that buys finished steel, processes it in some way, and then sells it. Together these three markets account for about 58 percent of steel shipments. The remaining 42 percent is dispersed over a wide range of products and activities, such as agricultural, industrial, and electrical machinery; cans and barrels; and appliances. The building of ships, aircraft, and railways and other forms of transport is included in this group as well.

The iron and steel rulemaking includes sites within the North American Industry Classification System (NAICS) codes 324199 (coke ovens, now part of ''All other petroleum and coal product manufacturing''), 331111 (iron and steel mills), 331210 (steel pipes and tubes), and 331221 (cold finishing of steel shapes). The iron and steel and metal products and machinery effluent guideline rulemakings both may have sites in the last two NAICS codes. Section III.C describes the dividing line between sites with iron and steel operations and sites with metal products and machinery operations.

The iron and steel effluent guideline would apply to approximately 254 iron and steel sites. Of these 254 sites, approximately 216 can be analyzed for post-regulatory compliance impacts at the site level. the remaining 38 sites, 13 did not report data at the site level, and 15 could not be analyzed due to being jointly owned sites or foreign owned sites or newly constructed sites, and 10 were in poor financial health prior to the regulation and are treated as closures under the prevailing baseline conditions. Approximately 60 sites are owned by small business entities.

The 254 sites are owned by 115 companies, as estimated by the EPA survey. The global nature of the industry is illustrated by the fact that 18 companies have foreign ownership. Twelve other companies are joint entities with at least one U.S. company partner. Excluding joint entities and foreign ownership, the data base contains 85 U.S. companies, more than half of which are privately owned. Responses to the EPA survey are the only sources of financial information for these privately-held firms.

The EPA survey collected financial data for the 1995–1997 time period (the most recent data available at the time of the survey). This three-year time frame marks a period of high exports (six to eight million tons per year). This high point in the business cycle allowed companies to replenish retained earnings, retire debt, and take other steps to reflect this prosperity in their financial statements. Even so, an initial analysis of the pre-regulatory condition of 115 companies in the EPA survey indicated that 27 of them would be considered ''financially distressed'' for reasons ranging from start-up companies and joint ventures to established firms that still showed losses.

The financial situation changed dramatically between 1997 and 1998 due to the Asian financial crisis and slow economic growth in Eastern Europe. The following analysis of economic conditions occurring after the 1995–1997 time frame is based upon sources such as trade journal reports, Securities and Exchange Commission (SEC) filings, and trade case filings with the U.S. Department of Commerce and the U.S. International Trade Commission (ITC).

When these countries' currencies fell in value, their steel products fell in price relative to U.S. producers. While the U.S. is and has been the world's largest steel importer (and a net importer for the last two decades), the U.S. was nearly the only viable steel market to which other countries could export during 1998. U.S. imports jumped by 13.3 million tons from 41 million to 54.3 million tons—a 32 percent increase—from 1997 to 1998. About one out of every four tons of steel consumed in 1998 was imported. At least partly due to increased competition from foreign steel mills, the financial health of the domestic iron and steel industry also experienced a steep decline after 1997. This decline is not reflected in the survey responses to the questionnaire, which covered the years 1995 through 1997 and which were the most recent data available at the time the questionnaire was administered in 1998. Based upon publically available sources, EPA learned that, after 1997, at least four companies went into Chapter 11 bankruptcy while at least four additional companies merged with healthier ones.

The flood of imports affected the industry disproportionately. Integrated steelmakers manufacture semi-finished and intermediate products, such as slabs and hot rolled sheet, as well as finished products, such as cold rolled sheet and plate. Integrated steelmakers were hurt most severely during 1998, as imports increased dramatically across most of their product line (for example, slabs, hot rolled sheet and strip, plate, and cold rolled sheet and strip). Mini-mills suffered as well, albeit to a lesser extent financially. The low-priced imports, however, benefitted some companies that purchase semi-finished and intermediate products for further processing.

The industry filed numerous countervailing duty and antidumping cases with the U.S. Department of Commerce and the U.S. ITC charging various countries (for example, Japan, Russia, Brazil) with unfair trade practices concerning carbon and stainless steel products. The ITC found for the U.S. industry in some cases (for example, hot rolled carbon sheet, carbon plate, stainless plate) meaning that it determined that the domestic industry was materially injured or threatened with material injury by the imports. In the case of Russia, the threat of trade remedies was sufficient to have Russia agree to voluntarily limit exports of a variety of steel products to the U.S.

The Clinton administration launched an initiative to address the economic concerns of the steel industry in 1999. The Steel Action Plan includes initiatives focused on eliminating unfair trade practices that support excess capacity, enhanced trade monitoring and assessment, and maintenance of strong trade laws. Further in a separate action on August 17, 1999, President Clinton signed into law an act providing authority for guarantees of loans to qualified steel companies. The Emergency Steel Loan Guarantee Act of 1999 (Pub. L. 106–51) established the Emergency Steel Guarantee Loan Program (13 CFR part 400) for guaranteeing loans made by private sector lending institutions to qualified steel companies. The Program will provide guarantees for up to $1 billion in loans to qualified steel companies. These loans will be made by private sector lenders, with the Federal Government providing a guarantee for up to 85 percent of the amount of the principal of the loan. A qualified steel company is defined in the Act to mean: any company that is incorporated under the laws of any state, is engaged in the production and manufacture of a product defined by the American Iron and Steel Institute as a basic steel mill product, and has experienced layoffs, production losses, or financial losses since January 1998 or that operates substantial assets of a company that meets these qualifications. Certain determinations must be made in order to guarantee a loan, including that credit is not otherwise available to a qualified steel company under reasonable terms or conditions sufficient to meet its financing needs, that the prospective earning power of the qualified company together with the character and value of the security pledged must furnish reasonable assurance of repayment of the loan to be guaranteed, and that the loan must bear interest at a reasonable rate. All loans guaranteed under this Program must be paid in full not later than December 31, 2005 and the aggregate amount of loans guaranteed with respect to a single qualified steel company may not exceed $250 million. According to a March 1, 2000 press release from U.S. Department of Commerce, thirteen companies have applied for loan guarantees totaling $ 901 million.

C. Economic Impact Methodology

1. Introduction

This section (and, in more detail, the EA and record for the proposed rule) evaluates several measures of economic impacts that result from the estimated compliance costs. The analysis in the EA consists of nine major components: (1) An assessment of the number of facilities that could be affected by this rule; (2) an estimate of the annualized aggregate cost for these facilities to comply with the rule using site-level capital, one-time non-capital, and annual operating and maintenance (O&M) costs; (3 and 4) two separate site-level closure analyses to evaluate the impacts of compliance costs for operations in individual subcategories at the site and for the combined cost of the options for all subcategories at the site; (5) an evaluation of the corporate financial distress incurred by the companies in the industry as a result of combined compliance costs for all sites owned by the company; (6) an industry-wide market analysis of the impacts of the compliance costs; (7) an evaluation of secondary impacts such as those on employment and economic output; (8) an analysis of the effects of compliance costs on small entities; and (9) a cost-benefit analysis pursuant to E.O. 12866.

All costs are reported in this section of the preamble in 1999 dollars, with the exception of cost-effectiveness results, which, by convention, are reported in 1981 dollars. The primary source of data for the economic analysis is the Collection of 1997 Iron and Steel Industry Data (Section 308 Survey). Other sources include government data from the Bureau of the Census, industry trade journals, and EPA's Development Document for this rulemaking.

2. Methodology Overview

The starting point for the economic analysis is the cost annualization model, which uses site-specific cost data and other inputs to determine the annualized capital, one-time non-capital, and O&M costs of improved wastewater treatment. This model uses these costs along with the company-specific real cost of capital (discount rate) and corporate tax rate over a 16-year analytic time frame to generate the annual cost of compliance for each option EPA considered. EPA based the 16-year time frame for analysis on the depreciable life for equipment of this type—15 years according to Internal Revenue Service (IRS) rules—plus a mid-year convention for putting the new equipment in operation (*i.e.,* six months between purchase, installation and operation). The model generates the present value and annualized post-tax cost for each option for each site in the survey, which are then used in the subcategory, site, and company analyses, discussed below. In the base case, the Agency adopts an assumption of zero ''cost pass-through'' of compliance costs. The Agency also estimates a ''cost pass-through'' factor from the market model discussed below and uses the result to examine the sensitivity of the impact analysis to the ''cost pass-through'' assumption.

In the subcategory analysis, EPA models the economic impacts of regulatory costs from individual subcategories on a site. The site analysis evaluates the combined costs on the profitability of the site. In both, the model compares the present value of forecasted cash flow over 16 years with the present value of the regulatory option over the same 16-year period. If the present value of the regulatory costs exceeds that of the projected cash flow, it does not make financial sense to upgrade the site. That is, if the present value of projected cash flow is positive before, but negative after, the incurrence of regulatory costs, the site is presumed to close. the analysis, cash flow at the site-level is defined as the sum of net income and depreciation. The measure is widely used within industry in evaluating capital investment decisions because both net income and depreciation (which is an accounting offset against income, but not an actual cash expenditure) are potentially available to finance future investment. However, assuming that total cash flow is available over an extended time horizon (for example, 15 years) to finance investments related to environmental compliance could overstate a site's ability to comply. EPA requests comment (see Section XIV for an amplified discussion) on its use of cash flow as a measure of resources available to finance environmental compliance and suggestions for alternative methodologies.

EPA developed three forecasting models for the iron and steel industry. None of these methods assume any growth in real terms and are calculated in terms of constant 1997 dollars. This conservative approach precludes any site from ''growing'' its way out of financial difficulties imposed by the regulation. Site-specific data are only available for 1995 to 1997. The period form 1998 to 2001 is the rulemaking period and the forecasting methods begin. Promulgation is scheduled for 2002; this is taken as the first year of implementation and the beginning of the 16-year period over which to consider the regulatory impact on projected earnings. The first two models explicitly address the sharp downturn in the industry after 1997 but differ in the strength and duration of recovery and subsequent downturns. That is, both address the cyclicality seen in the iron and steel industry, but with differing magnitudes and timing. The third forecasting method is a three-year average (1995 through 1997) to provide an ''upper bound'' analysis.

EPA calculates the post-regulatory status of a site as the present value of forecasted earnings minus the after-tax present value of regulatory costs. With three forecasting methods, there are three ways to evaluate each site. If a site's post-regulatory status is less than zero, EPA assigned a score of ''1'' for that forecasting method. A site, then, may have a score ranging from zero to three. Closure is the most severe and irrecoverable impact for the site. Such a decision is not made lightly. A business would examine a site's future in several ways and would likely make a determination to close a site only when the weight of evidence so indicated. EPA followed the same decision-making logic; a score of 2 or 3 is interpreted to identify the long-term non-viability of the site.

EPA could not perform an economic analysis of a number of sites at the subcategory and site levels, even though the annualized costs were calculated. these sites, the analysis defaults to the company level. A site may be in this category for several reasons: It is a cost center; it is a ''captive'' site that exists primarily to produce products transferred to other sites under the same ownership; components for the analysis are not recorded on the site's books, only those of the company; or the site's cash flow is negative for at least two years (sufficient to project a negative present value for earnings). Consistent with OMB guidance, EPA estimated postcompliance closures by counting projected closures due solely to the effect of the proposed rule. Direct impacts, such as loss in employment, revenues, production, and (possibly) exports are calculated from projected closures.

EPA evaluated many methods to estimate corporate financial distress reported in the economic literature of the last ten years and chose the ''Altman's Z''' model. This well-known and well-tested model was developed to analyze the financial health of both private and public manufacturing firms. It is based on empirical data and creates a weighted average of financial ratios, thus avoiding the difficulty in interpreting multiple ratios with differing implications for financial health. The single index, Z', is compared against the ranges developed by Altman to indicate ''good,'' ''indeterminate,'' and ''distressed'' financial conditions. EPA examines 1997 financial data (the most recent collected in the survey) to estimate the pre-regulatory company conditions. EPA then aggregates costs for all sites belonging to that company. EPA recalculates Altman's Z' after incorporating the effects of the pollution control compliance costs into the income statement and balance sheet for the company. All companies whose ''Altman's Z' '' score changes such that the company goes from a ''good'' or ''indeterminate'' baseline category to a ''distressed'' postcompliance category are classified as impacted. Such companies may have significant difficulties raising the capital needed to comply with the proposed rule, which can indicate the likelihood of bankruptcy, loss of financial independence, or shedding of assets.

EPA uses input-output analyses to determine the effects of the regulation using national-level employment and output multipliers. Input-output multipliers allow EPA to estimate the effect of a loss in output in the iron and steel industry on the U.S. economy as a whole. Every projected closure has direct impacts in lost employment and output. These direct losses also have repercussions throughout the rest of the economy and the input-output multipliers allow EPA to calculate the national losses in output and employment based on the direct impacts.

EPA also determines the impacts on regional-level employment. The increase in metropolitan statistical area (MSA) unemployment level, or county if

non-metropolitan, is calculated for each MSA or county in which there is at least one projected closure.

EPA investigated the industry-wide market effects of the regulation. EPA performed a 3-stage non-linear least-squares econometric estimation of a single-product translog cost model based on 20 years of U.S. Census and industry data. The market supply relationship is derived from the cost function and accounts for the effect of imperfect competition in the steel market. The model also incorporates international trade. The model estimates the supply shift, and the resulting changes in: domestic price, domestic consumption, export demand, and import supply. The model results may be used to estimate a ''cost pass-through'' factor indicating the portion of the increased cost that the iron and steel industry can pass through to the customers.

D. Economic Costs and Impacts of Technology Options by Subcategory

In this section, EPA presents the capital costs and post-tax total annualized costs for each technology option in each subcategory. As discussed above in Section VI.C.2, the cost annualization model derives total post-tax annualized costs from site-specific capital costs, one-time noncapital costs, and operating and maintenance costs, but only capital costs are reported here. a detailed presentation of all costing information, see Section V. As noted in Section VI.B, ten facilities are projected to close under baseline conditions and are not included further in the economic analysis. this reason, the costs and removals reported in Section VI. will differ from the results reported in the engineering analysis in Section V.

The Agency evaluates the first stage of the impact analysis by projecting the impacts associated with the regulatory costs for a single subcategory (or segment) at a site. example, a fully integrated facility may have cokemaking, ironmaking, integrated steelmaking, hot forming and finishing operations, but the postcompliance cash flow analysis only reflects the regulatory costs associated with a single subcategory. This stage of the analysis serves as a screening mechanism for potentially significant impacts for facilities which may be impacted by options in multiple subcategories. Alternatively, for any facility with operations in a single subcategory such as a stand-alone coke plant, this stage represents the complete facility level analysis.

1. Cokemaking

a. By-product Cokemaking.

i. *BAT.* The regulatory compliance costs associated with BAT options 1 and 2 for by-product cokemaking are not projected to result in any postcompliance facility closures. The regulatory compliance costs associated with BAT Options 3 and 4 are projected to result in one postcompliance closure, with a potential job loss of less than 500 full time equivalent employees (FTEs).

TABLE VI.D.1 BAT OPTIONS, COSTS, AND IMPACTS FOR BY-PRODUCT COKEMAKING

OPTION	Pre-tax capital cost (1999$ M)	Post-tax total annualized cost (1999$ M)	Impacts
			Closures/Job losses
1	$8.3	$1.0	0/0
2	12.9	4.1	0/0
3	35.8	7.2	1/<500
4	56.1	12.2	1/<500

ii. *PSES.* The regulatory compliance costs associated with PSES options 1, 2, 3, and 4 are not projected to result in any postcompliance closures.

TABLE VI.D.2 PSES OPTIONS, COSTS, AND IMPACTS FOR BY-PRODUCT COKEMAKING

OPTION	Pre-tax capital cost (1999$ M)	Post-tax total annualized cost (1999$ M)	Impacts
			Closures/Job losses
1	$0.0	$0.2	0/0
2	6.2	1.8	0/0
3	19.3	4.1	0/0
4	33.4	6.7	0/0

iii. *NSPS and PSNS.* The technology options EPA considered for new sources are identical to those it considered for existing dischargers. Engineering analysis indicates that the cost of installing pollution control systems during new construction is less than the cost of retrofitting existing facilities. Because EPA projects the costs for new sources to be less than those for existing sources and because limited or no impacts are projected for existing sources, EPA does not expect significant economic impacts for new sources.

b. *Non-recovery Cokemaking.* i. *BAT and PSES.* The technology option for both BAT and PSES is zero discharge. No compliance costs are associated with these options as all existing sources currently meet the zero discharge requirement. Since there are no compliance costs, there are no impacts resulting from the BAT and PSES option.

ii. *NSPS and PSNS.* The technology option EPA considered for new sources are identical to those it considered for existing dischargers. No compliance costs are associated with the zero discharge option, just as in the case of existing sources. Likewise, no impacts are projected to result from the new source requirements, just as in the case of existing sources.

2. Ironmaking

a. *BAT and PSES.* The regulatory compliance costs associated with the BAT option and the PSES option are not projected to result in any postcompliance closures. The Agency does not separately present costs for direct and indirect dischargers, because there are less than 3 indirect dischargers and data aggregation or other masking techniques are insufficient to avoid disclosure of information claimed as confidential business information.

TABLE VI.D.3 BAT AND PSES COSTS AND IMPACTS FOR IRONMAKING SUBCATEGORY

	Pre-tax Capital cost (1999 $ M)	Post-tax Total Annualized Cost (1999 $ M)	Impacts
			Closures/Job losses
BAT and PSES	$26.8	$4.5	0/0

b. *NSPS and PSNS.* The technology options EPA considered for new sources are identical to those it considered for existing dischargers. Engineering analysis indicates that the cost of installing pollution control systems during new construction is less than the cost of retrofitting existing facilities. Because EPA projects the costs for new sources to be less than those for existing sources and because limited or no impacts are projected for existing sources, EPA does not expect significant economic impacts for new sources.

3. Integrated Steelmaking

a. *BAT and PSES.* The regulatory compliance costs associated with the BAT option and the PSES option are not projected to result in any postcompliance closures. The Agency does not separately present costs for direct and indirect dischargers, because there are less than 3 indirect dischargers and data aggregation or other masking techniques are insufficient to avoid disclosure of information claimed as confidential business information.

TABLE VI.D.4 BAT AND PSES COSTS AND IMPACTS FOR INTEGRATED STEELMAKING

	Pre-tax capital cost (1999$ M)	Post-tax Total annualized cost (1999$ M)	Impacts
			Closures/ Job losses
BAT and PSES	$17.5	$3.6	0/0

b. *NSPS and PSNS.* The technology options EPA considered for new sources are identical to those it considered for existing dischargers. Engineering analysis indicates that the cost of installing pollution control systems during new construction is less than the cost of retrofitting existing facilities. Because EPA projects the costs for new sources to be less than those for existing sources and because limited or no impacts are projected for existing sources, EPA does not expect significant economic impacts for new sources.

4. Integrated and Stand-alone Hot ming

a. *Carbon and Alloy.* i. *BAT and PSES.* The regulatory compliance costs associated with the BAT option and the PSES option are not projected to result in any postcompliance closures.

TABLE VI.D.5 BAT AND PSES COSTS AND IMPACTS FOR INTEGRATED AND HOT MING, CARBON

	Pre-tax capital cost (1999$ M)	Post-tax Total annualized cost (1999$ M)	Impacts
			Closures/Job losses
BAT	$116.3	$21.2	0/0
PSES	0.3	0.1	0/0

ii. *NSPS and PSNS.* The technology options EPA considered for new sources are identical to those it considered for existing dischargers. Engineering analysis indicates that the cost of installing pollution control systems during new construction is less than the cost of retrofitting existing facilities. Because EPA projects the costs for new sources to be less than those for existing sources and because limited or no impacts are projected for existing sources, EPA does not expect significant economic impacts for new sources.

b. *Stainless.* i. *BAT and PSES.* The regulatory compliance costs associated with the BAT option and the PSES option are not projected to result in any postcompliance closures.

TABLE VI.D.6 BAT AND PSES COSTS AND IMPACTS FOR INTEGRATED AND HOT MING, STAINLESS

	Pre-tax Capital cost (1999$ M)	Post-tax total annualized cost (1999$ M)	Impacts
			Closures/Job losses
BAT:			
PSES	$0.8	$0.1	0/0

ii. *NSPS and PSNS.* The technology options EPA considered for new sources are identical to those it considered for existing dischargers. Engineering analysis indicates that the cost of installing pollution control systems during new construction is less than the cost of retrofitting existing facilities. Because EPA projects the costs for new sources to be less than those for existing sources and because limited or no impacts are projected for existing sources, EPA does not expect significant economic impacts for new sources.

5. Non-Integrated Steelmaking and Hot ming

a. Carbon and Alloy. i. *BAT and PSES.* The regulatory compliance costs associated with the BAT option and the PSES option are not projected to result in any postcompliance closures.

TABLE VI.D.7.—BAT AND PSES COSTS AND IMPACTS FOR NON-INTEGRATED STEELMAKING AND HOT MING, CARBON AND ALLOY

	Pre-tax capital cost (1999$ M)	Post-tax total annualized cost (1999$ M)	Impacts
			Closures/ Job losses
BAT	$19.0	$2.8	0/0
PSES	2.6	0.4	0/0

ii. *NSPS and PSNS.* The technology options EPA considered for new sources are identical to those it considered for existing dischargers, with the addition of a zero discharge option. A substantial number of recently constructed facilities have been able to achieve zero discharge. EPA believes the zero discharge new source option would not present a barrier to entry because as of 1997, a total of 24 nonintegrated facilities of all types have been able to achieve zero discharge.

b. *Stainless.* i. *BAT and PSES.* The regulatory compliance costs associated with either BAT option and the PSES option are not projected to result in any postcompliance closures.

TABLE VI.D.8.—BAT AND PSES COSTS AND IMPACTS FOR NON-INTEGRATED STEELMAKING AND HOT MING, STAINLESS

	Pre-tax capital cost (1999$ M)	Post-tax total annualized cost (1999$ M)	Impacts
			Closures/ Job losses
BAT 1	$0.4	$0.1	0/0
BAT 2	3.8	0.7	0/0
PSES	0.0	0.02	0/0

ii. *NSPS and PSES.* The technology options EPA considered for new sources are identical to those it considered for existing dischargers, with the addition of a zero discharge option. A substantial number of recently constructed facilities have been able to achieve zero discharge. EPA believes the zero discharge new source option would not present a barrier to entry because as of 1997, a total of 24 nonintegrated facilities of all types have been able to achieve zero discharge.

6. Steel Finishing

a. *Carbon and Alloy.* i. *BAT and PSES.* The regulatory compliance costs associated with the BAT option and the PSES option are not projected to result in any postcompliance closures.

TABLE VI.D.9.—BAT AND PSES COSTS AND IMPACTS FOR STEEL FINISHING, CARBON AND ALLOY

	Pre-tax capital cost (1999$ M)	Post-tax total annualized cost (1999$ M)	Impacts
			Closures/ Job losses
BAT	$14.8	$2.9	0/0
PSES	6.2	1.7	0/0

ii. *NSPS and PSNS.* The technology options EPA considered for new sources are identical to those it considered for existing dischargers. Engineering analysis indicates that the cost of installing pollution control systems during new construction is less than the cost of retrofitting existing facilities. Because EPA projects the costs for new sources to be less than those for existing sources and because limited or no impacts are projected for existing sources, EPA does not expect significant economic impacts for new sources.

b. *Stainless* i. *BAT and PSES.* The regulatory compliance costs associated with the BAT option and the PSES option are not projected to result in any postcompliance closures.

TABLE VI.D.10.—BAT AND PSES COSTS AND IMPACTS FOR STEEL FINISHING, STAINLESS

	Pre-tax capital cost (1999$ M)	Post-tax total annualized cost (1999$ M)	Impacts
			Closures/ Job losses
BAT	$15.8	$0.2	0/0
PSES	4.2	0.4	0/0

ii. *NSPS and PSNS.* The technology options EPA considered for new sources are identical to those it considered for existing dischargers. Engineering analysis indicates that the cost of installing pollution control systems during new construction is less than the cost of retrofitting existing facilities. Because EPA projects the costs for new sources to be less than those for existing sources and because limited or no impacts are projected for existing sources, EPA does not expect significant economic impacts for new sources.

7. *Other Operations.*

a. *Direct Reduced Iron.* i. *BPT.* The regulatory compliance costs associated with the BPT option are not projected to result in any postcompliance closures. The Agency does not present costs for direct dischargers, because there are only 2 direct dischargers in this segment and data aggregation or other masking techniques are insufficient to avoid disclosure of information claimed as confidential business information.

TABLE VI.D.11.—BPT COSTS AND IMPACTS DIRECTED REDUCED IRON

	Pre-tax capital cost (1999$ M)	Post-tax total annualized cost (1999$ M)	Impacts
			Closures/ Job losses
BPT			0/0

b. *ging.* i. *BPT.* The regulatory compliance costs associated with the BPT option are not projected to result in any postcompliance closures.

TABLE VI.D.12.—BPT COSTS AND IMPACTS GING

	Pre-tax capital cost (1999$ M)	Post-tax total annualized cost (1999$ M)	Impacts
			Closures/ Job losses
BPT	$0.0	$0.05	0/0

E. Facility Level Economic Impacts of Regulatory Options

In this section, the Agency evaluates the second stage of the impact analysis by projecting the impacts associated with the regulatory costs for all subcategories affected at a facility or site (the terms are used interchangeably). example, a fully integrated facility may have cokemaking, ironmaking, integrated steelmaking, hot forming and finishing operations, and the postcompliance cash flow analysis reflects the regulatory costs associated with all affected operations at the site. This stage of the analysis evaluates the aggregate regulatory costs and impacts upon each facility, which may be subject to the proposed rule and incur compliance costs in multiple subcategories.

The incorporation of the aggregate regulatory costs based upon the proposed options across all subcategories into the postcompliance cash flow analysis does not generate any additional projected facility closures (one facility closure was projected in the first stage of analysis—see Section VI.D.1). The Agency conducted the facility level analysis both with and without allowing for potential cost passthrough and the results are unchanged. The Agency determines the set of proposed options across all subcategories to be economically achievable.

F. Firm Level Impacts

In this section, the Agency evaluates the economic impacts of the regulatory options to the firms that own the facilities potentially subject to this proposed rule. EPA evaluates the third stage of the impact analysis by incorporating the regulatory costs borne by each facility into the financial status of the firm that owns the facility or multiple facilities. example, if a company owns an integrated facility, a stand-alone coke facility, and a stand-alone finishing facility, the aggregate regulatory costs for all three facilities are added to the baseline or precompliance financial conditions of the firm as reflected by the firm income statement and balance sheet. The Agency then calculates the postcompliance Altman Z-score and checks for changes in financial status from good or indeterminate to distressed with any such changes to be considered impacts.

In any combination of costs that includes the adoption of the BAT option for carbon and alloy steel segment of the integrated and stand-alone hot forming subcategory, the Agency projects the financial health of at least one multiple facility firm to deteriorate from indeterminate to financially distressed. A financially distressed company may have significant difficulties raising the capital needed to comply with the proposed rule, which can lead to the sale of assets, likelihood of bankruptcy, or the loss of financial independence. The one or more firms that are projected to be impacted have a current work force numbering in the several

thousands. In contrast, any combination of costs that does not include adoption of the BAT option for the carbon and alloy steel segment of the integrated and stand-alone hot forming subcategory, the Agency projects no firms to experience an impact.

The Agency projected only one postcompliance facility closure in the facility-level analysis for the entire proposed rule. This result indicates the viability of virtually all facilities as going concerns. The firm level analysis projects at least one firm may be financially distressed postcompliance. Given the continued viability of virtually all facilities including those in the carbon and alloy steel segment of the integrated and stand-alone hot forming subcategory, EPA expects that a financially distressed firm would respond to the financial distress by selling assets. The sale of assets (such as a facility) may include the continued operation by the purchasing firm, resulting in limited job losses or secondary impacts. The Agency determines the set of proposed options across all subcategories to be economically achievable.

G. Community Impacts

The Agency evaluates community impacts by examining the potential increase in county or metropolitan statistical area (MSA) unemployment. The Agency assumes all employees of the affected facilities reside in the county (if the county is not part of a larger metropolitan area) or metropolitan area in which the facilities are located. In the case of the single facility closure/firm associated with the by-product cokemaking BAT options 3 and 4, the impacts increase the county unemployment rate by 0.6 percent.

In the case of the BAT option for the carbon and alloy steel segment of the integrated and stand-alone hot forming subcategory, the Agency examines the effects if the one or more firms that become financially distressed lay off all of its workers, which corresponds to a worst case scenario. The one or more distressed firms have multiple facilities in various locations. The Agency assumes all employees of each affected facility reside in the county or metropolitan area in which the facility is located. The resulting impacts range from increasing the metropolitan unemployment rate by less than 0.1 percentage points to increasing the metropolitan unemployment rate by 2.1 percentage points, depending on the size of the affected community, the size of the affected facility and the prevailing unemployment rate. Although the Agency recognizes that an increase in community level unemployment of 2.1 percentage points would be significant, the Agency believes the actual community impacts associated with the one or more distressed firms would be much less than the worst case scenario presented here, given the results of the firm level analysis described above in Section VI.F and the opportunity for financially distressed firms to sell, rather than close, a viable facility.

H. eign Trade Impacts

The Agency evaluates the potential for foreign trade impacts by application of the market model. The aggregate regulatory compliance costs are incorporated to estimate the postcompliance impacts. If the proposed set of options is adopted, the analysis indicates 0.23 to 0.25 percent decrease in exports (decreases of $9.2 million to $9.9 million) and 0.11 to 0.12 percent increase in imports (increases of $7.5 million to $8.1 million).

I. Small Business Analysis

Based upon information provided in the Collection of 1997 Iron and Steel Industry Data (Section 308 Survey), the Agency was able to reasonably determine the appropriate SIC classification for each company. EPA applied the relevant SBA size standard for each SIC to determine whether each company was to be considered a small entity. SBA has recently finalized size standards for each NAICS industry; however, EPA determined that no companies change classification under the new NAICs standards. The SIC classifications observed were predominantly SICs 3312, 3316 and 3317, with a number of other industries also reported. The relevant size standards varied from 500 to 1500 employees, and included a few revenue based standards. EPA identified an estimated 34 small entities that may be affected by the rule among the estimated 115 total companies potentially affected by the rule. EPA has fully evaluated the economic achievability of the proposed rule to affected small entities. The economic achievability analysis was conducted using a discounted cash flow approach for the facility analysis and the Altman Z test for the firm analysis (for a full discussion, see Section VI.C.). EPA projects that one small entity (a firm owning a single facility) may incur an impact such as facility closure or firm failure. Further, for small entities, EPA examined the compliance cost to revenue ratio to identify any other potential impacts of the rule upon small entities. Using the most stringent set of co-proposed options, EPA has determined that the range is between 0 and 1.91 percent with only three entities experiencing an impact of greater than 1%.

J. Cost-Benefit Analysis

The Agency estimates the total monetized social costs of the proposed rule range between $56.5 million and $61.4 million and the total monetized social benefits range between $1.1 million and $2.7 million.

K. Cost-Effectiveness Analysis

This section provides the cost-effectiveness analysis of the BAT and PSES regulatory options by subcategory. The cost-effectiveness analysis compares the total annualized cost incurred for a regulatory option to the corresponding effectiveness of that option in reducing the discharge of pollutants.

Cost-effectiveness calculations are used during the development of effluent limitations guidelines and standards to compare the efficiency of one regulatory option in removing pollutants to another regulatory option. Cost-effectiveness is defined as the incremental annual cost of a pollution control option in an industry subcategory per incremental pollutant removal. The increments are considered relative to another option or to a benchmark, such as existing treatment. In cost-effectiveness analyses, pollutant removals are measured in toxicity normalized units called ''pound-equivalents.'' The cost-effectiveness value, therefore, represents the unit cost of removing an additional pound-equivalent (lb. eq.) of pollutants. In general, the lower the cost-effectiveness value, the more cost-efficient the regulation will be in removing pollutants, taking into account their toxicity. While not required by the Clean Water Act, cost-effectiveness analysis is a useful tool for evaluating regulatory options for the removal of toxic pollutants. Cost-effectiveness analysis does not take into account the removal of conventional pollutants (*e.g.,* oil and grease, biochemical oxygen demand, and total suspended solids).

the cost-effectiveness analysis, the estimated pound-equivalents of pollutants removed were calculated by multiplying the number of pounds of each pollutant removed by the toxic weighting factor for each pollutant. The more toxic the pollutant, the higher will be the pollutant's toxic weighting factor; accordingly, the use of pound-equivalents gives correspondingly more weight to pollutants with higher toxicity. Thus, for a given expenditure and pounds of pollutants removed, the cost per pound-equivalent removed

would be lower when more highly toxic pollutants are removed than if pollutants of lesser toxicity are removed. Annual costs for all cost-effectiveness analyzes are reported in 1981 dollars so that comparisons of cost-effectiveness may be made with regulations for other industries that were issued at different times.

1. Cokemaking

a. *By-product Cokemaking.* i. *BAT.* The first three BAT options for this segment display significant incremental pollutant reductions (as measured in lb-equivalents). BAT option 4 results in very limited additional pollutant removals beyond BAT option 3 with very substantial increases in capital and total annualized costs.

TABLE VI.K.1 BAT REMOVALS AND COST-EFFECTIVENESS FOR BY-PRODUCT COKEMAKING

OPTION	Pre-tax total annualized cost (1999$ M)	Removals (lb-eq)	Incremental cost effective-ness (1981$/lb-eq)	Average cost effectiveness (1981$/lb-eq);
1	$0.9	56,300	$10	$10
2	4.4	71,200	134	36
3	8.9	147,600	35	35
4	15.8	147,700	38,300	63

ii. *PSES.* All PSES options result in significant removals with PSES option 1 imposing very low incremental costs, PSES option 2 imposing moderate incremental costs, PSES option 3 providing very substantial removals with relatively modest incremental costs, and PSES option 4 providing limited additional removals with higher incremental costs.

TABLE VI.K.2 PSES REMOVALS AND COST-EFFECTIVENESS FOR BY-PRODUCT COKEMAKING

OPTION	Pre-tax total annualized cost (1999$ M)	Removals (lb-eq)	Incremental cost effective-ness (1981$/lb-eq)	Average cost effectiveness (1981$/lb-eq);
1	$0.3	3,400	$52	$52
2	2.3	5,600	527	240
3	5.2	48,500	39	62
4	8.8	51,400	729	100

b. *Non-recovery Cokemaking.* i. *BAT and PSES.* The Agency is evaluating a technology option for the Non-recovery Cokemaking Segment which is based on zero discharge for BAT and PSES and is estimated to have no associated regulatory compliance costs as all existing non-recovery cokemaking facilities achieve the zero discharge limitation. As a result, a cost-effectiveness analysis cannot be constructed for this segment.

2. Ironmaking

a. *BAT and PSES.* The evaluated BAT option yields substantial removals with relatively low compliance costs. The Agency does not separately present results for direct and indirect dischargers, because there are fewer than 3 indirect dischargers and data aggregation or other masking techniques are insufficient to avoid disclosure of information claimed as confidential business information.

TABLE VI.K.3 BAT AND PSES REMOVALS AND COST-EFFECTIVENESS FOR IRONMAKING

	Pre-tax total annualized cost (1999$ M)	Removals (lb-eq)	Incremental cost effective-ness (1981$/lb-eq)
BAT and PSES	$5.6	63,200	$52

3. Integrated Steelmaking

a. *BAT and PSES.* The evaluated BAT option yields substantial removals with relatively low compliance costs. The Agency does not separately present results for direct and indirect dischargers, because there are less than 3 indirect dischargers and data aggregation or other masking techniques are insufficient to avoid disclosure of information claimed as confidential business information.

TABLE VI.K.4—BAT AND PSES REMOVALS AND COST EFFECTIVENESS FOR INTEGRATED STEELMAKING SUBCATEGORY

	Pre-tax total annualized cost (1999$ M)	Removals (lb-eq)	Incremental cost effectiveness (1981 $/lb-eq)
BAT and PSES	$5.0	102,600	$29

4. Integrated and Stand-Alone Hot ming

a. *Carbon and Alloy.* i. BAT and PSES. The evaluated BAT option yields substantial removals with moderate compliance costs. The evaluated PSES option yields very limited removals with a relatively low costs.

TABLE VI.K.5—BAT AND PSES REMOVALS AND COST-EFFECTIVENESS, INTEGRATED AND STAND-ALONE HOT MING, CARBON AND ALLOY

	Pre-tax total annualized cost (1999$ M)	Removals (lb-eq)	Incremental cost effectiveness (1981$/lb-eq)
BAT	$28.6	87,200	$191
PSES	0.1	100	319

b. *Stainless.* i. *BAT and PSES.* There were no directly discharging facilities identified in the EPA survey. The evaluated PSES option yields extremely limited removals with a relatively low costs.

5. Nonintegrated Steelmaking and Hot ming

a. *Carbon and Alloy.* i. *BAT and PSES* The evaluated BAT option yields substantial removals with relatively low compliance costs. The evaluated PSES option yields very small removals with modest compliance costs.

TABLE VI.K.6—BAT AND PSES REMOVALS AND COST-EFFECTIVENESS, INTEGRATED AND STAND-ALONE HOT MING, STAINLESS

	Pre-tax total annualized cost (1999$ M)	Removals (lb-eq)	Incremental cost effectiveness (1981$/lb-eq)
BAT			
PSES	$0.2	10	$12,000

5. Nonintegrated Steelmaking and Hot ming

a. *Carbon and Alloy.* i. *BAT and PSES.* The evaluated BAT option yields substantial removals with relatively low compliance costs. The evaluated PSES option yields very small removals with modest compliance costs.

TABLE VI.K.7—BAT AND PSES REMOVALS AND COST-EFFECTIVENESS, NONINTEGRATED STEELMAKING AND HOT MING, CARBON AND ALLOY

	Pre-tax total annualized cost (1999$ M)	Removals (lb-eq)	Incremental cost effectiveness (1981 $/lb-eq)
BAT	$4.2	39,100	$62
PSES	0.6	40	9,200

b. *Stainless.*s i. *BAT and PSES.* The evaluated BAT 1 and PSES 1 options both yield substantial removals with relatively low compliance costs, while the BAT 2 options yields very limited removals with substantial costs.

TABLE VI.K.8—BAT AND PSES REMOVALS AND COST-EFFECTIVENESS NONINTEGRATED STEELMAKING AND HOT MING, STAINLESS

	Pre-tax total annualized cost (1999$ M)	Removals (lb-eq)	Cost effectiveness (1981 $/lb-eq) incremental
BAT 1	$0.1	1,873	$35
BAT 2	0.9	1,874	440,000
PSES 1	0.03	1,501	11

6. Steel Finishing

a. *Carbon and Alloy.* i. *BAT and PSES.*

The evaluated BAT option yields substantial removals with relatively low compliance costs. The evaluated PSES option yields very small removals with modest compliance costs.

TABLE VI.K.9—BAT AND PSES REMOVALS AND COST-EFFECTIVENESS, STEEL FINISHING, CARBON AND ALLOY

	Pre-tax total annualized cost (1999$ M)	Removals (lb-eq)	Incremental cost effectiveness (1981 $/lb-eq)
BAT	$3.5	16,600	$126
PSES	1.9	400	2,900

b. *Stainless.*

i. BAT and PSES

The evaluated BAT option yields substantial removals with very low compliance costs. The evaluated PSES option yields limited removals with modest compliance costs.

TABLE VI.K.10—BAT AND PSES REMOVALS AND COST-EFFECTIVENESS, STEEL FINISHING, STAINLESS

	Pre-tax total annualized cost (1999$ M)	Removals (lb-eq)	Incremental cost effectiveness (1981 $/lb-eq)
BAT	$0.2	69,700	$2
PSES	0.6	650	525

7. Other Operations

The Agency is evaluating technology options for Direct Reduced Ironmaking and ging segments for the control of only conventional parameters at BPT (see Section VI.L). The Agency is evaluating a technology option for the Briquetting Segment which is based on zero discharge and is estimated to have no associated regulatory compliance costs. As a result, a cost-effectiveness analysis cannot be constructed for these segments.

L. Cost-Reasonableness Analysis

As stated in Section VI.K, the Agency is evaluating technology options for the Direct Reduced Ironmaking and ging segments of the Other Operations Subcategory for the control of only conventional parameters at BPT. CWA Section 304(b)(1)(B) requires a cost-reasonableness assessment for BPT limitations. In determining BPT limitations, EPA must consider the total cost of treatment technologies in relation to the effluent reduction benefits achieved by such technology. This inquiry does not limit EPA's broad discretion to adopt BPT limitations that are achievable with available technology unless the required additional reductions are wholly out of proportion to the costs of achieving such marginal reduction.

The cost-reasonableness ratio is average cost per pound of pollutant removed by a BPT regulatory option. The cost component is measured as pre-tax total annualized costs (1999$). In this case, the pollutants removed are conventional pollutants although in some cases, removals may include priority and nonconventional pollutants. the Direct Reduced Ironmaking segment, the evaluated BPT option 1 removes approximately 800 pounds of conventional pollutants with a cost-reasonableness ratio of $6. the ging segment, the evaluated BPT option 1 removes approximately 500 pounds of conventional pollutants with a cost-reasonableness ratio of $15. EPA considers the cost-reasonableness ratio to be acceptable and the proposed option to be cost-reasonable in both segments.

VII. Water Quality Analysis and Environmental Benefits

EPA evaluated the environmental benefits of controlling the discharges of 60 priority and nonconventional pollutants from iron and steel facilities to surface waters and POTWs in national analyses of direct and indirect discharges. A total of 125 analytes were found in iron and steel effluents. Ambient water quality criteria (AWQC) or toxicity profiles are established for 60 of those analytes. Discharges of these pollutants into freshwater and estuarine ecosystems may alter aquatic habitats,

adversely affect aquatic biota, and adversely impact human health through the consumption of contaminated fish and drinking water.

Furthermore, these pollutants may also interfere with POTW operations in terms of inhibition of activated sludge or biological treatment and contamination of sewage sludges, thereby limiting the methods of disposal for sewage sludge and the POTW's costs (though, as noted below, there is no evidence of this for this sector). Most of these pollutants have at least one known toxic effect (human health carcinogen and/or systemic toxicant or aquatic toxicant). In addition, many of these pollutants bioaccumulate in aquatic organisms and persist in the environment.

The Agency did not evaluate the effects of conventional pollutants discharged from iron and steel mills on aquatic life and human health because of a lack of quantitative AWQC. EPA did not evaluate the effects of conventional pollutants on POTWs because POTWs are designed to treat these pollutants. However, the discharge of a conventional pollutant such as total suspended solids (TSS) or oil & grease can have adverse effects on aquatic life and the environment. example, habitat degradation can result from increased suspended particulate matter that reduces light penetration, and thus primary productivity, or from accumulation of suspended particles that alter benthic spawning grounds and feeding habitats.

Oil and grease produce toxic effects on aquatic organisms (*i.e.,* fish, crustacea, larvae and eggs, gastropods, bivalves, invertebrates, and flora). The marine larvae and benthic invertebrates, appear to be the most intolerant of petroleum products, particularly the water-soluble compounds, at concentrations ranging from 0.1 ppm to 25 ppm and 1 ppm to 6,100 ppm, respectively. However, since oil and grease is not a definitive chemical category, but instead includes many organic compounds with varying physical, chemical, and toxicological properties, it is difficult for EPA to establish a numerical criterion which would be applicable to all types of oil and grease. this reason, EPA does not model the effects of oil and grease on the environment.

Of a total of 254 iron and steel facilities, EPA evaluated 150 facilities, of which 103 are direct wastewater dischargers that discharge up to 60 pollutants to 77 receiving streams and 47 are indirect wastewater dischargers discharging up to 60 pollutants to 43 receiving streams. EPA did not evaluate 56 facilities with zero discharge or 48 facilities for which EPA had insufficient data to conduct the water quality analysis. To estimate some of the benefits from the improvements in water quality expected to result from this rule, instream concentration estimates are modeled and then compared to aquatic life and human health ambient water quality criteria (AWQC) guidance documents published by EPA or to toxic effect levels. States often consult these water quality criteria guidance documents when adopting water quality criteria as part of their water quality standards. However, because those State-adopted criteria may vary, for this analysis EPA used the nationwide criteria guidance as the representative values for the particular pollutants. EPA also modeled the effects of iron and steel discharges on POTWs. Results of the of the 150 facilities were extrapolated to the national level of 198 direct and indirect dischargers, using the statistical methodology for estimating costs, loads, and economic impacts.

Since at least 20% of the iron and steel facilities discharge in multiple waste subcategories, and many waterbody reaches receive discharges from more than one iron and steel facility, EPA chose to perform the environmental assessment analyses on a reach-by-reach basis. The reach-by-reach basis has the advantage over a subcategory-specific basis in that it more accurately predicts the overall effects of the rule on the environment.

In addition, EPA reviewed the CWA section 303(d) lists of impaired waterbodies developed by States in 1998 and noted that at least 17 waterbodies, identified with industrial point sources as a potential source of impairment, receive direct discharges from iron and steel facilities (and other sources). EPA also identified 12 waterbodies with fishing advisories for iron and steel pollutants of concern (mercury) that receive direct discharges from iron and steel facilities (and other sources).

EPA expects a variety of human health, environmental, and economic benefits to result from reductions in effluent loadings (see *Environmental Assessment of the Proposed Effluent Guidelines for the Iron and Steel Industry,* (Environmental Assessment)). In particular, the benefits assessment addresses the following benefit categories: (a) Human health benefits due to reductions in excess cancer cases; (b) human health benefits due to reductions in lead exposure; (c) human health benefits due to reductions in noncarcinogenic hazard (systemic); (d) ecological and recreational benefits due to improved water quality with respect to toxic pollutants; and (e) benefits to POTWs from reductions in interference, pass through, and biosolid contamination, and elimination of some of the efforts associated with establishing local pretreatment limits.

A. Reduced Human Health Cancer Risk

EPA expects that reduced loadings to surface waters associated with the proposed rule would reduce excess cancer cases by approximately 0.01 per year with estimated monetized benefits of $24,000 to $126,000 ($1997). These estimated benefits are attributable to reducing the cancer risks associated with consuming contaminated fish tissue. EPA developed these benefit estimates by applying an existing estimate of the value of a statistical life to the estimated number of excess cancer cases avoided. The estimated range of the value of a statistical life used in this analysis is $2.4 million to $12.6 million ($1997). EPA's SAB recently recommended that VSL's be adjusted downward using a discount factor to account for latency in cases (such as cancer) where there is a lag between exposure and mortality. This was not done in the current analysis because EPA requires more information to estimate latency periods associated with cancers caused by Iron and Steel pollutants. example, the risk assessments for several pollutants are based on data from animal bioassays; these data are not sufficiently reliable to estimate a latency period for humans. Extrapolating the results to the national level results in a 0.02 cancer case reduction and a monetized benefit of $48,000 to $252,000.

B. Reduced Lead Health Risk

the proposed rule, EPA expects that reduced loadings to surface waters from iron and steel discharges will reduce lead levels in those waters. Under the proposed treatment levels, the ingestion of lead-contaminated fish tissues by recreational and subsistence anglers would be reduced at 79 waterbodies. Because elevated blood lead levels can cause intellectual impairment in exposed children 0 to 6 years of age, benefits to the at-risk child populations are quantified by estimating the reduced potential IQ point loss. Benefits from reduced adult and neonatal mortality are also estimated. The benefits are quantified and monetized using methodologies developed in the Retrospective Analysis of the Clean Air Act (Final Report to Congress on Benefits and Costs of the Clean Air Act, 1970 to 1990; EPA 410–R–97–002). EPA

estimates that this proposed regulation would reduce cases of these adverse health effects; the total benefit for these reductions would be approximately $0.62 to $0.98 million ($1997). Extrapolating the results to the national level results in monetized benefits of $0.64 to $1.01 million ($1997) due to reduced ingestion of lead-contaminated fish tissues at 104 waterbodies.

C. Reduced Noncarcinogenic Human Health Hazard

Exposure to toxic substances poses risk of systemic and other effects to humans, including effects on the circulatory, respiratory or digestive systems and neurological and developmental effects. This proposed rule is expected to generate human health benefits by reducing exposure to these substances, thus reducing the hazards of these associated effects. EPA expects that reduced loadings to surface waters would reduce the number of persons potentially exposed to noncarcinogenic effects, due to consumption of contaminated fish tissue, by approximately 900 people for both the sample set and the national extrapolation of iron and steel facilities. Presently EPA does not have a methodology for monetizing these benefits.

D. Improved Ecological Conditions and Recreational Activity

EPA expects this proposed rule to generate environmental benefits by improving water quality. There is a wide range of benefits associated with the maintenance and improvement of water quality. These benefits include use values (*e.g.,* recreational fishing), ecological values (*e.g.,* preservation of habitat), and passive use (intrinsic) values. example, water pollution might affect the quality of the fish and wildlife habitat provided by water resources, thus affecting the species using these resources. This in turn might affect the quality and value of recreational experiences of users, such as anglers fishing in the affected streams. EPA considers the value of the recreational fishing benefits and intrinsic benefits resulting from this proposed rule, but does not evaluate the other types of ecological and environmental benefits (*e.g.,* increased assimilative capacity of the receiving stream, protection of terrestrial wildlife and birds that consume aquatic organisms, and improvements to other recreational activities, such as swimming, boating, water skiing, and wildlife observation) due to data limitations.

Modeled end-of-pipe pollutant loadings are estimated to decline by about 22 percent, from 227 million pounds per year under current conditions to 177 million pounds per year under this proposed rule (from 253 million pounds per year down to 198 million pounds per year on a national level). The analysis comparing modeled instream pollutant concentration to AWQC estimates that current discharge loadings result in excursions at 44 streams receiving the discharge from iron and steel facilities. The proposed rule would reduce excursions to 41 receiving streams. The number of receiving streams with excursions would be reduced from 55 to 51 streams at the national level.

EPA estimates that the annual monetized recreational benefits to anglers associated with the expected changes in water quality range from $188,000 to $671,000 ($1997). Monetized benefits extrapolated to the national level are $252,000 to $900,000 ($1997). EPA evaluates these recreational benefits by applying a model that considers the increase in value of a ''contaminant-free fishery'' to recreational anglers resulting from the elimination of all pollutant concentrations in excess of AWQC at 3 of the 44 receiving streams (4 of the 55 receiving streams on a national level). The monetized value of impaired recreational fishing opportunity is estimated by first calculating the baseline value of the receiving stream using a value per person day of recreational fishing, and the number of person-days fished on the receiving stream. The value of improving water quality in this fishery, based on the increase in value to anglers of achieving contaminant-free fishing, is then calculated.

In addition, EPA estimates that the annual monetized intrinsic benefits to the general public, as a result of the same improvements in water quality, range from at least $94,000 to $336,000 ($1997) for the sample set and from at least $126,000 to $450,000 ($1997) at the extrapolated national level. These intrinsic benefits are estimated as half of the recreational benefits and may be under or overestimated.

E. Effect on POTW Operations

EPA considers two potential sources of benefits to POTWs from this proposed regulation: (1) Reductions in the likelihood of interference, pass through, and biosolid contamination problems; and (2) reductions in costs potentially incurred by POTWs in analyzing toxic pollutants and determining whether to, and the appropriate level at which to, set local limits.

EPA has concluded from its analysis that under current conditions POTW operation and biosolid quality are not significantly affected by discharges from iron and steel mills. EPA is presently researching anecdotal evidence from POTW operators to support or refute this position.

F. Other Benefits Not Quantified

The above benefit analyses focus mainly on identified compounds with quantifiable toxic or carcinogenic effects. This potentially leads to an underestimation of benefits, since some pollutant characterizations are not considered. example, the analyses do not include the benefits associated with reducing the particulate load (measured as TSS), or the oxygen demand (measured as BOD5 and COD) of the effluents. TSS loads can degrade ecological habitat by reducing light penetration and primary productivity, and from accumulation of solid particles that alter benthic spawning grounds and feeding habitats. BOD5 and COD loads can deplete oxygen levels, which can produce mortality or other adverse effects in fish, as well as reduce biological diversity.

G. Summary of Benefits

EPA estimates that the annual monetized benefits, at the national level, resulting from this proposed rule range from $1.07 million to $2.61 million ($1997). Table VII.F.1 summarizes these benefits, by category. The range reflects the uncertainty in evaluating the effects of this proposed rule and in placing a dollar value on these effects. As indicated in Table VII.F.1, these monetized benefits ranges do not reflect some benefit categories, including improved ecological conditions from improvements in water quality due to reductions in conventional pollutants. Therefore, the reported benefit estimate may understate the total benefits of this proposed rule.

TABLE VII.F.1—POTENTIAL ECONOMIC BENEFITS (NATIONAL LEVEL)

Benefit category	Millions of 1997 dollars per year
Reduced Cancer Risk	0.05–0.25
Reduced Lead Health Risk.	0.64–1.01
Reduced Noncarcinogenic Hazard.	Unquantified
Improved Ecological Conditions.	Unquantified
Improved Recreational Value.	0.25–0.90
Improved Intrinsic Value.	0.13–0.45

TABLE VII.F.1—POTENTIAL ECONOMIC BENEFITS (NATIONAL LEVEL)—Continued

Benefit category	Millions of 1997 dollars per year
Reduced Biosolid Contamination at POTW.	
Improved POTW Operation (inhibition).	
Reduced Costs at POTWs.	
Total Monetized Benefits.	1.07–2.61

VIII. Non-Water Quality Environmental Impacts

Sections 304(b) and 306 of the Act require EPA to consider non-water quality environmental impacts associated with effluent limitations guidelines and standards. In accordance with these requirements, EPA has considered the potential impact of today's technical options on air emissions, solid waste generation, and energy consumption. While it is difficult to balance environmental impacts across all media and energy use, the Agency has determined that the impacts identified below are acceptable in light of the benefits associated with compliance with the proposed effluent limitations guidelines and standards.

A. Air Pollution

Various subcategories within the Iron and Steel Industry generate process waters that contain significant concentrations of organic and inorganic compounds, some of which are listed as Hazardous Air Pollutants (HAPs) in Title III of the Clean Air Act (CAA) Amendments of 1990. The Agency has developed National Emission Standards for Hazardous Air Pollutants (NESHAPs) under section 112 of the Clean Air Act (CAA) that address air emissions of HAPs for certain manufacturing operations. Subcategories within the Iron and Steel industry where NESHAPs are applicable include cokemaking (58 FR 57898, October 1993) and steel finishing with chromium electroplating and chromium anodizing (60 FR 4948, January 1995).

the cokemaking subcategory, maximum achievable control technology (MACT) standards are currently being developed by EPA for pushing, quenching, and battery stacks. Like effluent guidelines, MACT standards are technology based. The CAA sets maximum control requirements on which MACT can be based for new and existing sources. By-products recovery operations in the cokemaking subcategory remove the majority of HAPs through processes that collect tar, heavy and light oils, ammonium sulfate and elemental sulfur. Ammonia removal by steam stripping could generate a potential air quality issue if uncontrolled; however ammonia stripping operations at cokemaking facilities capture vapors and convert ammonia to either an inorganic salt or anhydrous ammonia, or destroy the ammonia.

Biological treatment of cokemaking wastewater can potentially emit hazardous air pollutants if significant concentrations of volatile organic compounds (VOCs) are present. To estimate the maximum air emissions from biological treatment, the individual concentrations of all VOCs in cokemaking wastewater entering the biological treatment system were multiplied by the maximum design flow and the operational period reported in the U.S. EPA Collection of 1997 Iron and Steel Industry Data to determine annual VOC loadings to the biological treatment unit. The concentrations of the individual VOCs entering the biological treatment system was determined from the sampling episode data. Assuming all the VOCs entering the biological treatment system are emitted to the atmosphere (no biological degradation), the maximum VOC emission rate would be approximately 1,800 pounds per year. See Technical Development Document, Section 13.

Treatment technology options proposed for integrated and non-integrated steelmaking operations focus on removal of suspended solids, dissolved metals and oils from process wastewaters. Under ambient conditions, the vapor pressure of these pollutants is such that insignificant volatilization occurs, even with extended atmospheric contact in open-top treatment units and induced draft cooling towers. EPA does not project any net increase in air emissions if facilities employ the proposed model technologies. As such, no adverse air impacts are expected to occur as a result of the proposed regulations.

B. Solid Waste

Solid waste, including hazardous and nonhazardous sludges and waste oil, will be generated from a number of the model treatment technologies used to develop the proposed effluent limitations guidelines and standards. Solid wastes include sludge from biological treatment systems, chemical precipitation and clarification systems, and gravity separation and dissolved air flotation systems. EPA accounted for the associated costs related to on-site recovery and off-site treatment and disposal of the solid wastes generated due to the implementation of the various technology options. These costs were included in the economic evaluation for the proposed regulation.

Biological nitrification proposed as the technology basis for ammonia removal from cokemaking wastewaters will produce a biological treatment sludge that facilities would need to dispose. EPA estimates that approximately 0.39 million pounds (dry wt.) per year of additional biological treatment sludge will be generated by the cokemaking subcategory as a result of lower effluent ammonia limits. The non-hazardous biological treatment sludges can be disposed in a Subtitle D landfill, recycled to the coke ovens for incineration, or land applied.

Additional solids captured by roughing clarifiers and sand filters proposed for recycle water systems within the integrated and non-integrated steelmaking facilities (blast furnace, sinter plant, BOF, vacuum degasser, continuous caster, hot forming mill) will account for an additional 1.8 percent of the solids currently being collected in scale pits and classifiers. Data provided in the industry surveys indicates the total annual sludge and scale production from all of these facilities, including stand-alone hot formers, was approximately 500,000 tons/year (dry weight). Solids removal equipment proposed for this rule is expected to remove an additional 9,000 tons per year of dry wastewater treatment sludge.

Sludges generated at steel finishing operations may be classified as hazardous under the Resource Conservation and Recovery Act (RCRA) as either a listed or characteristic waste based on the following information:

- If the site performs electroplating operations, sludge from treatment of electroplating wastewater on site is listed as hazardous waste F006 (40 CFR 260.31).
- If the site mixes electroplating wastewaters or sludges with other wastewaters or sludges generated on site, the resulting mixture would be a hazardous waste under the RCRA ''mixture rule.'' (40 CFR 261.3(a)(2)(iv)).
- If the sludge from wastewater treatment exceeds the standards for the Toxicity Characteristic Leaching Procedure (*i.e.* is hazardous), or exhibits other RCRA-defined hazardous characteristics (*i.e.,* reactive, corrosive, or flammable) it is considered a characteristic hazardous waste (40 CFR 261.24).

Additional federal, state, and local regulations may result in steel finishing

sludges being classified as a hazardous waste.

Based on information collected during site visits and sampling episodes to Iron and Steel operations, the Agency believes that some of the solid waste generated by steel finishing operations would not be classified as hazardous. However, for the purpose of compliance cost estimation, the Agency assumed that all solid waste generated as a result of the technology options would be hazardous. Date provided in the industry surveys indicates the total annual sludge production from all steel finishing operations throughout the industry was approximately 21,000 tons/year (dry weight). Additional sludge generation from finishing operations resulting from this proposed rule is approximately 900 tons/year (dry weight).

C. Energy Requirements

EPA estimates that compliance with this proposed regulation would result in a net increase in energy consumption at Iron and Steel facilities. The maximum estimated increased energy use by subcategory are presented in Table VIII–1. The costs associated with these energy requirements are included in EPA's estimated operating costs for compliance with the proposed rule. The projected increase in energy consumption is primarily due to the incorporation of components such as pumps, mixers, blowers, and fans. the integrated and stand-alone hot forming mills, the added energy requirements are related to recycle systems. Electrical equipment in the recycle system includes sand filters, cooling towers, and recycle pumps to return the treated and cooled water to the process.

TABLE VIII–1.—ADDITIONAL ENERGY REQUIREMENTS BY SUBCATEGORY

Subcategory	Energy required (million kilowatt hours/year)
Cokemaking Operations	21.7
Ironmaking Operations	10.6
Integrated Steelmaking Operations	7.8
Integrated and Stand-Alone Hot ming Operations	170
Non-Integrated Steelmaking and Hot ming Operations	8.4
Steel Finishing Operations	2.0
Other Operations	0.04
Total	220.54

Approximately 3,100,000 million kilowatt hours of electric power were generated in the United States in 1997 (Energy Information Administration, Electric Power Annual 1998 Volume 1, Table A1). Total additional energy needs for all Iron and Steel facilities to comply with this proposed rule correspond to approximately 0.007% of the national energy demand. The increase in energy demand due to the implementation of this proposed rule will in turn cause an air emission impact from the electric power generation facilities. The increase in air emissions is expected to be proportional to the increase in energy requirements.

IX. Options Selected for Proposal

A. Introduction

1. Methodology for Proposed Selection of Regulated Pollutants

EPA selects pollutants for regulation based on the following factors: Applicable Clean Water Act provisions regarding the pollutants subject to each statutory level; the pollutants of concern identified for each subcategory; and co-treatment of compatible wastewaters from different manufacturing operations.

The current regulation requires facilities to maintain the pH between 6.0 and 9.0 at all times. EPA intends to retain this limitation and proposes to codify identical pH limitations for previously unregulated subcategories. EPA also proposes to codify a specific reference to the general exception codified at 40 CFR 401.17, which authorizes excursions from the pH range codified in the applicable effluent limitations guidelines under certain enumerated circumstances. The pH shall be monitored at the point of discharge from the wastewater treatment facility to which effluent limitations derived from this part apply.

EPA selected a subset of pollutants for which to establish numerical effluent limitations from the list of Pollutants of Concern (POC) for each regulated subcategory. Section IV.F discusses EPA's methodology for selecting Pollutants of Concern (POC) and identifies on a subcategory basis the POCs relevant to this proposal. Generally, a chemical is considered as a POC if it was detected in untreated process wastewater at 10 times the minimum level (ML) in more than 10% of the samples.

Monitoring for all pollutants of concern is not necessary to ensure that Iron and Steel wastewater pollution is adequately controlled, since many of the pollutants originate from similar sources, have similar treatabilities, are removed by similar mechanisms, and treated to similar levels. Therefore, it may be sufficient to monitor for one pollutant as a surrogate or indicator of several others.

Regulated pollutants are pollutants for which the EPA would establish numerical effluent limitations and standards. EPA selected a POC for regulation in a subcategory if it meets all the following criteria:

- With the exception of TRC, chemical is not used as a treatment chemical in the selected treatment technology option.
- Chemical is not considered a non-conventional bulk parameter.
- Chemical is not considered as a volatile compound, *e.g.,* generally with Henry's Constant greater than or equal to $1x10^{-4}$.
- Chemical is effectively treated by the selected treatment technology option.
- Chemical is detected in the untreated wastewater at treatable levels in a significant number of samples, *e.g.,* generally 10 times the minimum level at more than 10% of the raw wastewater samples.
- Chemicals whose control through treatment processes would lead to control of a wide range of pollutants with similar properties; these chemicals are generally good indicators of overall wastewater treatment performance.

Based on the methodology described above, EPA proposes to regulate pollutants in each subcategory that will ensure adequate control of a range of pollutants.

a. *Clean Water Act.* The CWA provides for the limitation of conventional, non-conventional and toxic pollutants at the following regulatory levels:

BPT: conventional, non-conventional, toxic
BAT: non-conventional, toxic
NSPS: conventional, non-conventional, toxic
PSES: pass through/interfere or otherwise incompatible with POTW
PSNS: pass through/interfere or otherwise incompatible with POTW
BCT: conventional

b. *Pollutants of Concern.* Depending on the manufacturing processes, the wastewater characteristics vary from operation to operation. The pollutants to be regulated are proposed on a subcategory basis.

c. *Co-Treatment of Compatible Wastewaters.* Wastewaters from certain manufacturing operations are compatible for treatment in a single treatment system. EPA's proposed selection of regulated parameters is designed to foster co-treatment of compatible wastewaters and to discourage co-treatment of wastewaters

which the Agency believes to be incompatible.

Untreated by-product cokemaking process wastewaters contain relatively high concentrations of ammonia, cyanide, phenolic compounds, and several toxic organic compounds including benzene, toluene, xylene and polynuclear aromatic compounds. The chemical composition of those wastewaters is unique within the iron and steel industry, as are the physical/chemical and biological processes typically used to treat them. Consequently, EPA regards cokemaking wastewaters to be incompatible with wastewaters from other subcategories. Therefore, the model technologies EPA proposes and the corresponding limitations are designed to discourage co-treatment with wastewaters from operations in other subcategories.

Process wastewaters from the sintering and blast furnace operations segments of the proposed ironmaking subcategory contain many of the same pollutants (ammonia, cyanide, phenolic compounds, toxic metals and high loadings of suspended solids from wet air pollution control and gas cleaning operations). They are universally co-treated where sinter plants with wet air pollution controls are co-located with blast furnaces. Accordingly, the proposed regulation is structured to facilitate co-treatment and permitting of those wastewaters independent of wastewaters from other subcategories. Likewise, the regulation is structured to allow for co-treatment and cascading of wastewaters from the integrated steelmaking operations (basic oxygen furnaces, vacuum degassing, continuous casting). These wastewaters contain typically the same toxic metals.

Like the current regulation, the proposed regulation is based on the assumption that recycle system blowdowns from hot forming operations are compatible with wastewaters from steelmaking and steel finishing operations. When recycled to a high degree, the remaining volume of hot forming wastewaters can be effectively co-treated for TSS, O&G, lead and zinc with steelmaking and steel finishing wastewaters. Today's proposed regulation would limit the same toxic metals, such as lead and zinc, for carbon and alloy steel hot forming operations, carbon and alloy steelmaking, and steel finishing operations. This approach is intended to facilitate co-treatment and NPDES permitting across subcategories where feasible. EPA has taken the same approach with chromium and nickel for stainless steel hot forming, non-integrated steelmaking, and steel finishing operations. Notwithstanding EPA's consideration of this factor, EPA does not propose to exclude any pollutants from regulation on the theory that they are not amenable to co-treatment.

2. Pollutants Selected for Pretreatment Standards

Unlike direct dischargers whose wastewater will receive no further treatment once it leaves the facility, indirect dischargers send their wastewater to POTWs for further treatment. EPA establishes pretreatment standards for those BAT pollutants that pass through POTWs. Therefore, for indirect dischargers, before proposing pretreatment standards, EPA examines whether the pollutants discharged by the industry ''pass through'' POTWs to waters of the U.S. or interfere with POTW operations or sludge disposal practices. Generally, to determine if pollutants pass through POTWs, EPA compares the percentage of the pollutant removed by well-operated POTWs achieving secondary treatment with the percentage of the pollutant removed by facilities meeting BAT effluent limitations. A pollutant is determined to ''pass through'' POTWs when the median percentage removed by well-operated POTWs is less than the median percentage removed by direct dischargers complying with BAT effluent limitations. In this manner, EPA can ensure that the combined treatment at indirect discharging facilities and POTWs is at least equivalent to that obtained through treatment by direct dischargers.

This approach to the definition of pass-through satisfies two competing objectives set by Congress: (1) That standards for indirect dischargers be equivalent to standards for direct dischargers, and (2) that the treatment capability and performance of POTWs be recognized and taken into account in regulating the discharge of pollutants from indirect dischargers. Rather than compare the mass or concentration of pollutants discharged by POTWs with the mass or concentration of pollutants discharged by BAT facilities, EPA compares the percentage of the pollutants removed by BAT facilities to the POTW removals. EPA takes this approach because a comparison of the mass or concentration of pollutants in POTW effluents with pollutants in BAT facility effluents would not take into account the mass of pollutants discharged to the POTW from other industrial and non-industrial sources, nor the dilution of the pollutants in the POTW to lower concentrations from the addition of large amounts of other industrial and non-industrial water.

The primary source of the POTW percent removal data is the ''Fate of Priority Pollutants in Publicly Owned Treatment Works'' (EPA 440/1–82/303, September 1982), commonly referred to as the ''50-POTW Study.'' This study presents data on the performance of 50 well-operated POTWs that employ secondary biological treatment in removing pollutants. Each sample was analyzed for three conventional, 16 non-conventional, and 126 priority toxic pollutants.

At the time of the 50-POTW sampling program, which spanned approximately 2½ years (July 1978 to November 1980), EPA collected samples at selected POTWs across the U.S. The samples were subsequently analyzed by either EPA or EPA-contract laboratories using test procedures (analytical methods) specified by the Agency or in use at the laboratories. Laboratories typically reported the analytical method used along with the test results. However, for those cases in which the laboratory specified no analytical method, EPA was able to identify the method based on the nature of the results and knowledge of the methods available at the time.

Each laboratory reported results for the pollutants for which it tested. If the laboratory found a pollutant to be present, the laboratory reported a result. If the laboratory found the pollutant not to be present, the laboratory reported either that the pollutant was ''not detected'' or a value with a ''less than'' sign (<) indicating that the pollutant was below that value. The value reported along with the ''less than'' sign was the lowest level to which the laboratory believed it could reliably measure. EPA subsequently established these lower levels as the minimum levels of quantitation (MLs). In some instances, different laboratories reported different MLs for the same pollutant using the same analytical method.

Because of the variety of reporting protocols among the 50-POTW Study laboratories (pages 27 to 30, 50-POTW Study), EPA reviewed the percent removal calculations used in the pass-through analysis for previous industry studies, including those performed when developing effluent guidelines for Organic Chemicals, Plastics, and Synthetic Fibers (OCPSF) Manufacturing, Centralized Waste Treatment (CWT), and Commercial Hazardous Waste Combustors. EPA found that, for at least 12 parameters, different analytical minimum levels were reported for different rulemaking studies (10 of the 21 metals, cyanide, and one of the 41 organics).

To provide consistency for data analysis and establishment of removal efficiencies, EPA reviewed the 50-POTW Study, standardized the reported MLs for use in the final rules for CWT and Transportation Equipment Cleaning Industries and for this proposed rule and the Metal Products and Machinery proposed rule. A more detailed discussion of the methodology used and the results of the ML evaluation are contained in the record for today's proposal.

In using the 50-POTW Study data to estimate percent removals, EPA has established data editing criteria for determining pollutant percent removals. Some of the editing criteria are based on differences between POTW and industry BAT treatment system influent concentrations. many toxic pollutants, POTW influent concentrations were much lower than those of BAT treatment systems. many pollutants, particularly organic pollutants, the effluent concentrations from both POTW and BAT treatment systems were below the level that could be found or measured. As noted in the 50-POTW Study, analytical laboratories reported pollutant concentrations below the analytical threshold level, qualitatively, as ''not detected'' or ''trace,'' and reported a measured value above this level. Subsequent rulemaking studies such as the 1987 OCPSF study used the analytical method nominal ''minimum level'' (ML) established in 40 CFR Part 136 for laboratory data reported below the analytical threshold level. Use of the nominal minimum level (ML) may overestimate the effluent concentration and underestimate the percent removal. Because the data collected for evaluating POTW percent removals included both effluent and influent levels that were close to the analytical detection levels, EPA devised hierarchal data editing criteria to exclude data with low influent concentration levels, thereby minimizing the possibility that low POTW removals might simply reflect low influent concentrations instead of being a true measure of treatment effectiveness.

EPA has generally used hierarchic data editing criteria for the pollutants in the 50-POTW Study. today's proposal, EPA used the following editing criteria:

(1) Substitute the standardized pollutant-specific analytical minimum level for values reported as ''not detected,'' ''trace,'' ''less than [followed by a number],'' or a number less than the standardized analytical minimum level,

(2) Retain pollutant influent and corresponding effluent values if the average pollutant influent level is greater than or equal to 10 times the pollutant minimum level (10xML), and

(3) If none of the average pollutant influent concentrations are at least 10 times the minimum level, then retain average influent values greater than or equal to two times the minimum level (2xML) along with the corresponding average effluent values. (In most cases, 2xML will be equal to or less than 20 μg/l.)

EPA then calculates each POTW percent removal for each pollutant based on its average influent and its average effluent values. The national POTW percent removal used for each pollutant in the pass-through test is the median value of all the POTW pollutant specific percent removals.

The rationale for retaining POTW data using the ''10xML'' editing criterion is based on the BAT organic pollutant treatment performance editing criteria initially developed for the 1987 OCPSF regulation (52 FR 42522, 42545–48; November 5, 1987). BAT treatment system designs in the OCPSF industry typically achieved at least 90 percent removal of toxic pollutants. Since most of the OCPSF effluent data from BAT biological treatment systems had values of ''not detected,'' the average influent concentration for a compound had to be at least 10 times the analytical minimum level for the difference to be meaningful (demonstration of at least 90 percent removal) and qualify effluent concentrations for calculation of effluent limits.

Additionally, due to the large number of pollutants of concern for the Iron and Steel industry, EPA also used data from the National Risk Management Research Laboratory (NRMRL) Treatability Database (formerly called the Risk Reduction Engineering Laboratory (RREL) database) to augment the POTW database for the pollutants which the 50-POTW Study did not cover. This database provides information, by pollutant, on removals obtained by various treatment technologies. The database provides the user with the specific data source and the industry from which the wastewater was generated. each pollutant of concern EPA considered for this proposed rule that was not found in the 50-POTW database, EPA used data from the NRMRL database, using only treatment technologies representative of typical POTW secondary treatment operations (activated sludge, activated sludge with filtration, aerated lagoons). EPA further edited these files to include information pertaining only to domestic or industrial wastewater. EPA used pilot-scale and full-scale data only, and eliminated bench-scale data and data from less reliable references. These and other aspects of the methodology used for this proposal are described in Chapter 11 of the Technical Development Document.

The results of the POTW pass-through analysis for indirect dischargers are discussed in Sections IX.B-H for each subcategory.

3. Issues Related to the Methodology Used to Determine POTW Performance

today's proposal, EPA used its traditional methodology to determine POTW performance (percent removal) for toxic and non-conventional pollutants. POTW performance is a component of the pass-through methodology used to identify the pollutants to be regulated for PSES and PSNS. It is also a component of the analysis to determine net pollutant reductions (for both total pounds and toxic pound-equivalents) for various indirect discharge technology options. However, as discussed in more detail below, EPA is considering revisions to its traditional methodology for determining POTW performance and solicits comments on a variety of methodological changes.

a. *Assessment of Acceptable POTWs.* EPA developed the principle pass-through analysis for today's iron and steel proposal by using data from all 50 POTWs that were part of the 50 POTW Study data base. Some of these POTWs were not operated to meet the secondary treatment requirements at 40 CFR part 133 for all portions of their wastestream. Most POTWs today have secondary treatment or better in place. EPA estimates that as of 1996, POTWs with at least secondary treatment in place service greater than 90 percent of the indirect discharging population. If the POTW removal calculations do not reflect the upgrades and system improvements that have occurred since the time of the 50 POTW Study, they would tend to under-estimate POTW removals. This would result in overestimating the pollutant reductions that are achieved through the regulation of indirect dischargers, thereby making the regulation appear more cost-effective for indirect dischargers than it is.

One partial solution to this methodological issue would be to evaluate individual treatment trains in the 50 POTW Study data base, and include only those treatment trains that achieved compliance with 40 CFR part 133 in the analysis of POTW pollutant removal rates. There were 29 treatment trains that achieved BOD_5 and TSS effluent concentrations between 15 mg/

l and 45 mg/l during the sampling and could potentially be considered reflective of secondary treatment (based on 40 CFR 133.102 limitations of 30 mg/l monthly average and 45 mg/l weekly max for secondary treatment), and an additional 2 treatment trains were either trickling filters or waste stabilization ponds that achieved BOD_5 and TSS effluent concentrations between 40 mg/l and 65 mg/l and could potentially be considered equivalent to secondary treatment pursuant to 40 CFR 133.101(g) (based on 40 CFR 133.105 limitations of 45 mg/l monthly average and 65 mg/l weekly maximum). In addition, 15 treatment trains achieved BOD_5 and TSS effluent concentrations below 15 mg/l each, and could potentially be considered greater than secondary treatment.

Using data from these 46 treatment trains only would omit the worst performers in the 50 POTW Study that are probably not reflective of current performance. It might not fully correct, however, for additional upgrades and optimization that may have occurred over the past two decades.

b. *Assessment of Acceptable Data.* EPA developed the pass-through analysis that is the basis for today's proposal using POTW data editing criteria that are generally consistent with those used for the industry data. Specifically, EPA included only data from POTWs for which influent concentrations were 10 times the analytical minimum (quantitation) level (10xML) if available. If none of the average pollutant influent concentrations are at least 10 times the ML, then EPA retained only data from POTWs for which influent concentrations were 2 times the analytical minimum level. Because it is difficult to achieve the same pollutant reduction (in terms of percent) in a dilute wastestream as in a more concentrated wastestream, EPA believes that a 10 X ML editing criteria may overestimate the percent removals that are calculated for both industry and POTWs in the pass-through analysis.

As a general rule, more POTW data than industry data is eliminated through this editing criteria for the specific pollutants that are being examined. This is not surprising since the pass-through analysis would not even be performed on pollutants generally found at less than 10 times the method minimum level in industry since EPA would, in many cases, not require pretreatment for such low levels of a pollutant. As a result of this imbalance (pollutant influent levels at POTWs being less than pollutant influent levels to industrial pretreatment), EPA believes that it is possible that this editing criteria may bias the pass-through results by over-estimating POTW removals where influent concentrations are generally lower. This would result in underestimating the pollutant reductions that are achieved through the regulation of indirect dischargers thereby making the rule appear less cost-effective than it is. On the other hand, there may be little difference in percent removals across the range of influent concentrations generally experienced by POTWs.

One potential solution to this methodological question would be to include data (for both indirect dischargers and POTWs) even if the influent concentration is not 10 times the analytical minimum level. This solution needs to be considered in context, however, with data handling criteria for effluent measurements of ''non-detect'' discussed below.

c. *Assessment of removals when effluent is below the analytical method minimum level.* EPA developed the pass-through analysis that is the basis for today's proposal using the analytical method minimum level as the effluent value when the pollutant was not detected in the effluent. This is the approach that is generally used when developing pollutant reduction estimates for the regulation, performing cost-effectiveness calculations, and developing effluent limitations. EPA believes that this methodology may underestimate the performance of the selected technology option for both directs and indirects. Once again, this would result in underestimating the removals estimated for *direct* dischargers, and thereby making the rule appear less cost-effective than it is. indirect dischargers, EPA believes that the overall effect of using the minimum level for non-detect values for both industry and POTW data creates a bias for underestimating POTW removals in comparison to industry removals. This may result in an overestimation of pollutant removals by indirect dischargers, and may make the rule appear more cost-effective than it is. (Note that this problem is minimized by only using data with influent levels exceeding 10 X ML, because a non-detect assures that at least 90 percent of the pollutant has been removed. It is arguably less important that the true removal may be greater than 90 percent, rather than exactly 90 percent. Using a less stringent editing criteria of 2 X ML as discussed above would exacerbate this problem. If the influent were only 2 X ML, then removals greater than 50 percent could never be measured.)

One potential alternative would be to assume a value of one half of the minimum level for effluent values of non-detect. This approach would have to be applied uniformly for the indirect dischargers as well as the POTWs in order for the percent removal calculations to be reasonable.

a more detailed discussion of alternative approaches to the POTW pass-through analysis, see the Technical Development Document, Section X. EPA solicits comment on the significance of each of these methodological issues and the potential alternatives.

4. Determination of Long Term Averages, Variability Factors, and Effluent Limitations Guidelines and Standards

This subsection describes the statistical methodology used to develop long-term averages, variability factors, and limitations for BPT, BCT, BAT, NSPS, PSES, and PSNS. The same basic procedures apply to the calculation of all effluent limitations guidelines and standards for this industry, regardless of whether the technology is BPT, BCT, BAT, NSPS, PSES, or PSNS. simplicity, the following discussion refers only to effluent limitations guidelines; however, the discussion also applies to new source and pretreatment standards.

The proposed limitations for pollutants for each option, as presented in today's notice, are provided as ''daily maximums'' and ''maximums for monthly averages.'' Definitions provided in 40 CFR 122.2 state that the daily maximum limitation is the ''highest allowable 'daily discharge '''' and the maximum for monthly average limitation is the ''highest allowable average of 'daily discharges' over a calendar month, calculated as the sum of all 'daily discharges' measured during a calendar month divided by the number of 'daily discharges' measured during that month.'' Daily discharges are defined to be the '' 'discharge of a pollutant' measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling.''

EPA calculates the limitations based upon percentiles chosen with the intention, on one hand, to accommodate reasonably anticipated variability within the control of the facility and, on the other hand, to reflect a level of performance consistent with the Clean Water Act requirement that these effluent limitations be based on the ''best'' technologies. The daily maximum limitation is an estimate of the 99th percentile of the distribution of the daily measurements. The maximum for monthly average limitation is an

estimate of the 95th percentile of the distribution of the monthly averages of the daily measurements. The percentiles for both types of limitations are estimated using the products of long-term averages and variability factors.

In the first of two steps in estimating both types of limitations, EPA determines an average performance level (the ''long-term average'') that a facility with well-designed and operated model technologies (which reflect the appropriate level of control) is capable of achieving. This long-term average is calculated from the data from the facilities using the model technologies for the option. EPA expects that all facilities subject to the limitations will design and operate their treatment systems to achieve the long-term average performance level on a consistent basis because facilities with well-designed and operated model technologies have demonstrated that this can be done. In the second step of developing a limitation, EPA determines an allowance for the variation in pollutant concentrations when processed through well designed and operated treatment systems. This allowance for variance incorporates all components of variability including process and wastewater generation, sample collection, shipping, storage, and analytical variability. This allowance is incorporated into the limitations through the use of the variability factors, which are calculated from the data from the facilities using the model technologies. If a facility operates its treatment system to meet the relevant long-term average, EPA expects the facility to be able to meet the limitations. Variability factors assure that normal fluctuations in a facility's treatment are accounted for in the limitations. By accounting for these reasonable excursions above the long-term average, EPA's use of variability factors results in limitations that are generally well above the actual long-term averages. The data sources, the selection of pollutants and data, and the calculations of pollutant long-term averages and variability factors are briefly described below. More detailed explanations are provided in the technical development document.

EPA recognizes that, as a result of modifications to 40 CFR part 420, some dischargers that consistently meet effluent limitations based on the current regulation may need to improve treatment systems, process controls, and/or treatment system operations in order to consistently meet effluent limitations based on revised effluent limitations guidelines and standards. EPA believes that this consequence is consistent with the Clean Water Act statutory framework, which requires that discharge limitations reflect the best available technology, and that the best available technology should be redefined periodically.

The long-term averages, variability factors, and limitations were based upon pollutant concentrations collected from three data sources: EPA sampling episodes, the 1997 Analytical and Production follow-up survey, and data submitted by industry. When the data from the EPA sampling episodes at a facility met the data editing criteria, EPA used the sampling data and any monitoring data provided by the facility. See Technical Development Document Section 10 for more information.

5. BPT

In general, the BPT technology level represents the average of the best existing performances of plants of various processes, ages, sizes or other common characteristics. Where existing performance is considered uniformly inadequate, BPT may be transferred from a different subcategory or industry. Limitations based upon transfer of technology must be supported by a conclusion that the technology is indeed transferable and a reasonable prediction that it will be capable of meeting the prescribed effluent limits. See *Tanners' Council of America* v. *Train,* 540 F.2nd 1188 (4th Cir. 1976). BPT focuses on end-of-pipe treatment rather than process changes or internal controls, except where the process changes or internal controls are common industry practice.

The cost-benefit inquiry for BPT is a limited balancing, committed to EPA's discretion, which does not require the Agency to quantify the benefits in monetary terms. In balancing costs in relation to effluent reduction benefits, EPA considers the volume and nature of existing discharges expected after the application of BPT, the general environmental effects of the pollutants, and the cost and economic impact of the required pollution controls. When setting BPT limitations, EPA is required under section 304(b) to perform a limited cost-benefit balancing to ensure the costs are not wholly out of proportion to the benefits achieved. See *Weyerhaeuser Company* v. *Costle,* 590 F.2d 1011 (D.C. Cir. 1978).

a. *New Subcategories/Segments.* EPA proposes to promulgate BPT limitations for conventional pollutants (TSS and/or oil & grease) for the following subcategories or segments that have not previously been regulated under part 420: Non-recovery cokemaking; sintering operations with dry air pollution controls; electric arc furnace operations within the Non-Integrated Steelmaking and Hot ming Subcategory; direct reduced iron; forging; and, briquetting. There are no BPT limitations in the current regulation applicable to non-recovery cokemaking, direct reduced iron, forging and briquetting. The current Steelmaking Subcategory BPT regulation requires ''no discharge of pollutants'' for semi-wet electric arc furnace operations (§ 420.43(a)) and allows discharges for wet electric arc furnace operations (§ 420.43(c)). Under the proposed subcategorization scheme, there are no wet electric arc furnace operations within the Non-Integrated Steelmaking and Hot ming Subcategory. The current BPT regulation does not specifically cover sintering operations with dry air pollution controls.

b. *Existing Subcategories/Segments.* manufacturing operations subject to current BPT regulations (i.e., all iron and steel operations regulated under the current part 420 and electroplating operations regulated currently under part 433 but proposed for regulation under the revised Part 420), the Agency at this time is not proposing to revise the BPT limitations for TSS and oil & grease. Because EPA is proposing to establish a revised subcategorization schedule for part 420 by consolidating several former subparts and creating new ones, EPA has presented the current part 420 BPT limitations for each proposed subpart in the form of segments corresponding to the subcategorization schedule that EPA proposes to replace. With respect to continuous electroplating operations, which are currently regulated under part 433 (Metal Finishing), but which EPA proposes to regulate under part 420 (Iron & Steel), EPA presents BPT limitations for the conventional parameters TSS and oil and grease in proposed subpart F, §§ 420.62(a)(9) and (b)(9) based on the limitations as currently codified in part 433 for those operations.

The Agency is also considering an alternative approach that would simplify the regulation and ease implementation of BPT limitations in the NPDES permit program. The Agency solicits comment on this alternative approach, which is discussed below. The alternative is also presented in the Technical Development Document for this proposed regulation.

j. *Alternative approach: Codify BPT limitations as the TSS and O&G Concentrations used to develop the Current part 420 Regulation.* The Agency is aware that incorporating the current BPT limitations into the new

subcategorization structure of the proposed regulation is complex and will be difficult to implement because the BPT limitations are unchanged and reflect a different subcategorization schedule. If the regulation were promulgated as proposed, permit writers and the industry would be required to implement the existing part 433 BPT limitations, existing part 420 BPT limitations for 12 subcategories and more than 50 segments, as well as the proposed BAT limitations for seven subcategories with far fewer segments. As a result, permit writers would need to identify process units using different characteristics for BPT than they would use for BAT and other technology levels. Therefore, EPA is considering an alternative approach that EPA believes would ease implementation of BPT limitations in the NPDES permit program.

Under this alternative approach, EPA would replace the current mass-based BPT limitations for TSS and oil & grease with corresponding concentration-based limitations for TSS and oil & grease. The concentration-based BPT limitations would be the treated effluent concentrations used to develop the current regulation for all operations EPA proposes to continue to regulate under the revised part 420 regulations. (Thus, this option would not apply to Cold Worked Pipe & Tube operations currently subject to part 420, but which EPA proposes to regulate under Part 438. Those concentrations are shown as the daily maximum and maximum monthly average TSS and oil & grease concentrations (mg/L) for the 12 subcategories of the existing regulation (see Table I–1 (pages 13 to 17), Vol. I of the ''Development Document for Effluent Limitations Guidelines for the Iron and Steel Manufacturing Point Source Category,'' (EPA 440/1–82–024; May 1982)). electroplating operations regulated currently under part 433, the corresponding BPT concentration limitations would be either those listed at part 433, or those for the steel finishing operations listed in Table I–1 referenced above.

Under this option, the TSS and oil & grease concentrations listed in the 1982 development document would be codified as BPT limitations in the seven subcategories proposed for this regulation. Because the TSS and oil & grease concentrations used to develop the 1982 regulation are the same for operations within each of the seven subcategories for this proposed regulation, the structure of the revised regulation would be streamlined and implementation would be much simpler. example, permit writers and the industry would not have to contend with classifying hot forming and steel finishing operations under both the more complicated subcategory and segment schedule from the current regulation and the less complicated subcategory and segment schedule from this proposed regulation.

Under this option, the permit writers would develop NPDES permit effluent limitations by first applying the corresponding BAT limitations for toxic and non-conventional pollutants for each internal or external outfall discharging process wastewaters. Mass effluent limitations for TSS and oil & grease would be developed by applying the respective concentration-based BPT effluent limitations guidelines to a reasonable measure of actual process wastewater discharge flow, taking into account process wastewaters regulated directly by Part 420 and those process wastewaters that may be unregulated by part 420 (see proposed regulation at § 420.03(f)). As with the BAT limitations, the Agency intends that only the mass limitations derived for TSS and oil & grease as described above be included in NPDES permits.

Depending upon site-specific circumstances, this option could result in either more or less stringent limitations for TSS and oil & grease than would be derived from the current BPT limitations. example, if a mill has process wastewater discharge flows lower than the model BPT production normalized flows from the 1982 regulation and no unregulated process wastewaters, the resulting TSS and oil & grease permit limitations would be more stringent in proportion to the amount of the lower discharge flow. On the other hand, if the mill had higher process wastewater flows or a substantial volume of unregulated process wastewaters, the resultant effluent limitations would be higher in proportion to the higher discharge flow. The Agency believes that in many instances the volume of regulated process wastewaters currently discharged or that will be discharged to attain compliance with the BAT limitations will be somewhat less than the model BPT flow rates. Consequently, on balance, EPA expects that the resulting NPDES permit effluent limitations for TSS and oil & grease would be somewhat more stringent but in the range of those derived from the current BPT limitations.

Under this approach, as a practical matter, there would be no additional costs of compliance to achieve the resulting BPT TSS and oil & grease effluent limitations. Incremental investment costs and incremental operation and maintenance costs were considered, where appropriate, as costs to achieve the BAT limitations. In addition, EPA would not expect facilities to incur additional monitoring costs associated with concentration-based BPT limitations because facilities already monitor for these pollutants under the current regulation, and EPA does not propose to establish any new monitoring requirements for the conventional pollutants. Nonetheless, for the purposes of calculating cost per pound of conventional pollutants removed, EPA has estimated both the costs associated with implementing new BPT technologies (in this case, identical to the proposed BAT technologies, even though as a practical matter, they are already subsumed in the BAT costs), as well as the total pounds removed by those technologies. (These totals reflect only the subcategories and segments for which EPA is considering revising BPT limitations.) The total estimated costs are $53.8 million (1997 pretax total annualized costs) and the total estimated removals are 30.3 million pounds of conventional pollutants. EPA believes these costs to be reasonable in relation to the effluent reduction benefits. If EPA were to adopt this alternative approach, EPA would revise BCT limitations to reflect the new BPT levels because nothing more stringent that those levels appears to pass the BCT cost test.

EPA solicits comments on this alternative approach, which EPA believes would ease the implementation of the BPT limitations and would reflect current manufacturing, waste management, and wastewater treatment practices. EPA also solicits other options for consideration.

6. BCT

The BCT methodology, promulgated in 1986 (51 FR 24974), discusses the Agency's consideration of costs in establishing BCT effluent limitations guidelines. EPA evaluates the reasonableness of BCT candidate technologies (those that are technologically feasible) by applying a two-part cost test:

(1) The POTW test; and

(2) The industry cost-effectiveness test.

In the POTW test, EPA calculates the cost per pound of conventional pollutant removed by industrial dischargers in upgrading from BPT to a BCT candidate technology and then compares this cost to the cost per pound of conventional pollutant removed in upgrading POTWs from secondary treatment. The upgrade cost to industry

must be less than the POTW benchmark of $0.25 per pound (in 1976 dollars).

In the industry cost-effectiveness test, the ratio of the incremental BPT to BCT cost divided by the BPT cost for the industry must be less than 1.29 (*i.e.,* the cost increase must be less than 29 percent).

In developing BCT limits, EPA considered whether there are technologies that achieve greater removals of conventional pollutants than proposed for BPT, and whether those technologies are cost-reasonable according to the prescribed BCT tests. EPA identified no technologies that can achieve greater removals of conventional pollutants than the BPT standards that also pass the BCT cost-reasonableness tests. Accordingly, EPA proposes to establish BCT effluent limitations equal to the current BPT limitations.

7. Consideration of Statutory Factors for BAT, PSES, NSPS and PSNS Technology Options Selection

Based on the record before it, EPA has determined that each proposed model technology is technically available. EPA is also proposing that each is economically achievable for the segment to which it applies. Further, EPA has determined, for the reasons set forth in Section VIII, that none of the proposed technology options has unacceptable adverse non-water quality environmental impacts. Finally, EPA has determined that each proposed technology option achieves greater pollutant removals than any other economically achievable technology considered by EPA and, for that reason, also represents the best technology among those considered for the particular segment. EPA also considered the age, size, processes, and other engineering factors pertinent to facilities in the proposed segments for the purpose of evaluating the technology options. None of these factors provides a basis for selecting different technologies than those EPA proposes to select as its model BAT and PSES technologies for the segments within each subcategory, or if EPA does not propose segmentation, for the subcategory itself.

In selecting its proposed NSPS technology for these segments and subcategories, EPA considered all of the factors specified in CWA section 306, including the cost of achieving effluent reductions. (These findings also apply to the proposed PSNS for these segments.) The proposed NSPS technologies for these segments are presently being employed at facilities in each segment of these subcategories. Therefore, EPA has concluded that such costs do not present a barrier to entry. The Agency also considered energy requirements and other non-water quality environmental impacts for the proposed NSPS options and concluded that these impacts were no greater than for the proposed BAT technology options for the particular segment and are acceptable. EPA therefore concluded that the NSPS technology bases proposed for these segments constitute the best available demonstrated control technology for those segments.

B. Cokemaking

After considering all of the technology options described in the Section V.C in light of the factors specified in section 304(b)(2)(B) and 306 of the Clean Water Act, as appropriate, EPA proposes to select the technology options identified below as BAT, PSES, NSPS, and PSNS for the by-product and non-recovery cokemaking segments of the proposed Cokemaking Subcategory.

1. By-Product Cokemaking

a. *Regulated Pollutants.* i. *BAT.* the By-Product segment of this subcategory, EPA proposes establishing BAT limitations for ammonia-N, total cyanide, phenol, benzo(a)pyrene, thiocyanate, naphthalene, mercury, selenium, and Total Residual Chlorine (TRC). Except for TRC, these pollutants are characteristic of cokemaking wastewaters. TRC is an indicator of post-alkaline chlorination residual concentration of chlorine. Facilities would not need to meet the TRC limit if they certify to the permitting authority that they do not employ alkaline chlorination in their wastewater treatment. These proposed regulated pollutants are key indicators of the performance of the ammonia distillation, biological treatment, and alkaline chlorination processes, which are the key components of the complex model BAT and NSPS treatment systems for by-product coke plants.

ii. *PSES.* EPA proposes to regulate the following parameters under PSES: ammonia-N, total cyanide, thiocyanate, selenium, phenol, and naphthalene. Using the methodology described in Section IX.A.2, EPA has determined that each of these pollutants passes through. EPA notes that ammonia-N is a key indicator of the performance of the PSES and PSNS treatment systems because it reflects the performance of the ammonia stills, which not only control ammonia-N, but also acid gasses (HCN, H_2S) and volatile toxic organic pollutants (benzene, toluene, xylenes), some portions of which would otherwise be lost in coke plant and municipal sewer systems and in biological processes at POTWs. EPA has determined that the other pollutants EPA proposes to regulate at BAT (benzo(a)pyrene and mercury) do not pass through.

iii. *NSPS.* NSPS limitations, EPA proposes to regulate the same pollutants as those for BAT, with the addition of TSS and oil and grease (measured as HEM).

iv. *PSNS.* EPA proposes to regulate the same parameters as under PSES for this segment.

b. *Technology Selected.* i. *BAT.* The Agency is proposing to establish BAT–3 for the by-products recovery segment of the cokemaking subcategory. The treatment technologies that serve as the basis for the development of the proposed BAT limits are: Tar removal, equalization, ammonia stripping, temperature control, equalization, single-stage biological treatment with nitrification, and alkaline chlorination. EPA estimates that only one facility will close as a result of BAT–3. EPA has determined that this option is economically achievable and cost effective.

As presented in Section V.C.1, four BAT options were under consideration. Under BAT–1, water usage would be reduced by 1.6 million gallons per year from current levels and the removal toxic and non-conventional pollutants would increase by 14% over those levels. BAT–2 results in no further reduction in flow beyond that to be achieved by BAT–1, but does result in the additional removal of 17% of the total cyanide from direct discharging cokemaking wastestreams through the use of cyanide precipitation. BAT–3 also results in no further reduction in flow beyond that to be achieved by BAT–1, but does result in the additional removal of 50% of the total cyanide from direct discharging cokemaking wastestreams beyond BAT–1 levels through the use of alkaline chlorination. BAT–4 results in no further reduction in flow beyond that to be achieved by any of the BAT options, and does not lead to significant additional pollutant removal beyond that to be achieved by BAT–3.

BAT–1 removes 56,300 toxic pound equivalents over current discharge at an annualized compliance cost of $0.9 million (1997$). BAT–2 removes an additional 26% of toxic pound equivalents over BAT–1, at an additional annualized compliance cost of $3.3 million (1997$). Neither of these options results in any facility closures, so both are considered economically achievable. However, EPA is not proposing either of these options,

because BAT–3 removes even more pollutants of concern at a cost that is also economically achievable.

EPA also evaluated BAT–4 as a basis for establishing BAT more stringent than the level of control being proposed today. As was the case for BAT–3, EPA estimates that only one facility would close as a result of BAT–4, so EPA has determined that this option is economically achievable. However, EPA is not proposing to establish BAT limits based on BAT–4 because it determined that BAT–3 achieves nearly equivalent reductions in pound-equivalents for much less cost. EPA has determined that BAT–3 would remove 0.43 million pounds of priority and non-conventional pollutants per year at a total annualized cost of $8.6 million (1997$). In contrast, BAT–4 would remove the same quantity of pollutants at a total annualized cost of $15.2 million (1997$). In view of the fact that BAT–4 appears to achieve no additional pollutant removals and yet would prompt additional total annualized costs of $6.6 million, EPA has determined that BAT–3, not BAT–4, is the ''best available'' technology economically achievable for the by-products recovery segment of the cokemaking subcategory.

ii. *PSES.* EPA is co-proposing two sets of technologies to serve as the bases for the development of the proposed PSES limits: (1) Tar removal, equalization, ammonia stripping, temperature control and equalization, and (2) tar removal, equalization, ammonia stripping, temperature control, equalization, and single-stage biological treatment with nitrification. These are identified as options PSES–1 and PSES–3 in Section V.C., respectively, and provide controls for each pollutant that EPA has determined pass through. EPA estimates that no facilities would close as a result of compliance with either of these options. EPA has concluded that these options are economically achievable.

Under Option PSES–1, EPA estimates an additional 3,400 toxic pound equivalents would be removed per year above the current amount, at an additional annualized compliance cost of $0.3 million (1997$). Under Option PSES–2, EPA estimates an additional 2,200 toxic pound equivalents would be removed per year above PSES–1, at an additional annualized compliance cost of $1.9 million (1997$). Under PSES–3, EPA estimates an additional 42,900 toxic pound equivalents would be removed per year above PSES–2, at an additional annualized compliance cost of $2.8 million (1997$). Under PSES–4, EPA estimates an additional 2,900 toxic pound equivalents would be removed per year above PSES–3, at an additional annualized compliance cost of $3.5 million (1997$). Based on consideration of the additional pollutant removals achieved by PSES–4 for indirect dischargers in this subcategory and the additional costs needed to achieve them, EPA has determined that PSES–3 is the best technology for the by-products recovery segment of the cokemaking subcategory.

Although EPA considers PSES–3 to be the best among the PSES options EPA considered, EPA is also co-proposing PSES–1 because it may provide a lower cost means of obtaining similar pollutant reductions. EPA plans to further evaluate setting PSES equal to BAT–3 between proposal and promulgation of this rule.

iii. *NSPS.* The treatment technologies that serve as the basis for the development of the proposed NSPS are the same as Option BAT–3. the reasons set forth above for BAT in its comparison of BAT–3 and BAT–4, EPA has determined that BAT–3 is the ''best'' demonstrated technology for new sources in the by-products recovery segment of the cokemaking subcategory.

iv. *PSNS.* The treatment technologies that serve as the basis for the development of the proposed PSNS are the same as Option PSES–3. the reasons discussed above, EPA proposes PSES–3 as the basis for its PSNS for this segment. The Agency also solicits comment on the second option discussed under PSES for this segment, identified as option PSES–1. EPA plans to further evaluate setting PSNS equal to BAT–3 between proposal and promulgation of this rule.

2. Non-recovery Cokemaking

Since the non-recovery cokemaking process does not generate any process wastewater, EPA proposes no discharge of process wastewater pollutants to waters of the U.S. for BAT/PSES/NSPS/PSNS for all categories for this segment.

C. Ironmaking

After considering all of the technology options described in the Section V.C in light of the factors specified in section 304(b)(2)(B) and 306 of the Clean Water Act, as appropriate, EPA proposes to select the technology options identified below as BAT, PSES, NSPS, and PSNS for the blast furnace and sintering segments of the proposed Ironmaking Subcategory.

1. Blast Furnace

a. *Regulated Pollutants.* i. *BAT.* EPA proposes to regulate the following parameters under BAT: Ammonia-N, total cyanide, phenol, lead, zinc, and total recoverable chlorine (TRC). Ammonia-N and total cyanide are regulated in the current part 420 and are again proposed for regulation. These pollutants are characteristic of blast furnace ironmaking wastewaters and are key indicators of the performance of the alkaline chlorination process. Phenol is proposed for regulation in place of total phenols, because EPA judged phenol to be a better indicator of treatment performance of ironmaking wastewater than total phenols. EPA proposes to limit TRC to ensure residual concentrations of chlorine are kept to a minimum to avoid effluent toxicity. Facilities would not need to meet the TRC limit if they certify to the permitting authority that they do not employ alkaline chlorination in their wastewater treatment. EPA proposes to limit lead and zinc because they are the principal metals present and will track performance of the metals precipitation model BAT system with respect to other metals identified as pollutants of concern.

ii. *PSES.* EPA proposes to regulate the following parameters under PSES: ammonia-N, lead, and zinc. Using the methodology described in Section IX.A.2, EPA has determined that each of these pollutants passes through. EPA has determined that the other pollutants EPA proposes to regulate at BAT (total cyanide and phenol) do not pass through.

iii. *NSPS.* In addition to the parameters listed under BAT for this segment, EPA proposes to regulate TSS and oil & grease (measured as HEM).

iv. *PSNS.* EPA proposes to regulate the same parameters under PSNS for this segment as it does for PSES.

b. *Technology Selected.* i. *BAT.* The treatment technologies that serve as the basis for the development of the proposed BAT limits for the ironmaking subcategory (Blast Furnace and Sintering Segments) are: solids removal with high-rate recycle and metals precipitation, alkaline chlorination, and mixed-media-filtration for the blowdown wastewater. This is identified as BAT–1 in Section V.C. Under BAT–1, water usage would be reduced by 5% over current levels, and total loadings of toxic and non-conventional pollutants would be reduced by 68%. EPA estimates that no facilities would close as a result of BAT–1. EPA has determined that this option is economically achievable. EPA did not pursue additional, more stringent options because all significant POCs in the effluent after application of BAT–1 system are projected to exist at levels too low to be further treated by any other add-on technology. Therefore, EPA proposes BAT–1 as the technology

basis for BAT for the ironmaking subcategory.

ii. *PSES.* The treatment technologies that serve as the basis for the development of the proposed PSES limits are: solids removal with high-rate recycle and metals precipitation for the blowdown wastewater. This is identified as Option PSES–1 in Section V.C. This option provides controls for each pollutant that EPA has determined passes through for this segment. EPA has determined that this option is economically achievable. Although BAT–1 achieves additional removal of ammonia-N through alkaline chlorination, EPA has found that all POTWs currently receiving wastewater from ironmaking operations are achieving ammonia removal comparable to that achieved by BAT–1. Therefore, EPA proposes PSES–1 as the technology basis for PSES for the ironmaking subcategory.

EPA is proposing regulatory flexibility that would allow indirectly discharging ironmaking operations to not have to meet the pretretment standards for ammonia-N if the facility certifies to the pretreatment control authority under 40 CFR 403.12 that they discharge to POTWs with the capability, when considered together with the indirect discharger's removals, to achieve removals at least equivalent to those expected under BAT for ammonia-N.

EPA plans to further evaluate setting PSES equal to BAT–1 between proposal and promulgation of this rule.

iii. *NSPS.* The treatment technologies that serve as the basis for the development of the proposed NSPS limits are the same as Option BAT–1 for this segment. As was the case for BAT, EPA did not pursue additional, more stringent options for NSPS because all significant POCs in the effluent after application of BAT–1 system are projected to exist at levels too low to be further treated by this or any other add-on technology. Therefore, EPA proposes BAT–1 as the technology basis for NSPS for the ironmaking subcategory because EPA believes it represents the best demonstrated technology for this subcategory.

iv. *PSNS.* The treatment technologies that serve as the basis for the development of the proposed PSNS limits are the same as Option PSES–1 for this segment. the reasons set forth above for NSPS, EPA proposes PSES–1 as the basis for PSNS for this subcategory.

EPA is proposing regulatory flexibility that would allow indirectly discharging ironmaking operations to not have to meet the pretreatment standards for ammonia-N if the facility certifies to the pretreatment control authority under 40 CFR 403.12 that they discharge to POTWs with the capability, when considered together with the indirect discharger's removals, to achieve removals at least equivalent to those expected under BAT for ammonia-N.

EPA plans to further evaluate setting PSNS equal to BAT–1 between proposal and promulgation of this rule.

2. Sintering

a. *Regulated Pollutants.* Because several congeners of dioxins have been shown to cause adverse health effects at concentration levels far below those of most pollutants, EPA proposes to regulate 2,3,7,8-tetra-chloro-dibenzo furan (TCDF). EPA selected this congener because sampling data indicates that it is present in post-treatment sinter plant wastewater, and because removal of this pollutant is expected to correlate strongly with removal of other dioxin congeners, due to their similar chemical structures. EPA's sampling program did not indicate that there are measurable quantities of 2,3,7,8-tetra-chloro-dibenzo dioxin (TCDD) in post-treatment sinter plant wastewater. The proposed limit would be expressed as less than the minimum level (''<ML'') or ten parts per quadrillion using current analytical methods. The ''ML'' is an abbreviation for the minimum level of the analytical method for TCDF specified in 40 CFR part 136. EPA proposes to require compliance monitoring at internal outfalls (after treatment of sinter plant wastewaters separately or in combination with blast furnace wastewaters), i.e., before any additional process or non-process flows are combined with the sinter plant wastewater. This regulatory approach is similar to that used in the regulation of the bleached paper grade plant effluents at bleached kraft pulp and paper mills (see 40 CFR 430.24(e)). EPA expects to gather additional information on dioxin and furan concentrations in sinter plant effluent and on this proposed regulatory approach through the public comment process. EPA also is willing to speak with interested parties during the comment period to ensure that EPA considers the views of all stakeholders and uses the best possible data upon which to base a decision for the final regulation.

i. BAT

EPA proposes to regulate the following parameters under BAT: ammonia-N, total cyanide, phenol, lead, zinc, TRC and 2,3,7,8 TCDF. EPA proposes to regulate ammonia-N, total cyanide and phenol in order to track performance of the BAT model treatment technology, which includes alkaline chlorination. EPA proposes to regulate TRC in order to ensure residual concentrations of chlorine are kept to a minimum to avoid effluent toxicity. Facilities would not need to meet the TRC limit if they certify to the permitting authority that they do not employ alkaline chlorination in their wastewater treatment. EPA proposes to regulate lead and zinc because they are the principal metals present and will track performance of the metals precipitation model BAT system with respect to other metals identified as pollutants of concern.

ii. PSES

EPA proposes to regulate the following parameters under PSES: ammonia-N, lead, zinc, and 2,3,7,8 TCDF. Using the methodology described in Section IX.A.2, EPA has determined that each of these pollutants passes through. EPA has determined that the other pollutants EPA proposes to regulate at BAT (cyanide and phenol) do not pass through.

iii. NSPS

In addition to the parameters listed under BAT for this segment, EPA proposes to regulate TSS and oil & grease (measured as HEM).

iv. PSNS

EPA proposes to regulate the same parameters under PSNS for this segment as it does for PSES.

b. *Technologies Selected.*

i. BAT/PSES/NSPS/PSNS

See discussions under ''Blast Furnace'' above.

D. Integrated Steelmaking

After considering all of the technology options described in the Section V.C in light of the factors specified in section 304(b)(2)(B) and 306 of the Clean Water Act, as appropriate, EPA proposes to select the technology options identified below as BAT, PSES, NSPS, and PSNS for the proposed Integrated Steelmaking Subcategory.

1. Regulated Pollutants

a. *BAT/PSES/NSPS/PSNS.* EPA proposes to regulate lead and zinc under BAT/PSES/NSPS/PSNS because they are the principal metals present and because they are good indicators of the performance of the metals precipitation component of the proposed model technology. Using the methodology described in Section IX.A.2, EPA has determined that both lead and zinc pass through.

2. Technology Selected

a. *BAT/NSPS/PSES/PSNS.* The treatment technologies that serve as the basis for the development of the proposed BAT/NSPS/PSES/PSNS limits are: solids removal and high rate recycle, with metals precipitation for blowdown wastewater. Cooling towers are also part of the model technology for process wastewater associated with vacuum degassing or continuous casting. This option is identified as BAT–1 in Section V.C.

Under BAT–1, water usage can be reduced by 83% over current levels, and total loadings of toxic and non-conventional pollutants can be reduced by 66%. EPA estimates that no facilities would close as a result of BAT–1. EPA has determined that this option is economically achievable. EPA did not pursue other options because all significant POCs in the effluent after application of BAT–1 system are projected to exist at levels too low to be further treated by any other add-on technologies. Therefore, EPA proposes BAT–1 as the technology basis for BAT for the proposed Integrated Steelmaking subcategory.

the same reason, EPA proposes BAT–1 as the basis for PSES for this subcategory. This option provides controls for each pollutant that EPA has determined passes through for this subcategory.

As was the case for BAT and PSES, EPA did not pursue additional, more stringent options for NSPS and PSNS because all significant POCs in the effluent after application of BAT–1 system are projected to exist at levels too low to be further treated by any other add-on technology. Therefore, EPA proposes BAT–1 as the technology basis for NSPS and PSNS for the integrated steelmaking subcategory because EPA believes it represents the best demonstrated technology for this subcategory.

E. Integrated and Stand Alone Hot ming

After considering all of the technology options described in the Section V.C in light of the factors specified in section 304(b)(2)(B) and 306 of the Clean Water Act, as appropriate, EPA proposes to select the technology options identified below as BAT, PSES, NSPS, and PSNS for the carbon and allow segment and the stainless steel segment of the proposed Integrated and Stand Alone Hot ming Subcategory.

1. Carbon and Alloy

a. *Regulated Pollutants.* i. *BAT.* EPA is proposing to regulate the following pollutants: lead and zinc.

ii. *PSES/PSNS.* See discussion under ''Technology Selected—PSES/PSNS'' below.

iii. *NSPS.* EPA is proposing regulating the same pollutants as for BAT, with the addition of TSS and oil & grease (measured as HEM).

b. *Technology Selected.* i. *BAT.* EPA is proposing two different BAT approaches today because of the uncertainty regarding the economic achievability of the preferred option in April 2002 when EPA is scheduled to take final action on this proposal.

BAT Option A: The treatment technologies that serve as the basis for the development of BAT Option A are: scale pit with oil skimming, roughing clarifier, cooling tower with high rate recycle and mixed-media filtration of blowdown. As required by CWA section 301(b)(2), each existing direct discharger subject to this proposed BAT would be subject to the corresponding limitations as soon they are incorporated into the facility's NPDES permit. EPA believes the BAT Option A is economically achievable because the facility level analysis projects no facility closures. The firm level analysis does, however, project that one or more firms may experience financial ''distress'' as a result of the aggregate compliance costs of the rule, including the hot forming segment compliance costs. Financial ''distress'' may indicate the loss of financial independence, sale of assets or the likelihood of bankruptcy. In this case, the facility level analysis indicates the facilities would be expected to remain viable postcompliance and would possess value as continuing concerns. Therefore, EPA expects that the firm(s) would respond to financial ''distress'' through the sale of assets, rather than through declaration of bankruptcy, which would be far more disruptive in terms of economic impacts for the subcategory as a whole. example, job losses would be more limited in the event of the sale of a facility owned by a distressed firm rather than a bankruptcy induced closure and any community impacts associated with job losses would likewise be less severe. The Agency believes that this projected level of financial distress is not significant and therefore believes that Option A is economically achievable for the segment as a whole.

BAT Option B: As discussed in more detail above in Section V.C.4.b, Section VI.D.4, and Section VI.F, EPA has estimated that it could cost affected facilities $ 21.2 million in total annualized costs to comply with BAT limitations based on the proposed BAT model technology, which includes high rate recycle. When those costs are considered together with other costs that EPA estimates firms will incur if this rule is promulgated as proposed, EPA has predicted that the cumulative costs of this rule could jeopardize the corporate financial health of one or more firms. See Section VI.F. While EPA considers those possible impacts to be acceptable for the purposes of today's proposal, EPA is also aware that new information received after this proposal, including information regarding changes in the financial health of the industry due to changes in the national economy and foreign trade, might lead EPA to reach a different conclusion when EPA takes final action on this proposal in April 2002. Therefore, in addition to proposed BAT Option A for the carbon and alloy segment of the Integrated and Stand Alone Hot ming subcategory, EPA is proposing a second BAT approach for this segment. EPA is considering BAT limitations for this segment based on BAT Option B in the event it determines that BAT Option A is not economically achievable for the segment as a whole at the time it takes final action on today's proposal. The proposed alternative described below is designed to minimize possible adverse economic impacts of the primary proposed BAT option for this segment.

Like the BAT option A, BAT Option B includes high rate recycle. (Indeed, the technology basis for BAT Option A and the proposed alternative is identical.) The difference between BAT Option A and BAT Option B involves the amount of time that facilities in the segment would have to achieve the BAT limitations based on that technology. Under BAT option A, all direct discharging facilities covered by the carbon and alloy segment of the Integrated and Stand Alone Hot ming subcategory would be subject to the BAT limitations as soon as they are placed in the facilities' NPDES permit. See sections 301(b)(2)(C), (D) and (F) of the Clean Water Act. Although it is common practice for permit writers to issue administrative orders concurrent with issuing permits based on a new or revised effluent guideline, the decision to do so is left to the permit writers' enforcement discretion. Therefore, EPA cannot assume the availability of such relief when it estimates the costs and impacts of this proposed rule. Under BAT Option B, in contrast, all facilities within the carbon and alloy segment of the Integrated and Stand Alone Hot ming subcategory could receive additional time to achieve the limitations based on the proposed BAT technology for that segment. If EPA ultimately determines in April 2002 that

BAT Option A is not economically achievable for the segment as a whole, it may decide to take final action based on BAT Option B.

Under BAT Option B, EPA would codify BAT limitations that consisted of three separate components. Together, the three components would comprise BAT for the carbon and alloy segment of the Integrated and Stand Alone Hot ming subcategory and, operating incrementally, would become progressively more stringent over time. Although applied in stages, the limitations would represent a continuum of progress that all facilities under BAT Option B would be required to achieve by April 30, 2007. Under the first component, consisting of ''stage 1'' BAT limitations, each facility subject to this segment would be immediately subject to limitations based on the mill's existing effluent quality for the regulated pollutants, or its current technology-based permit limits for those pollutants, whichever are more stringent. The second component would consist of enforceable interim milestones developed on a best professional judgment basis by the permitting authority to reflect reasonable interim milestones toward achievement of the ultimate BAT limitations. Under the third component, consisting of the ultimate, or ''stage 2'', BAT limitations, each facility by April 30, 2007 would be subject to limitations that are based on the BAT technology proposed for this segment (*i.e.,* scale pit with oil skimming, roughing clarifier, filtration, high rate recycle and mixed-media filtration of blowdown).

With respect to the ''stage 1'' limitations, EPA intends that the permitting authority would express that limitation in numeric form for each facility on a case-by-case basis. The ''stage 1'' limitations thus will be numeric values on the regulated pollutants, that, for each pollutant, are equivalent to the more stringent of either the technology-based limit on that pollutant in the facility's last permit or the facility's current effluent quality with respect to that pollutant. Existing effluent quality for the regulated pollutants would be determined at the internal monitoring point where the wastewater containing those pollutants leaves the hot forming wastewater treatment plant. These ''stage 1'' BAT limits would represent the first step in the BAT continuum for BAT Option B and would be enforceable against the facility as soon as they are placed in the facility's NPDES permit. The purpose of the ''stage 1'' BAT limits would be to ensure that, at a minimum, existing effluent quality is maintained while the facility moves toward achieving the ''stage 2'' BAT limitations that are based on the model BAT technologies for this segment. Allowing a facility to degrade its effluent quality during development and installation of the model BAT technologies would be inconsistent with the statute's direction that BAT limitations achieve reasonable further progress toward the Clean Water Act's national goals. EPA's ''stage 1'' limitations, thus, would be intended to capture continuously improving effluent quality.

Because the ''stage 1'' limitations would reflect a level of technology that the facility is already employing or that was previously determined to be BAT for that facility, EPA would be able to conclude at the time of promulgation that the technology bases for the ''stage 1'' limits are both technically available and economically achievable. If EPA were to promulgate such limitations, EPA would also consider whether they would result in any adverse non-water quality environmental impacts, and would also consider all of the other statutory factors specified in CWA section 304(b)(2)(B) and 306. EPA believes that ''stage 1'' limitations could be the ''best'' available technology economically achievable for facilities in the segment if the record shows that they allow those facilities to focus their resources on the research, development, testing, and installation of the technologies ultimately needed to achieve the ''stage 2'' limitations, which are based on model BAT technology for the subpart. ''Stage 1'' limitations thus would reflect ''reasonable further progress toward the national goal of eliminating the discharge of all pollutants,'' as called for by CWA section 301(b)(2)(A), and could reasonably represent the appropriate first rung of the segment BAT ladder, if EPA were to determine that the model technology is not economically achievable at the time of promulgation.

The second component would consist of interim milestone limitations. Under this component, facilities would be required to meet enforceable requirements determined by the permitting authority based on best professional judgment; these milestones would be expressed as narrative or numeric conditions in the facility's NPDES permit and would reflect each step in a facility's progress toward achievement of the ultimate, ''stage 2,'' performance requirements.

With respect to ''stage 2,'' EPA would promulgate limitations that represent the performance that can be achieved using the model BAT technology for the segment. Because the model technology for BAT Option B's ''stage 2'' limitations would be the same as those proposed for BAT Option A, the calculated limitations would be identical as well. The difference between the BAT Option A and BAT Option B is that the facilities in this segment would not be required to be subject to those limitations upon promulgation. Rather, the facilities would be subject to the ''stage 2'' limitations at some later date specified in the regulation by EPA, *e.g.,* April 30, 2007. That date would represent the date by which EPA determines—based on the administrative record at the time of promulgation—that the model technology would be economically achievable for the segment as a whole. Thus, under BAT Option B , if EPA concludes at the time of promulgation that five years would be sufficient time to allow the subcategory as a whole to raise the capital necessary to implement the model BAT technology for the segment in a way to assure its economic achievability, then EPA would specify that date as the date by which the segment as a whole is subject to the ''stage 2'' BAT limitations.

EPA acknowledges that the uncertainties of the iron and steel market and the financial circumstances of individual firms may make it difficult to project the economic achievability of particular technologies in future years, even in the comparative near-term. EPA expects it would take into account a variety of factors, including the costs of the BAT model technology over a specified number of years, the expected industry price and revenue cycle, the economic impact on the segment of other EPA regulations that might affect them within the time frame, and resulting aggregate costs, closures, and firm failures.

In the effluent limitations guidelines and standards for the pulp, paper and paperboard industry, EPA adopted an approach similar to BAT Option B as part of its Voluntary Advanced Technology Incentives Program. See 40 CFR 430.24(b). Facilities choosing to participate in the Voluntary Advanced Technology Incentives Program could enroll at one of three levels, or tiers, each with its own set of limits and time frames for compliance and each based on a different model BAT technology (with technologies becoming more advanced as the time periods for compliance were extended). each tier, EPA promulgated voluntary advanced technology BAT limitations that consisted of three separate components. Together, the three components comprised BAT for any bleached papergrade kraft and soda mill that elected to participate in the voluntary

incentives program. See 40 CFR 430.24(b). The first component consisted of ''stage 1'' existing effluent quality limitations that were similar in principle to the ''stage 1'' limitations described above for BAT Option B. See 40 CFR 430.24(b)(1). The second component consisted of enforceable interim milestones developed on a best professional judgment basis by the permitting authority to reflect reasonable interim milestones toward achievement of the ultimate BAT limitations. See 40 CFR 430.24(b)(2). (The program also included numeric six-year milestone limitations that would apply to facilities that enrolled in Incentives Tiers with deadlines of 2009 and 2014. See 40 CFR 430.24(b)(3).) The third component consisted of numeric ''stage 2'' effluent limitations that reflected the limitations achievable by the model BAT technology for the particular tier. Taken together, these three components constitute reasonable further progress toward the national goal of eliminating the discharge of all pollutants and for this reason represented BAT.

EPA recognizes that some facilities in this segment are already achieving or are capable of achieving limitations approaching the ultimate ''stage 2'' limitations. In this situation, the ''stage 1'' or interim milestone BAT limitations for these mills would correspond to that level of achievement, as judged by the permitting authority based on monitoring data supplied by the facility. In this way, EPA would ensure that, for the segment as a whole, limitations would be derived from the ''best'' available technology economically achievable, even though that technology might vary on a mill-by-mill basis during the interim period before the ''stage 2'' limitations apply. This incremental approach is authorized by CWA section 301(b)(2)(A), which expressly requires BAT to result in reasonable further progress toward the national goal of eliminating pollutant discharges. EPA believes that the two-step approach set forth in BAT Option B would move facilities toward that national goal. Each facility in the segment would be required immediately to begin to implement a BAT package consisting of successively more stringent permit limits and conditions. Although environmental improvements are realized only incrementally, the facility is subject to BAT limits as soon as its permit is written based on the first increment of that BAT package. Thus, the facility is continuously subject to and must comply immediately with the BAT limits as they progressively unfold, including each interim BAT limitation or permit condition representing that progress.

EPA's promulgation of BAT as a package of progressively more stringent limitations and conditions is also consistent with the use of BAT as a ''beacon to show what is possible.'' *Kennecott* v. *EPA,* 780 F.2d 445, 448 (4th Cir. 1985). By using BAT Option B, EPA thus would be able to promulgate forward-looking effluent limitations guidelines and standards for the segment as a whole. If EPA were to adopt BAT Option B, EPA would be promoting a form of technological progress that is consistent with Congressional intent that BAT should aspire to ''increasingly higher levels of control.'' See, *e.g.,* Statement of Sen. Muskie (Oct. 4, 1972), reprinted in A Legislative History of the Water Pollution Control Act Amendments of 1972 (''1972 Leg. Hist.''), at 170. It would also be consistent with the overall goals of the Act. See CWA section 101(a). Agencies have considerable discretion to interpret their statutes to promote Congressional objectives. '' '[T]he breadth of agency discretion is, if anything, at zenith when the action * * * relates primarily to * * * the fashioning of policies, remedies and sanctions, including enforcement and voluntary compliance programs[,] in order to arrive at maximum effectuation of Congressional objectives.'' ' *U.S. Steelworkers of America* v. *Marshall,* 647 F.2d 1189, 1230–31 n.64 (D.C. Cir. 1980) (upholding OSHA rule staggering lead requirements over 10 years) (quoting *Niagara Mohawk Power Corp.* v. *FPC,* 379 F.2d 153, 159 (D.C. Cir. 1967)), cert. denied, 453 U.S. 9113 (1981). In this case, the codification of progressively more stringent BAT limitations advances not only the general goal of the Clean Water Act, but also the explicit goal of the BAT program. See *Chevron, U.S.A., Inc.* v. *NRDC,* 467 U.S. 837, 843–44 (1984).

Moving toward the elimination of pollutant discharges in stages is also consistent with the overarching structure of the effluent limitations guidelines program. Congress originally envisioned that the sequence of attaining BPT limits in 1977 and BAT limits in 1983 would result in ''levels of control which approach and achieve the elimination of the discharge of pollutants.'' Statement of Sen. Muskie (Oct. 4, 1972), reprinted in 1972 Legislative History, at 170. This two-step approach produced dramatic improvements in water quality, but did not achieve the elimination of pollutant discharges. Therefore, EPA periodically revisits and revises its effluent limitations guidelines with the intention each time of making further progress toward the national goal. This is the third effluent limitations guideline promulgated for the iron and steel industry. Achieving these incremental improvements through successive rulemakings carries a substantial cost, however. The effluent guideline rulemaking process can be highly complex, in large part because of the massive record compiled to inform the Agency's decisions and because of the substantial costs associated with achieving each additional increment of environmental improvement. If EPA were to adopt BAT Option B, EPA would hope to achieve the goals that Congress envisioned for the BAT program at considerably less cost: one rulemaking that looks both at the present and into the future.

Finally, like other agencies, EPA has inherent authority to phase in regulatory requirements in appropriate cases. EPA has employed this authority in other contexts. example, EPA recently phased in, over two years, TSCA rules pertaining to lead-based paint activities. See 40 CFR 746.239 and 61 FR 45788, 45803 (Aug. 29, 1996). Similarly, the Occupational Safety and Health Administration phased in, over 10 years, a series of progressively more stringent lead-related controls. See 29 CFR 1910.1025 (1979 ed.). Indeed, in upholding that rule, the U.S. Court of Appeals for the D.C. Circuit noted that ''the extremely remote deadline at which the [sources] are to meet the final [permissible exposure limits] is perhaps the single most important factor supporting the feasibility of the standard.'' *United Steelworkers of America* v. *Marshall,* 647 F.2d at 1278.

EPA is aware that CWA sections 301(b)(2)(C) & (D) require BAT limits to be achieved ''in no case later than three years after the date such limits are promulgated under section 304(b), and in no case later than March 31, 1989.'' (Section 301(b)(2)(F), which refers to BAT limitations for nonconventional pollutants, also contains the March 31, 1989 date, but uses as its starting point the date the limitations are ''established.'') This language does not speak to the precise question EPA confronts here: whether EPA can promulgate BAT limitations that are phased in over time, so that a direct discharger at all times is subject to and must comply immediately with the particular BAT limitations applicable to them at any given point in time. Section 301(b)(2) provides no clear direction. EPA therefore is charged with making a reasonable interpretation of the statute

to fill the gap. See *Chevron, U.S.A., Inc.* v. *NRDC,* 467 U.S. at 843–44. EPA believes that subjecting facilities to progressively more stringent BAT limitations over time could be the best way of achieving reasonable further progress toward eliminating all pollutant discharges, as intended by Congress. EPA could use BAT Option B to push facilities to achieve environmental reductions beyond those achievable if EPA proposes a BAT based on what is immediately attainable. BAT Option B would also make it possible for facilities to achieve these performance requirements at a pace that makes technical and economic sense. In fact, the Agency estimates the total annualized compliance costs for the alternative to be $13.3 million, which represents a savings of $7.9 million.

EPA specifically solicits comment on both of these options, including options for less expensive technology. Even though the Agency believes that Option A is economically achievable, there may be non-trivial impacts for a few firms. The Agency could not identify less-expensive treatment technology that would meet the objectives of the CWA. Therefore EPA also solicits comment on whether there is any rational basis to distinguish among mills in this segment, so as to apply BAT Option B only to a specific subsegment of mills for which the model technology is not economically achievable at the time of promulgation.

ii. *PSES/PSNS.* EPA estimates that PSES–1, whose technical basis consists of a scale pit with oil skimming, a roughing clarifier, sludge dewatering, filtration, and high rate recycle, with mixed-media filtration of blowdown, would result in a flow reduction of 74% over current conditions, and a 53% reduction in discharge of toxic and non-conventional pollutants. However, EPA does not propose to promulgate PSES for the carbon and allow steel segment of the proposed Integrated and Stand Alone Hot ming subcategory. EPA believes that nationally applicable PSES regulations are unnecessary at this time, because there are only seven facilities in this segment and because PSES–1 would result in an average removal of only 21 toxic pound-equivalents per facility per year for these facilities. These reductions are much lower than other categorical standards promulgated by EPA. example, Organic Chemical, Plastics, and Synthetic Fibers (OCPSF), Electroplating, Battery Manufacturing, and Porcelain Enameling toxic pound equivalents removed per facility per year range from 6,747 to 14,960. In addition, EPA recently decided not to promulgate pretreatment standards for two industrial categories, Industrial Laundries, see 64 FR 45072 (August 18, 1999) and Landfills, see 65 FR 3008 (January 19, 2000), based on low removals of toxic pound equivalents by facilities in those categories. In the case of industrial laundries, EPA decided not to promulgate pretreatment standards based on 32 toxic pound equivalents per facility per year, and in the landfills effluent guidelines, EPA decided not to promulgate pretreatment standards for non-hazardous landfills based on the removal of only 14 toxic pound equivalents per facility per year.

The Agency believes that pretreatment local limits implemented on a case-by-case basis can more appropriately address any individual toxic parameters present at these facilities.

iii. *NSPS.* EPA proposes BAT Option A as the basis for NSPS for this segment because EPA believes it represents the best demonstrated technology for this segment.

iv. *PSNS.* EPA is proposing not to revise PSNS for this segment because EPA does not foresee the construction of any new indirect discharging facilities that would be subject to this segment. EPA also does not believe that it is practicable for a direct discharging facility covered by this segment to become an indirect discharging facility because their flows would be too large for a POTW to handle.

2. *Stainless*

a. *Regulated Pollutants.* i. *BAT* EPA is proposing regulating the following pollutants: chromium and nickel.

ii. *PSES/PSNS.* See discussion under ''Technology Selected—PSES/PSNS'' below.

iii. *NSPS.* EPA is proposing to regulate the same pollutants as for BAT, with the addition of TSS and oil & grease.

b. *Technology Selected.* i. *BAT.* The treatment technologies that serve as the basis for the development of the proposed BAT limits for the stainless segment of the integrated and stand alone hot forming subcategory are: Scale pit with oil skimming, roughing clarifier, with high rate recycle and mixed-media filtration of blowdown. This option is referred to as BAT–1 in Section V.C. EPA estimates that no facilities would close as a result of BAT–1. EPA has determined that this option is economically achievable. EPA did not pursue additional, more stringent options because all significant POCs in the effluent after application of BAT–1 system are projected to exist at levels too low to be further treated by any add-on technology. Therefore, EPA proposes BAT–1 as the technology basis for BAT for the stainless steels segment of the proposed Integrated and Stand Alone Hot ming subcategory.

ii. *PSES/PSNS.* EPA estimates that PSES–1 for the stainless segment of the integrated and stand alone hot forming subcategory would result in a reduction of 90% of the flow from current levels, and a 66% removal of toxic and non-conventional pollutants. However, EPA does not propose to promulgate PSES for the stainless steel segment of the proposed Integrated and Stand Alone Hot ming subcategory. EPA believes that nationally applicable PSES regulations are unnecessary at this time, because there are only three facilities in this segment and because PSES–1 would result in an average removal of only 4 toxic pound-equivalents per facility per year for these facilities. These reductions are much lower than other categorical standards promulgated by EPA. example, Organic Chemical, Plastics, and Synthetic Fibers (OCPSF), Electroplating, Battery Manufacturing, and Porcelain Enameling toxic pound equivalents removed per facility per year range from 6,747 to 14,960. And, EPA recently decided not to promulgate pretreatment standards for two industrial categories, Industrial Laundries, see 64 FR 45072 (August 18, 1999) and Landfills, see 65 FR 3008 (January 19, 2000), based on low removals of toxic pound equivalents by facilities in those categories. In the industrial laundries rule, EPA decided not to promulgate pretreatment standards based on 32 toxic pound equivalents per facility per year, and in the landfills effluent guidelines, EPA decided not to promulgate pretreatment standards for non-hazardous landfills based on the removal of only 14 toxic pound equivalents per facility per year.

The Agency believes that pretreatment local limits implemented on a case-by-case basis can more appropriately address any individual toxic parameters present at these facilities.

iii. *NSPS.* EPA's proposed technology is the same as the proposed BAT technology for this segment because no other treatment technologies are demonstrated to control the pollutants EPA proposes to regulate.

F. Non-integrated Steelmaking and Hot ming

After considering all of the technology options described in the Section V.C in light of the factors specified in section 304(b)(2)(B) and 306 of the Clean Water Act, as appropriate, EPA proposes to select the technology options identified below as BAT, PSES, NSPS, and PSNS for the carbon and alloy segment and

the stainless steel segment of the proposed Non-integrated and Stand Alone Hot ming Subcategory.

1. *Carbon and Alloy*

a. *Regulated Pollutants.* i. *BAT.* EPA is proposing regulating the following pollutants: lead and zinc.

ii. *PSES.* See discussion under ''Technology Selected—PSES'' below.

iii. *NSPS/PSNS.* EPA proposes no discharge of process wastewater pollutants to waters of the US for NSPS and PSNS.

b. *Technology Selected.*

i. *BAT.* The treatment technologies that serve as the basis for the development of the proposed BAT limits for the carbon and alloy segment of the proposed Non-integrated and Stand Alone Hot ming Subcategory are: solids removal, cooling tower, high rate recycle, mixed-media filtration of recycled flow or of low volume blowdown flow, and sludge dewatering. This is identified as BAT–1 in Section V.C. EPA estimates that the BAT–1 technology would result in a reduction of 90% of flow and a 72% reduction in the discharge of toxic and non-conventional pollutants. EPA estimates BAT–1 to remove 39,100 toxic pound-equivalents beyond current conditions, at an annualized compliance cost of $3.1 million (1997$). EPA estimates that no facilities would close as a result of BAT–1. EPA has determined that this option is economically achievable. EPA did not pursue additional, more stringent options because all significant POCs in the effluent after application of BAT–1 system are projected to exist at levels too low to be further treated by any add-on technology. Therefore, EPA proposes BAT–1 as the technology basis for BAT for the carbon and allow steel segment of the proposed Non-Integrated and Stand Alone Hot ming subcategory.

ii. *PSES.* EPA estimates that the PSES–1 technology would result in a reduction of flow of 7%, and the reduction in the discharge of non-conventional pollutants by 4.3%. However, EPA does not propose to revise PSES for the carbon and alloy steel segment of the proposed Non-Integrated and Stand Alone Hot ming subcategory. EPA believes that nationally applicable PSES regulations are unnecessary at this time, because there are only 15 facilities in this segment and because PSES–1 would result in an average removal of only 3 toxic pound-equivalents per facility per year for these facilities. These reductions are much lower than other categorical standards promulgated by EPA. example, Organic Chemical, Plastics, and Synthetic Fibers (OCPSF), Electroplating, Battery Manufacturing, and Porcelain Enameling toxic pound equivalents removed per facility per year range from 6,747 to 14,960. And, EPA recently decided not to promulgate pretreatment standards for two industrial categories, Industrial Laundries, see 64 FR 45072 (August 18, 1999) and Landfills, see 65 FR 3008 (January 19, 2000), based on low removals of toxic pound equivalents by facilities in those categories. In the industrial laundries rule, EPA decided not to promulgate pretreatment standards based on 32 toxic pound equivalents per facility per year, and in the landfills effluent guidelines, EPA decided not to promulgate pretreatment standards for non-hazardous landfills based on the removal of only 14 toxic pound equivalents per facility per year.

While EPA does not propose to revise PSES for this segment, EPA intends to re-codify the current PSES to fit the new proposed subcategorization format.

iii. *NSPS/PSNS.* EPA proposes no discharge of process wastewater pollutants to waters of the US for NSPS and PSNS. The model NSPS process water and water pollution control technologies include treatment and high-rate recycle systems, management of process area storm water, and disposal of low-volume blowdown streams by evaporation through controlled application on electric furnace slag, direct cooling of electrodes in electric furnaces, and other evaporative uses. Operators of 24 existing non-integrated steel facilities have reported zero discharge of process wastewater. These facilities are located in the following states: Alabama, Arizona, Georgia, Illinois, Indiana, Louisiana, New Jersey, New York, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, Texas, Utah, and Washington. In the Non-Integrated Steelmaking and Hot ming subcategory, the 24 facilities produce the following products: Bars, beams, billets, flats, plate, rail, rebar, rod, sheet, slabs, small structurals, strip, and specialty sections. Consequently, the Agency has determined that zero discharge is an appropriate NSPS for non-integrated steelmaking and hot forming operations located in any area of the United States and producing any product. EPA judged that there is no barrier to entry for new sources to achieve this option.

2. Stainless

a. *Regulated Pollutants.* i. *BAT.* EPA is proposing regulating the following pollutants: chromium and nickel.

ii. *PSES.* EPA is proposing regulating the following pollutants: chromium and nickel. Using the methodology described in Section IX.A.2, EPA has determined that both pollutants pass through.

iii. *NSPS/PSNS.* EPA proposes no discharge of process wastewater pollutants to waters of the US for NSPS/PSNS.

b. *Technology Selected.* i. *BAT.*

The treatment technologies that serve as the basis for the development of the proposed BAT limits for the Stainless segment are: solids removal, cooling tower, high rate recycle, mixed-media filtration of recycled flow or of low volume blowdown flow, and sludge dewatering. This is identified as BAT–1 in Section V.C. Under BAT–1, water usage would be reduced by 50% over current levels, and total loadings of non-conventionals would be reduced by 29%. EPA estimates BAT–1 to remove 1,560 toxic pound-equivalents beyond current conditions, at an annualized compliance cost of $0.1 million (1997$). EPA estimates that no facilities would close as a result of BAT–1. EPA has determined that this option is economically achievable. EPA did not pursue additional, more stringent options because all significant POCs in the effluent after application of BAT–1 system are projected to exist at levels too low to be further treated by any add-on technology. Therefore, EPA proposes BAT–1 as the technology basis for BAT for the stainless steel segment of the Non-Integrated Steelmaking and Hot ming subcategory.

ii. *PSES.* The treatment technologies that serve as the basis for the development of the proposed PSES limits for the Stainless segment are the same as for BAT–1. This option provides controls for each pollutant that EPA has determined passes through for this segment. EPA estimates that the PSES–1 technology would result in a reduction of flow of 85%, and the reduction in the discharge of non-conventional pollutants by 20%. EPA estimates that no facilities would close as a result of BAT–1. EPA has determined that this option is economically achievable. As was the case for BAT, EPA did not pursue additional, more stringent options for PSES because all significant POCs in the effluent after application of BAT–1 system are projected to exist at levels too low to be further treated by this or any other add-on technology. Therefore, EPA proposes BAT–1 as the technology basis for PSES for this segment.

iii. *NSPS/PSNS.* EPA proposes no discharge of process wastewater pollutants to waters of the US for NSPS and PSNS. See discussion under NSPS/PSNS for the Carbon and Alloy segment of this subcategory, above.

G. Finishing

After considering all of the technology options described in the Section V.C in light of the factors specified in section 304(b)(2)(B) and 306 of the Clean Water Act, as appropriate, EPA proposes to select the technology options identified below as BAT, PSES, NSPS, and PSNS for the carbon and allow segment and the stainless steel segment of the proposed Finishing Subcategory.

1. Carbon and Alloy

a. *Regulated Pollutants.* i. *BAT.* EPA is proposing regulating the following pollutants: hexavalent chromium, chromium, lead, and zinc.

ii. *PSES.* See discussion under ''Technology selected—PSES'' below.

iii. *NSPS.* EPA is proposing regulating the same pollutants as for BAT, with the addition of TSS and oil & grease.

iv. *PSNS.* EPA is proposing regulating the same pollutants as for BAT. Using the methodology described in Section IX.A.2, EPA has determined that hexavalent chromium, chromium, lead, and zinc pass through.

b. *Technology Selected.* i. *BAT.* The treatment technologies that serve as the basis for the development of the proposed BAT limits for the Carbon and Alloy segment for the proposed steel finishing subcategory are: recycle of fume scrubber water, diversion tank, oil removal, hexavalent chrome reduction (where applicable), equalization, metals precipitation, sedimentation, sludge dewatering, and counter-current rinses. This is identified as BAT–1 in Section V.C. EPA estimates that selection of the BAT–1 option as the technology basis would result in the reduction of flow by this segment of the non-integrated steelmaking and hot forming subcategory by 65%, and the reduction in the discharge of non-conventional pollutants by 25%. EPA estimates BAT–1 to remove 22,410 toxic pound-equivalents beyond current conditions, at an annualized compliance cost of $4.0 million (1997$). EPA estimates that no facilities would close as a result of BAT–1. EPA has determined that this option is economically achievable. EPA did not pursue additional, more stringent options because all significant POCs in the effluent after application of BAT–1 system are projected to exist at levels too low to be further treated by any other add-on technology. Therefore, EPA proposes BAT–1 as the technology basis for BAT for the carbon and alloy segment of the proposed Steel Finishing subcategory.

ii. *PSES.* The treatment technologies that serve as the basis for PSES–1 are the same as the BAT–1 technologies. EPA estimates that, under PSES–1, flow from this segment of the Finishing subcategory would decrease by 30%, and the amount of toxic and non-conventional pollutants discharged would decrease by 10%. However, EPA does not propose to revise PSES for the carbon and allow steel segment of the proposed Steel Finishing subcategory. EPA believes that nationally applicable PSES regulations are unnecessary at this time, because PSES–1 would result in an average removal of only 12 toxic pound-equivalents per facility per year for these facilities. These reductions are much lower than other categorical standards promulgated by EPA. example, Organic Chemical, Plastics, and Synthetic Fibers (OCPSF), Electroplating, Battery Manufacturing, and Porcelain Enameling toxic pound equivalents removed per facility per year range from 6,747 to 14,960. And, EPA recently decided not to promulgate pretreatment standards for two industrial categories, Industrial Laundries, see 64 FR 45072 (August 18, 1999) and Landfills, see 65 FR 3008 (January 19, 2000), based on low removals of toxic pound equivalents by facilities in those categories. In the industrial laundries rule, EPA decided not to promulgate pretreatment standards based on 32 toxic pound equivalents per facility per year, and in the landfills effluent guidelines, EPA decided not to promulgate pretreatment standards for non-hazardous landfills based on the removal of only 14 toxic pound equivalents per facility per year.

While EPA does not propose to revise PSES for this segment, EPA intends to re-codify the current PSES to fit the new proposed subcategorization format.

iii. *NSPS/PSNS.* EPA proposes NSPS and PSNS for this subcategory to be the same as the proposed BAT technology because no other treatment technologies are demonstrated to control the pollutants EPA proposes to regulate.

2. Stainless

a. *Regulated Pollutants.* i. *BAT.* EPA is proposing regulating the following pollutants: hexavalent chromium, chromium, nickel, ammonia-N, and fluoride.

EPA is aware of a potential problem associated with nitrate discharge from one stainless steel finishing operation with combination (hydrofluoric and nitric) acid pickling. It may be that similar problems are associated with discharges coming from similar operations in other parts of the country. Nitrates, when consumed in drinking water, can be associated with health problems in humans, particularly infants.

Nitrates were identified as a pollutant of concern for stainless steel acid pickling operations where nitric acids and combinations of nitric and hydrofluoric acids are used for surface treatments for various grades of stainless steels. Nitrates originate from the nitric acids used in the process and are released from three sources: waste or spent pickling acids, pickle rinse waters and acid pickling fume scrubbers. Some stainless steel finishing operations dispose of their nitrate bearing wastewater via off-site hauling. Many other stainless steel finishing facilities treat spent nitric acid and nitric/hydrofluoric acid pickle liquors on site with the pickling rinse waters and fume scrubber waters from other stainless steel finishing operations. Nitrates are soluble in water and thus are not removed to any appreciable degree in the metals precipitation systems used to treat chromium and nickel in stainless steel finishing wastewaters.

EPA collected information from mills with stainless steel finishing operations with onsite chemical precipitation treatment of spent nitric and nitric/hydrofluoric acids in combination with pickle rinse waters and acid pickling fume scrubber blow-down. The treated effluent nitrate concentrations from the mills without acid purification units ranged from about 500 to more than 1,000 mg/l.

Acid purification systems are used on several stainless steel acid pickling lines for recovery and reuse of nitric and nitric/hydrofluoric acids. This technology comprises removal of dissolved metals (iron, chromium, nickel) from a side stream of the strong acid pickling solution and return of the purified acid to the acid pickling bath. This essentially extends the life of the pickling acids, thereby reducing the consumption of virgin nitric acid. A reject stream containing dilute acid and the dissolved metals is periodically sent to wastewater treatment.

The model BAT technology for stainless steel finishing operations includes acid purification units for recovery and reuse of spent nitric and nitric/hydrofluoric acid pickling solutions. EPA believes facilities using acid purification technology can achieve long-term average concentrations of nitrates in the treated stainless steel acid pickling wastewater effluent in the range of 200 mg/l to 300 mg/l.

EPA is considering developing a limit for nitrate (in the form of nitrate-nitrite-N) for stainless steel finishing operations with combination acid pickling. EPA solicits comment and information on this issue, particularly (a) monitoring data from steel finishing

operations that discharge nitrates, or POTWs that receive wastewater from these operations, and (b) performance data and cost estimates from vendors of pollution control equipment that is capable of achieving substantial reduction of nitrates from steel pickling wastewaters.

ii. *PSES.* See discussion under ''Technology Selected—PSES'' below.

iii. *NSPS/PSNS.* EPA is proposing regulating the same pollutants as for BAT, with the addition of TSS and oil & grease.

iv. *PSNS.* EPA is proposing regulating the same pollutants as for BAT. Using the methodology described in Section IX.A.2, EPA has determined that hexavalent chromium, chromium, nickel, ammonia-N, and fluoride pass through.

b. *Technology Selected.* i. *BAT.* The treatment technologies that serve as the basis for the development of the proposed BAT for the Stainless segment of the proposed steel finishing subcategory are Recycle of fume scrubber water, diversion tank, oil removal, hexavalent chrome reduction (where applicable), equalization, metals precipitation, sedimentation, sludge dewatering, counter-current rinses, and acid purification. This is identified as BAT–1 in Section V.C. EPA estimates that, under BAT–1, flow from this segment of the Finishing subcategory would decrease by 47%, and the amount of toxic and non-conventional pollutants discharged would decrease by 45%. EPA estimates BAT–1 to remove 69,700 toxic pound-equivalents beyond current conditions, at an annualized compliance cost of $0.2 million (1997$). EPA estimates that no facilities would close as a result of BAT–1. EPA has determined that this option is economically achievable. EPA did not pursue additional, more stringent options because all significant POCs in the effluent after application of BAT–1 system are projected to exist at levels too low to be further treated by any other add-on technology. Therefore, EPA proposes BAT–1 as the technology basis for BAT for the stainless steel segment of the proposed Steel Finishing subcategory.

ii. *PSES.* The treatment technologies that serve as the basis for PSES–1 are the same as the BAT–1 technologies. EPA estimates that, under PSES–1, flow from the stainless segment of the Steel Finishing subcategory would decrease by 23%, and the amount of toxic and non-conventional pollutants discharged would decrease by 10%. However, EPA is not proposing to revise PSES for facilities in this segment.

EPA discovered that the majority (548 of 653) of the toxic pound-equivalents projected to be removed through promulgation of PSES standards were attributable to one parameter (fluoride) from one facility. EPA believes that, in a situation like this, it is more appropriate for the POTW control authority for that facility to control the pollutant release through its pretreatment control mechanism, rather than to implement a national pretreatment standard. When these toxic pound-equivalents are removed from the analysis, the number of toxic pound-equivalents per facility drops to 7. EPA recently decided not to promulgate pretreatment standards for two industrial categories, Industrial Laundries, see 64 FR 45072 (August 18, 1999) and Landfills, see 65 FR 3008 (January 19, 2000), with projected removals of toxic pound equivalents by facilities in those categories comparable to this. In the industrial laundries rule, EPA decided not to promulgate pretreatment standards based on 32 toxic pound equivalents per facility per year; and in the landfills effluent guidelines, EPA decided not to promulgate pretreatment standards for non-hazardous landfills based on the removal of only 14 toxic pound equivalents per facility per year.

While EPA does not propose to revise PSES for this segment, EPA intends to re-codify the current PSES to fit the new proposed subcategorization format. The PSES limits currently in 40 CFR part 420 for each manufacturing process except electroplating would continue to apply under this proposal. Limits for the electroplating manufacturing process are currently included in 40 CFR part 433. The PSES limits in 40 CFR part 433 are concentration-based, as opposed to those in 40 CFR part 420, which are mass-based. To ensure a consistent basis for facilities operating other operations in addition to electroplating, EPA is proposing to convert the existing 40 CFR part 433 PSES concentration-based limits to mass-based limits by multiplying by the proposed BAT production-normalized flow rate and the appropriate conversion factor. Nine pollutants are regulated under PSES at 40 CFR part 433, some of which do not apply to electroplating operations as performed in the Iron and Steel industry. EPA proposes to specify PSES limits for four of the pollutants: Chromium, lead, nickel, and zinc. These four metals were identified as POCs for electroplating manufacturing operations in section 7 of the technical development document. EPA does not believe this action will result in incremental cost increases to the industry. EPA seeks industry comment on this matter.

iii. *NSPS/PSNS.* EPA proposes NSPS and PSNS for this subcategory to be the same as the proposed BAT technology because no other treatment technologies are demonstrated to control the pollutants EPA proposes to regulate.

H. Other

After considering all of the technology options described in the Section V.C in light of the factors specified in section 304(b)(1)(B) and 306 of the Clean Water Act, as appropriate, EPA proposes to select the technology options identified below as BPT, PSES, NSPS, and PSNS for the following proposed segments in this final subcategory: Direct-Reduced Ironmaking, ging, and Briquetting.

1. Direct-reduced Ironmaking (DRI)

a. *Regulated Pollutants.* The Agency proposes to regulate TSS for this segment.

b. *Technology Selected.* i. *BPT/BCT/NSPS.* EPA is proposing BPT and BCT for the Direct-reduced Ironmaking (DRI) segment because the Agency is setting limits for the first time for the conventional pollutants in this subcategory. The treatment technologies that serve as the basis for the development of the proposed BPT/BCT/NSPS limits for the DRI segment are: solids removal, clarifier, and high rate recycle, with filtration for blowdown wastewater. This is identified as BPT–1 in Section V.C. EPA estimates that no facilities would close as a result of BPT–1.EPA proposes this option because it is the best practicable control technology currently available. It is also the best demonstrated technology for controlling the discharge of conventional pollutants from these operations. EPA is not proposing BAT limitations for this segment because it has identified no toxic or non-conventional pollutants of concern for the segment.

ii. *PSES/PSNS.* The Agency reserves PSES/PSNS for the DRI segment it found no pollutants that pass through.

2. ging

a. *Regulated Pollutants and Limits.* i. *Direct Dischargers (BPT/BCT/NSPS).* The Agency proposes to regulate TSS and oil & grease for this segment.

ii. *Indirect Dischargers (PSES/PSNS).* The Agency reserves PSES/PSNS for the forging segment because it found no pollutants that pass through.

b. *Technology Selected.* i. *BPT/BCT/NSPS.* forging operations, EPA is proposing BPT/BCT because the Agency is setting limits for the first time for the conventional pollutants in this

subcategory. The treatment technology that serves as the basis for the development of the proposed BPT and BCT limitations and NSPS for the ging segment is oil/water separation. This is identified as BPT–1 in Section V.C. EPA estimates that there will be a reduction of O&G of 72% from direct discharging forging operations as a result of implementation of this BPT/BCT option.

EPA estimates that no facilities would close as a result of BPT–1. EPA proposes this option because it is the best practicable control technology currently available. It is also the best demonstrated technology for controlling the discharge of conventional pollutants from these operations.

EPA is not proposing BAT limitations for this segment because it has identified no toxic or non-conventional pollutants of concern for the segment. EPA is not proposing pretreatment standards for this segment because it found no pollutants that pass through.

3. Briquetting

a. *Technology Selected.* The proposed BPT/BCT/NSPS/PSES/PSNS limits for the Briquetting segment are: no discharge of process wastewater pollutants to waters of the U.S.

X. Regulatory Implementation

A. Implementation of Part 420 Through the NPDES Permit Program and the National Pretreatment Program

Under sections 301, 304, 306 and 307 of the CWA, EPA promulgates national effluent limitations guidelines and standards of performance for major industrial categories for three classes of pollutants: (1) Conventional pollutants (*i.e.,* total suspended solids, oil and grease, biochemical oxygen demand, fecal coliform, and pH); (2) toxic pollutants (*e.g.*, toxic metals such as chromium, lead, nickel, and zinc; toxic organic pollutants such as benzene, benzo-a-pyrene, and naphthalene); and (3) non-conventional pollutants (*e.g.*, ammonia-N, fluoride, iron, total phenols, and 2,3,7,8-tetrachlorodibenzofuran).

As discussed in Section II, EPA must promulgate six types of effluent limitations guidelines and standards for each major industrial category, as appropriate:

Abbreviation	Effluent limitation guideline or standard
BPT	Best Practicable Control Technology Currently Available.
BAT	Best Available Technology Economically Achievable.
BCT	Best Control Technology for Conventional Pollutants.
NSPS	New Source Performance Standards.
PSES	Pretreatment Standards for Existing Sources.
PSNS	Pretreatment Standards for New Sources.

The pretreatment standards apply to industrial facilities with wastewater discharges to POTWs, which generally are municipal wastewater treatment plants. The effluent limitations guidelines and new source performance standards apply to industrial facilities with direct discharges to navigable waters.

1. NPDES Permit Program

Section 402 of the CWA establishes the National Pollutant Discharge Elimination System (NPDES) permit program. The NPDES permit program is designed to limit the discharge of pollutants into navigable waters of the United States through a combination of various requirements including technology-based and water quality-based effluent limitations. This proposed regulation contains the categorical technology-based effluent limitations guidelines and standards applicable to the iron and steel industry to be used by permit writers to derive NPDES permit technology-based effluent limitations. Water quality-based effluent limitations (WQBELs) are based on receiving water characteristics and ambient water quality standards, including designated water uses. They are derived independently from the technology-based effluent limitations set out in this proposed regulation. The CWA requires that NPDES permits must contain for a given discharge, the more stringent of the applicable technology-based and water quality-based effluent limitations.

Section 402(a)(1) of the CWA provides that in the absence of promulgated effluent limitations guidelines or standards, the Administrator, or her designee, may establish effluent limitations for specific dischargers on a case-by-case basis. Federal NPDES permit regulations provide that these limits may be established using ''best professional judgment'' (BPJ) taking into account any proposed effluent limitations guidelines and standards and other relevant scientific, technical and economic information. Where EPA has promulgated technology-based effluent limitations guidelines and standards for particular pollutants, any more stringent effluent limitations must be either WQBELs or effluent limitations derived under other regulations established by the permit authority.

Section 301 of the CWA, as amended by the Water Quality Act of 1987, requires that BAT effluent limitations for toxic pollutants are to have been achieved as expeditiously as possible, but not later than three years from date of promulgation of such limitations and in no case later than March 31, 1989. See 301(b)(2). Because the proposed revisions to 40 CFR part 420 will be promulgated after March 31, 1989, NPDES permit effluent limitations based on the revised effluent limitations guidelines must be included in the next NPDES permit issued after promulgation of the regulation and the permit must require immediate compliance.

2. New Source Performance Standards

purposes of applying the new source performance standards (NSPS) being proposed today, a source is a new source if it commences construction after the effective date of the forthcoming final rule. (EPA expects to take final action on this proposal in April 2002, which is more than 120 days after the date of proposal.) See 40 CFR 122.2. Each source that meets this definition would be required to achieve any applicable newly promulgated NSPS upon commencing discharge.

However, the currently codified NSPS continue to have force and effect for a limited universe of new sources; for this reason, in today's proposed rule, EPA is retaining the NSPS promulgated in 1982 for part 420. Specifically, following promulgation of any revised NSPS, the 1982 NSPS would continue to apply for a limited period of time to new sources that commenced discharge within the time period beginning ten years before the effective date of a final rule revising part 420. Thus, if EPA promulgates revised NSPS for Part 420 in April 2002, and those regulations take effect in June 2002, any direct discharging new source that commenced discharge after June 1992 but before June 2002 would be subject to the currently codified NSPS for ten years from the date it commenced discharge or during the period of depreciation or amortization of such facility, whichever comes first. See CWA section 306(d). After that ten year period expires, any new or revised BAT limitations would apply with respect to toxics and nonconventional pollutants. Limitations on conventional pollutants would be based on the1982 NSPS for conventional pollutants unless EPA promulgates revisions to BPT/BCT for conventional pollutants that are more stringent than the 1982 NSPS.

Rather than reproduce the 1982 NSPS in the proposed rule (which is substantially reorganized from the 1982 structure), EPA proposes to refer permitting authorities to the NSPS codified in the 2000 edition of the Code of Federal Regulations for use during the applicable ten-year period. (The 2000 edition of the Code of Federal Regulations presents the 1982 NSPS tables.) This approach would allow EPA to avoid reproducing in the new regulations numerous tables of NSPS that would soon become outdated.

National Pretreatment Standards

40 CFR Part 403 sets out national pretreatment standards which have three principal objectives: (1) To prevent the introduction of pollutants into publicly owned treatment works (POTWs) that will interfere with POTW operations, including use or disposal of municipal sludge; (2) to prevent the introduction of pollutants into POTWs which will pass through the treatment works or will otherwise be incompatible with the treatment works; and (3) to improve opportunities to recycle and reclaim municipal and industrial wastewaters and sludges.

The national pretreatment standards comprise a series of prohibited discharges designed to prevent interference with POTW operations and federal categorical pretreatment standards designed to prevent pass through of pollutants introduced to POTWs by industrial sources. Local control authorities are required to implement the national pretreatment program including application of the federal categorical pretreatment standards to their industrial users that are subject to such categorical pretreatment standards, as well as any pretreatment standards derived locally (*i.e.,* local limits) that are more restrictive than the federal categorical standards. This proposed regulation sets out revisions to the federal categorical pretreatment standards (PSES and PSNS) applicable to iron and steel facilities regulated by 40 CFR part 420.

The federal categorical pretreatment standards for existing sources must be achieved not later than three years after promulgation of the standards. During that three year period, existing indirect discharges are subject to the 1982 PSES. The 1982 PSES would no longer apply after the expiration of that three-year period. Rather than reproduce the 1982 PSES in the proposed rule (which is substantially reorganized from the 1982 structure), EPA proposes to refer pretreatment control authorities to the PSES codified in the 2000 edition of the Code of Federal Regulations for use during that three-year period. (The 2000 edition of the Code of Federal Regulations presents the 1982 PSES tables.) This approach would allow EPA to avoid reproducing in the new regulations numerous tables of pretreatment standards that would become outdated within three years.

the purposes of this rule, EPA proposes to treat new indirect dischargers in the same way that it treats new direct dischargers, in several material respects.

First, as discussed elsewhere in this preamble, EPA proposes PSNS technologies to be identical to NSPS technologies except where different technologies are justified by EPA's pass through analysis.

Second, for indirect dischargers that are subject to the current PSNS, EPA proposes to maintain the current PSNS for ten years beginning on the date the new indirect discharger commenced discharge or during the period of depreciation or amortization of the facility, whichever comes first. Thereafter, the indirect discharger would be subject to any newly promulgated PSES. EPA sees no principled basis to distinguish between new direct and indirect dischargers when deciding whether to apply more stringent standards within the first ten years of operation. Like new direct dischargers, new indirect dischargers were designed and constructed to meet existing performance standards for new sources. Concluding that it would be unfair to require a new source to meet a new set of limits within the first ten years of operation, Congress passed CWA section 306(d). EPA believes the same concerns apply to new indirect dischargers; therefore, in the interests of equity, EPA proposes to apply the ten-year shield to new indirect dischargers as well.

Third, EPA proposes to characterize a source as a new source subject to the new PSNS if it commences construction after the effective date of the forthcoming final rule. Each source that meets this definition would be required to achieve any applicable newly promulgated PSNS upon commencing discharge. EPA believes this definition is appropriate in the context of part 420 because PSNS already exists to regulate any indirect discharges that might commence construction prior to promulgation of revisions to part 420. Therefore, this is not a situation where new discharges might go unregulated during the period between proposed and final action. This definition is also consistent with the most recent interpretation of CWA section 306, upon which EPA relies by analogy. In 1983, the U.S. Court of Appeal for the Third Circuit struck down the definition of new source in EPA's pretreatment regulations based on its interpretation of section 306, which applies to direct discharging new sources. See *National Assoc. of Metal Finishers, et al.* v. *EPA,* 719 F.2d 624 (3d Cir. 1983). In 1987, the U.S. Court of Appeals for the District of Columbia disagreed with the Third Circuit's interpretation of section 306 and upheld a definition of new source that was tied to the date of promulgation rather than the date of proposal. See *NRDC* v. *EPA,* 822 F.2d 104 (D.C. Cir. 1987). The court reasoned that a period of uncertainty beyond 120 days (from proposal to promulgation) was unreasonable, and that Congress could not have intended potential new sources ''to languish in doubt as to when non-final regulations would eventually enjoy the force of law.'' This reasoning is relevant to this rulemaking, where EPA is scheduled to take final action on today's proposal in 18 months. Finally, EPA's approach in this proposed rule is also distinguishable from the facts contemplated by the Third Circuit, which did not consider the retrofitting costs a new source might incur when planning and constructing its facility in accordance with the current PSNS, only to have to make potentially costly adjustments soon thereafter to comply with newly promulgated PSNS.

Rather than reproduce the 1982 PSNS in the proposed rule (which is substantially reorganized from the 1982 structure), EPA proposes to refer pretreatment control authorities to the PSNS codified in the 2000 edition of the Code of Federal Regulations for use during the applicable ten-year period. (The 2000 edition of the Code of Federal Regulations presents the 1982 PSNS tables.) This approach would allow EPA to avoid reproducing in the new regulations numerous tables of PSNS that have already been codified.

B. Upset and Bypass Provisions

A ''bypass'' is an intentional diversion of waste streams from any portion of a treatment facility. An ''upset'' is an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. EPA's regulations concerning bypasses and upsets for direct dischargers are set forth at 40 CFR 122.41(m) and (n) and for indirect dischargers at 40 CFR 403.16 and 403.17.

C. Variances and Removal Credits

1. Variances

The NPDES permit regulations provide for the following types of modifications of permit effluent limitations derived from the effluent limitations guidelines:

a. Section 301(c) economic variance from BAT for non-conventional pollutants.

b. Section 301(g) water quality-related variance from BAT for non-conventional pollutants.

c. Section 316(a) thermal variance from BPT, BCT and BAT.

d. Fundamentally different factors variance (40 CFR part 125, subpart D).

Although final regulations that set out criteria for applying for and evaluating applications for section 301(c) and 301(g) variances have not been promulgated, EPA has published guidance materials for permit authorities regarding such variances. Variances under section 316(a) for thermal discharges are not at issue in the current 40 CFR part 420, or with these proposed modifications, because effluent limitations guidelines for thermal discharges have not been promulgated previously, nor is EPA proposing them at this time. See the published guidance materials and 40 CFR part 125 for further information regarding the above-listed variances. The pretreatment regulations incorporate a similar requirement at 40 CFR 403.13(h)(9).

2. Removal Credits

Section 307(b)(1) of the CWA establishes a discretionary program for POTWs to grant ''removal credits'' to their indirect dischargers. Removal credits are a regulatory mechanism by which industrial users may discharge a pollutant in quantities that exceed what would otherwise be allowed under an applicable categorical pretreatment standard because it has been determined that the POTW to which the industrial user discharges consistently treats the pollutant. EPA has promulgated removal credit regulations as part of its pretreatment regulations. See 40 CFR 403.7. These regulations provide that a POTW may give removal credits if prescribed requirements are met. The POTW must apply to and receive authorization from the Approval Authority. To obtain authorization, the POTW must demonstrate consistent removal of the pollutant for which approval authority is sought. Further, the POTW must have an approved pretreatment program. Finally, the POTW must demonstrate that granting removal credits will not cause the POTW to violate applicable Federal, State and local sewage sludge requirements. 40 CFR 403.7(a)(3).

The United States Court of Appeals for the Third Circuit interpreted the Clean Water Act as requiring EPA to promulgate the comprehensive sewage sludge regulations required by CWA § 405(d)(2)(A)(ii) before any removal credits could be authorized. See *NRDC* v. *EPA,* 790 F.2d 289, 292 (3rd Cir., 1986); cert. denied. 479 U.S. 1084 (1987). Congress made this explicit in the Water Quality Act of 1987, which provided that EPA could not authorize any removal credits until it issued the sewage sludge use and disposal regulations. On February 19, 1993, EPA promulgated Standards for the Use or Disposal of Sewage Sludge, which are codified at 40 CFR part 503 (58 FR 9248). EPA interprets the Court's decision in *NRDC* v. *EPA* as only allowing removal credits for a pollutant if EPA has either regulated the pollutant in part 503 or established a concentration of the pollutant in sewage sludge below which public health and the environment are protected when sewage sludge is used or disposed.

The part 503 sewage sludge regulations allow four options for sewage sludge disposal: (1) Land application for beneficial use, (2) placement on a surface disposal unit, (3) firing in a sewage sludge incinerator, and (4) disposal in a landfill which complies with the municipal solid waste landfill criteria in 40 CFR part 258. Because pollutants in sewage sludge are regulated differently depending upon the use or disposal method selected, under EPA's pretreatment regulations the availability of a removal credit for a particular pollutant is linked to the POTW's method of using or disposing of its sewage sludge. The regulations provide that removal credits may be potentially available for the following pollutants:

(1) If POTW applies its sewage sludge to the land for beneficial uses, disposes of it in a surface disposal unit, or incinerates it in a sewage sludge incinerator, removal credits may be available for the pollutants for which EPA has established limits in 40 CFR part 503. EPA has set ceiling limitations for nine metals in sludge that is land applied, three metals in sludge that is placed on a surface disposal unit, and seven metals and 57 organic pollutants in sludge that is incinerated in a sewage sludge incinerator. (40 CFR 403.7(a)(3)(iv)(A)).

(2) Additional removal credits may be available for sewage sludge that is land-applied, placed in a surface disposal unit, or incinerated in a sewage sludge incinerator, so long as the concentration of these pollutants in sludge do not exceed concentration levels established in part 403, Appendix G, Table II. sewage sludge that is land applied, removal credits may be available for an additional two metals and 14 organic pollutants. sewage sludge that is placed on a surface disposal unit, removal credits may be available for an additional seven metals and 13 organic pollutants. sewage sludge that is incinerated in a sewage sludge incinerator, removal credits may be available for three other metals (40 CFR 403.7(a)(3)(iv)(B)).

(3) When a POTW disposes of its sewage sludge in a municipal solid waste landfill that meets the criteria of 40 CFR part 258, removal credits may be available for any pollutant in the POTW's sewage sludge (40 CFR 403.7(a)(3)(iv)(C)).

Several iron and steel companies which are indirect dischargers to POTWs have sought removal credits for pollutants subject to categorical pretreatment standards but for which no sewage sludge standard (part 503, part 403, Appendix G-Table I) or maximum concentration (part 403, Appendix G—Table II) has been established. Specifically, these companies claim that phenols (4AAP) are consistently treated by POTWs and do not cause the sewage sludge to adversely affect human health and the environment. (See, *e.g., LTV Steel* v. *EPA,* No. 94–1516 (7th Cir.)). Today's proposal, if finalized, would mean that removal credits for phenols (4AAP) would no longer be necessary, because there would no longer be a categorical pretreatment standard for that pollutant. However, for those pollutants which would be included in the categorical pretreatment standard, only those included in either part 403, Appendix G—Table I or Table II would be eligible for removal credits.

D. Production Basis for Calculation of Permit Limitations

1. Background

The effluent limitations guidelines and standards for BPT, BAT, NSPS, PSES, and PSNS proposed today are expressed as mass limitations in pounds/ton of product. The mass limitation is derived by multiplying an effluent concentration (determined from the analysis of treatment system performance) by a model flow appropriate for each subcategory expressed in gallons/ton of product, or gallons/day. The production normalized flows used to develop many of the limits in the proposed rule are considerably lower than those used to

develop currently applicable limits. Consequently, many of the proposed limitations are more stringent than the current limitations for the same operations, even though other components of the wastewater treatment system remains the same. The proposed limitations neither require the installation of any specific control technology nor the attainment of any specific flow rate or effluent concentration. A facility subject to today's proposed regulation can use various treatment alternatives or water conservation practices to achieve a particular effluent limitation or standard. The model treatment systems described here illustrate at least one means available to achieve the proposed effluent limitations guidelines and standards.

The NPDES permit regulations at § 122.45(f) require that NPDES permit effluent limitations be specified as mass effluent limitations (*e.g.,* lbs/day or kg/day), except under certain enumerated circumstances that do not apply here. In order to convert the proposed effluent limitations expressed as pounds/ton to a monthly average or daily maximum permit limit, the permitting authority would use a production rate with units of tons/day. The current part 420 and part 122.45(b)(2) NPDES permit regulations require that NPDES permit and pretreatment limits be based on a ''reasonable measure of actual production.'' The production rates used for NPDES permitting for the iron and steel industry have commonly been the highest annual average production from the prior five year period prorated to a daily basis, or the highest monthly production over the prior five years prorated to a daily basis. Industry stakeholders have indicated that (1) EPA should put the method used to determine appropriate production rates for calculating allowable mass loadings into the regulation for consistency, so that the permit writers can all use the same basis; and (2) EPA should use a high production basis, such as maximum monthly production over the previous five year period or maximum design production, in order to ensure that a facility will not be out of compliance during periods of high production.

The NPDES permit regulations at 40 CFR 122.45(b)(2)(i) require that for existing sources mass effluent limitations calculated from production-based effluent limitations guidelines and standards must be based not on production capacity, but on a ''reasonable measure of actual production.'' The current iron and steel regulation at 40 CFR 420.04 sets out the basis for calculating mass-based pretreatment requirements and requires that the pretreatment requirements also be based on a reasonable measure of actual production. That regulation provides the following examples of what may constitute a reasonable measure of actual production: the monthly average for the highest of the previous five years, or the high month of the previous year. Both values are converted to a daily basis (*i.e.,* tons/day) for purposes of calculating monthly average and daily maximum mass permit effluent limitations. Similar provisions exist in the national pretreatment regulations at 40 CFR 403.6(c)(3) for deriving mass-based pretreatment requirements.

Each of the above regulations requires that effluent limitations and pretreatment standards for new sources must be based on projected production. That approach is carried forward in this proposed regulation.

EPA believes that some NPDES and pretreatment permit production rates have been derived in a manner that is not consistent with the term ''reasonable measure of actual production'' specified at § 122.45(b)(2)(i), 403.6(c)(3), and 420.04. In some cases, maximum production rates for similar process units discharging to one treatment system were determined from different years or months, which may provide an unrealistically high measure of actual production. In EPA's view, this would occur if the different process units could not reasonably produce at these high rates simultaneously.

The ideal situation for the application of production-based effluent limitations and standards is where production is relatively constant from day-to-day or month-to-month. In this case, the production rate used for purposes of calculating the permit limitations would then be the average rate. However, in the case of the iron and steel industry, production rates are not constant and vary significantly based on factors such as fluctuations in marked demand for domestic products, maintenance, product changes, equipment failures, and facility modifications. As such, the typical production rate for individual mills vary significantly over time, especially over the customary five-year life of a permit.

The objective in determining a production estimate for a mill is to develop a reasonable measure of production which can reasonably be expected to prevail during the next term of the permit. This is used in combination with the production-based limitations to establish a maximum mass of pollutant that may be discharged each day and month. However, if the permit production rate is based on the maximum month, then the permit could allow excessive discharges of pollutants during significant portions of the life of the permit. These excessive allowances may discourage mills from ensuring optimal waste management, water conservation, and wastewater treatment practices during lower production periods. On the other hand, if the average permit production rate is based on an average derived from the highest year of production over the past five years, then mills may have trouble ensuring that their waste management, water conservation, and wastewater treatment practices can accommodate shorter periods of higher production. This might require mills to target a more stringent treatment level than that on which the limits were based during these periods of high production. To accomplish this mills would likely have to develop more efficient treatment systems, greater hydraulic surge capacity, and better water conservation and waste management practices during these periods.

2. Alternatives for Establishing Permit Effluent Limitations

EPA is soliciting comment on several alternative approaches that may result in more stringent mass-based permits for some mills with better protection of the environment for the entire life of a permit and may result in higher costs. Each alternative requires that production from unit operations that do not generate or discharge process wastewater shall not be included in the calculation of operating rates.

Alternative A: This is the basis for today's proposed limits. It retains the essential requirements of the current rule as described above (see § 420.3). However, today's proposal provides additional instructions for avoiding approaches that result in unrealistically high estimates of actual production by only considering production from all production units that could occur simultaneously (see § 420.3(c)). This may result in higher costs for those mills with current permit conditions based on production levels that are higher than levels that could occur simultaneously at multiple process units. However, these costs were included in the economic analysis for the 1982 I&S regulation as well as today's proposal.

Alternative B: The Agency is considering including in the rule a requirement for the permit writer to establish multi-tiered permit limits. Permit writers and control authorities

currently use their best professional judgment for establishing multi-tiered permits. The Agency has issued guidance for use in considering multi-tiered permits (see Chapter 5 of the ''U.S. EPA NPDES Permit Writers' Manual,'' (EPA–833–8–96–003, December 1996) and Chapter 7 of the ''Industrial User Permitting Guidance Manual,'' (EPA 833/R–89–001, September 29, 1989).

In situations where a single set of effluent limitations are not appropriate for the permit's entire period, a tiered permit may be established. One set of limits would apply for periods of average production along with other sets which take effect when there are significant changes in the average production rate. The guidance notes that a 10 to 15 percent deviation above or below the long-term average production rate is within the range of normal variability. Predictable changes in the long-term production higher than this range would warrant consideration of a tiered or multi-tiered permit. The iron and steel industry has a variable historical production rate where the permit modification process is not fast enough to respond to the need for higher or lower equivalent limits. example, many iron and steel mills have a characteristic historical average monthly production rate that varies between 60 to 95 percent of plant capacity. (Note that for a mill operating at 60 percent of capacity, a production increase to 95 percent of capacity would represent nearly a 60 percent jump in production.) In these cases, alternate effluent limitations might be established for average production rates associated, for example, with 75 and 95 percent of capacity.

Alternative C: To provide a basis for deriving NPDES and pretreatment permit production rates that is consistent with the term reasonable measure of actual production and that can be applied consistently for steel mills subject to part 420, EPA is also considering revising the definition of production. The modified definition of the NPDES and pretreatment permit production basis would be the average daily operating rate for the year with the highest annual production over the past five years, taking into account the annual hours of operation of the production unit and the typical operating schedule of the production unit, as illustrated by the following example:

Highest annual production from previous five years.	3,570,000 tons.
Operating hours	8,400 hours.
Hourly operating rate	425 tons/hour.
Average daily operating rate (24 hour day).	10,200 tons/day.

The above example is for a process unit that is operated typically 24 hours per day with short-term outages for maintenance on a weekly or monthly basis. steel processing facilities that are operated typically less than 24 hours per day, the average daily operating rate must be determined based on the typical operating schedule (*e.g.*, 8 hours per day for a facility operated one 8-hour turn (or shift) per day; 16 hours per day for a facility operated for two 8-hour turns per day). example:

Highest annual production from previous five years.	980,000 tons.
Operating hours	4,160 hours.
Hourly operating rate	235.6 tons/hour.
Average daily operating rate (16 hour day).	3,769 tons/day.

In this example, EPA recognizes that the approach could cause problems for a facility that was operated 16 hours/day at the time the permit was issued and then wished to change to 24 hours/day based on unforseen changes in market conditions. To address this issue, the approach could be combined with the tiered permit approach discussed above.

multiple similar process units discharging to the same wastewater treatment system with one NPDES or pretreatment permit compliance point (*e.g.*, two blast furnaces operated with one treatment and recycle system for process waters), under this approach the year with the highest annual production over the previous five years would be determined on the basis of the sum of annual production for both furnaces. Then, based on this year's average daily operating rate would be calculated as above independently for each furnace using total annual production and annual operating hours for each furnace. The daily production values would be summed to calculate the average daily operating rate for the combination of the two furnaces. example, consider the following production data:

	Furnace A	Furnace B	Total (tons)
1995	1,850,000	1,305,000	3,155,000
1996	1,675,000	1,425,000	3,100,000
1997	1,760,000	1,406,000	3,166,000
1998	1,580,000	1,328,000	2,908,000
1999	1,825,000	1,380,000	3,205,000

Annual maximum production rates for each furnace and the combination of the two furnaces are underlined. In this example, 1999 was the maximum production year for the combination of the furnaces and the data from each furnace that year would be used to calculate the average daily operating rates. Had the 1995 data from Furnace A and the 1996 data from Furnace B been used in combination (3,275,000 tons), an unrealistic measure of actual production might have resulted if the two furnaces could not produce at these high levels concurrently. example, if the downstream intermediate production capacity effectively limits the combined production of the two furnaces. On the other hand, if the two furnaces could produce at these high levels concurrently, and might reasonablely be expected to over the forthcoming five-year permit cycle if strong market conditions prevailed, then the production measure based on the 1995 Furnace A data and the 1996 Furnace B data might not be an unrealistic measure of actual production.

In contrast to the previous example, for multiple process units that are not similar, but have process wastewater co-treated in one centralized wastewater treatment system with one NPDES or pretreatment permit compliance point, the year with the highest production over the previous five years would be determined separately for each production unit or combination of similar production units with the highest annual production. example, where process wastewater for BOF steelmaking, vacuum degassing, and

continuous casting operations are discharged through one NPDES permit or pretreatment permit compliance point. Consider the following example:

	BOF	V. Degasser	C. Caster (tons)
1995	2,675,000	1,305,000	2,658,000
1996	2,900,000	1,600,000	2,885,000
1997	3,150,000	1,690,000	3,140,000
1998	3,280,000	1,668,000	3,270,000
1999	3,225,000	1,380,000	3,215,000

In this example, 1998 production data for the BOF, 1997 data from the vacuum degasser, and 1998 data for the continuous caster would be used to develop the NPDES permit effluent limitations. An analogous situation would be for a steel finishing plant with acid pickling, cold rolling and electroplating operations.

The permit applicant would, under this alternative, need to provide the following information with its permit application or pretreatment report: for each process operation regulated, the average daily operating rate determined in accordance with § 420.3, including the underlying production data and operating schedule information necessary to calculate the average daily operating rate; and, sufficient information to identify each process operation in terms of the definitions of process operations set out in this part.

Alternative D: The Agency is considering establishing production-based maximum monthly average effluent limitations and standards in combination with daily-maximum concentration-based effluent limitations and standards. Under this alternative, the maximum monthly average NPDES permit and pretreatment mass basis requirements would be determined using the part 420 production-based standards in combination with a reasonable measure of actual production, such as Alternative C above. However, the daily-maximum requirements would be in the form of effluent concentrations that would be included in part 420 in lieu of the daily-maximum production-based mass effluent limitations guidelines and standards. The daily maximum concentrations set out as effluent limitations guidelines and standards would be those concentrations that were used to develop the proposed production-based mass effluent limitations guidelines and standards.

The Agency believes this approach would effectively address the potential issue cited above regarding short-term peaks in production under most circumstances. There would be no additional burden on the industry and permit writers for applying for and writing NPDES or pretreatment permits. Permit authorities may need to revise their automated compliance tracking systems to account for both mass and concentration limitations at the same outfall, which is a common feature in many NPDES and pretreatment permits issued prior to this proposal.

This approach would also provide some flexibility for the industry where, because of historical conditions, relatively high volumes of storm water from intense rainfall events are collected and treated with process water. In some cases, the volume of storm water collected and treated may cause short-term peak discharge flows that exceed the normal process water discharge flow which may result in violation of daily-maximum limitations. On balance, the Agency believes that treatment of such storm water flows is beneficial. The combination of maximum monthly average mass limits and daily-maximum concentration limits would provide such flexibility.

EPA solicits comments about these alternatives to the proposed production bases for calculating NPDES permit effluent limitations and pretreatment requirements including comments on related costs and any technical difficulties that mills might have in meeting limits during short periods of high production. EPA also solicits other options for consideration.

E. Water Bubble

The ''water bubble'' is a regulatory flexibility mechanism described in the current regulation at 40 CFR 420.03 to allow for trading of identical pollutants at any single steel facility with multiple compliance points. The bubble has been used at some facilities to realize cost savings and/or for compliance. It is structured in a way to produce also a benefit for the environment.

As currently structured the water bubble has the following restrictions:

- Trades can be made only for like pollutants (*e.g.* lead for lead, not lead for zinc).
- Trades are subject to any applicable water quality-based effluent limitations.
- Each outfall must have specific fixed limitations
- Cokemaking and cold rolling are excluded from consideration for water bubble use.
- Each trade must result in a minimum net reduction amount of the amount traded (15% for TSS/Oil & Grease, 10% for toxic pollutants).
- Bubble restricted to existing sources.

While at present NPDES permits for only nine facilities have alternative effluent limitations derived from the water bubble, there may be increased interest in the water bubble with the promulgation of a revised part 420. With this in mind, EPA proposes making the following changes to the water bubble rule:

- Allow trades for cokemaking operations but only if the cokemaking alternative limitations are more stringent than the limitations in Subpart A. These more stringent limits would be offset by less stringent limits for some other operation. EPA is proposing to limit trades involving cokemaking in this way because it is concerned about co-occurring contaminants in cokemaking wastewaters for which limits are not being established (*e.g.*, benzo(b)fluoranthene, benzo(a)anthracene, and chrysene). Allowing a relaxation of the limits for cokemaking wastewater could allow undetected increases in discharges of these co-occurring contaminants that would not necessarily be offset by tighter limits on the regulated pollutants in another waste stream.
- Prohibit trades for sintering operations because of the presence of dioxins and furans in sinter wastewater unless the alternative limitations are more stringent than the sintering process wastewater limitations in subpart B. As with cokemaking, these more stringent sintering limits would be offset by less stringent limits on some

other waste stream. The logic for this restriction is the same as for cokemaking.

• Prohibit trades of oil and grease because of differences in the types of oil and grease used among the I&S operations (the finishing operations tend to use and discharge synthetic and animal fats and oils used to lubricate metal materials, the hot-end operations tend to discharge petroleum-based oil and grease used to lubricate machinery, and cokemaking operations tend to discharge oil and grease containing polynuclear aromatics generated by the combustion of coal).

• Allow trades for cold rolling operations.

• Allow trades for new, as well as existing sources. Since the existing source environmental gain is 10 percent for all parameters except for TSS which is 15 percent, EPA is considering whether a higher net gain, *e.g.*, 20 percent, is appropriate for new sources given their flexibility in design.

EPA is proposing to change the current regulations to prohibit trading between outfalls of oil and grease. As noted above, EPA is concerned that different types of oil and grease may be discharged by different process units, and that trading might thus allow an increase in a more environmentally harmful type of oil and grease (*e.g.*, petroleum based), with the offsetting reduction being from a less harmful type (*e.g.*, animal fats). EPA recognizes that facilities will generally identify trades that save them money. EPA has no data to suggest that the most economically beneficial trading opportunities (*i.e.*, those likely to be used by facilities) would systematically either decrease or increase the most harmful types of oil and grease. Giving the existing requirement for a 15 percent net decrease of oil and grease across all outfalls if trading is utilized, it may well be the case that even with the possibility that an individual trade might allow for an increase in, say, petroleum-based oil and grease, the net effect of trading would be both beneficial to the environment and provide cost saving opportunities to facilities. EPA requests comment on whether trading should continue to be allowed for oil and grease, including the current 15 percent (or greater) net reduction.

Potential cost impacts associated with changes in the water bubble have been accounted for in the estimated capital and operating and maintenance costs prepared for the economic impact and cost-effectiveness analyses.

EPA requests comment on the modified restrictions on the use of the bubble, particularly on the larger environmental gain through the use of the bubble that would be required for new sources.

EPA proposes to retain the other restrictions specified in the current water bubble rule.

XI. Other Coinciding Agency Activities

A. 40 CFR Part 63, Subpart L—National Air Emission Standard for Coke Oven Batteries

Promulgated on October 27, 1993, this regulation established coke oven emission limits for lids (% leaking lids), offtakes PLO (% leaking offtakes), charging (log), and doors PLD (% leaking doors). The regulation established two alternate tracks of limits through which coke ovens batteries may achieve compliance; the Maximum Achievable Control Technology (MACT) track and the Lowest Achievable Emissions Rate (LAER) extension track. All coke manufacturing facilities have chosen a specific track and, where appropriate, are attempting to conform with these regulations. Of the 58 by-product recovery coke batteries in operation in the United States, 50 have selected the LAER extension track, which subjects them to requirements through the year 2020. The LAER extension track limits may become more stringent in 2010. These plants will not be affected by the residual Risk Standards when promulgated. The remaining eight by-product recovery coke batteries that selected the MACT Track Limits must comply with Residual Risk Standards after they are promulgated.

B. Coke Ovens: Pushing, Quenching, and Battery Stacks Proposed Rule

EPA is developing a regulation under section 112(d) of the Clean Air Act (CAA) to reduce emissions from pushing, quenching, and battery stacks at coke plants and plans to propose the rule in November 2000 and promulgate it in November 2001. This rule would establish requirements to control coke oven emissions and would apply to all coke batteries at coke plants that are major sources of hazardous air pollutant (HAP) emissions or that are part of a facility that is a major source of HAP emissions. A major source means any stationary source or group of stationary sources within a contiguous area and under common control that emits or has the potential to emit considering controls, in aggregate, 10 tons or more per year of any single HAP or 25 tons per year of more of any combination of HAP.

The rule includes both emission limitations and work practice standards. Relative to pushing, two options are proposed. One option would require sources to meet an opacity limit based on the daily observations of four pushes. The other option is a work practice standard that places failing ovens under scrutiny until they are repaired or taken out of service. The proposed rule also includes emission limits for particulate matter (PM), as a surrogate for coke oven emissions, for control devices applied to pushing emissions. To address quenching emissions, sources would be required to use clean water as makeup water, equip quench towers with baffles, and inspect and repair baffles on an on-going basis. battery stacks, the proposed rule establishes opacity limits and requires the installation and operation of continuous opacity monitors (COM). In addition, all batteries would be required to operate at all times according to an operation and maintenance plan to ensure good operation and maintenance of batteries and control equipment. The proposed rule also includes notification, recordkeeping, and reporting requirements.

C. Steel Pickling—HCL Process

The Steel Pickling National Emission Standards for Hazardous Air Pollutants (NESHAP) final rule was published on June 22, 1999, 64 FR, 33202–33223, to reduce emissions of toxic air pollutants from sources in steel pickling facilities.

The steel pickling rule applies to all facilities that pickle steel using hydrochloric acid or that regenerate hydrochloric acid and (a) that are major sources or (b) are part of a facility that is a major source. The EPA estimates that 62 of the 80 steel pickling facilities using hydrochloric acid and all 8 acid regeneration plants currently in operation (six of which are co-located with pickling facilities) are affected by this rule. The steel pickling rule does not apply to any pickling line that uses an acid other than hydrochloric acid, an acid solution containing less than 6 percent HCl, or at a temperature less than 100 °F.

Existing plants have up to two years from the effective date of the final rule to comply with its requirements. If necessary, the owner or operator of an affected facility may request that EPA (or the applicable regulatory authority in a State with an approved permit program) grant one additional year to install controls. The EPA's rule establishes limitations for hydrochloric acid and chlorine emissions and offers flexibility to the industry by providing

cost-effective options for both emissions control and monitoring.

Pickling facility operators may comply with the emission limitation for hydrochloric acid by meeting either an emissions reduction target or a concentration standard. This option allows operators to comply with the rule under a wide variety of acid bath and ventilation conditions. Emissions reductions for hydrochloric acid are based on wet scrubber control technology, which provides the facility operator the option of recycling hydrochloric acid from the scrubber effluent.

Interested parties can download the final rule from EPA's web site on the Internet under ''recent actions'' at the following address: http://www.epa.gov/ttn/oarpg. further information about the rule, contact James Maysilles of the EPA's Office of Air Quality Planning and Standards at 919–541–3265.

D. Integrated Iron and Steel Manufacturing NESHAP

EPA plans to propose an Integrated Iron and Steel Manufacturing NESHAP under section 112(d) of the CAA applicable to sinter plants, blast furnaces, BOF shops and ancillary operations in November 2000 and to promulgate it in November 2001. The EPA has included integrated iron and steel manufacturing facilities on the list of major sources of hazardous air pollutant (HAP) emissions under section 112(c) of the CAA. Information on this action is at: http://www.epa.gov/ttn/oarp.

You may be subject to the rule if you own or operate an integrated iron and steel facility that is a major source of HAP emissions, or that is part of a facility that is a major source of HAP emissions. This source category includes sinter production, iron production, and steel production.

XII. Related Acts of Congress, Executive Orders, and Agency Initiatives

A. Executive Order 12866: Regulatory Planning and Review

Under Executive Order 12866 (58 FR 51735, October 4, 1993), the Agency must determine whether the regulatory action is ''significant'' and therefore subject to OMB review and the requirements of the Executive Order. The Order defines ''significant regulatory action'' as one that is likely to result in a rule that may:

(1) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;

(2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

(4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

Pursuant to the terms of Executive Order 12866, it has been determined that this rule is a ''significant regulatory action.'' As such, this action was submitted to OMB for review. Changes made in response to OMB suggestions or recommendations will be documented in the public record.

B. Regulatory Flexibility Act as Amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), 5 U.S.C. 601 et seq.

The Regulatory Flexibility Act generally requires an agency to prepare a regulatory flexibility analysis for any rule subject to notice and comment rulemaking requirements under the Administrative Procedure Act or any other statute unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small organizations, and small governmental jurisdictions.

purposes of assessing the impacts of today's rule on small entities, small entity is defined as: (1) A small business that has between 500 and 1500 employees (each firm was assigned the relevant definition depending on SIC determination and based on SBA size standards); (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of less than 50,000; and (3) a small organization that is any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.

After considering the economic impact of today's proposed rule on small entities, including consideration of alterative regulatory approaches being proposed, I certify that this action will not have significant economic impact on a substantial number of small entities. EPA identified an estimated 34 small companies that may be affected by the rule among the estimated 115 total companies potentially affected by the rule. EPA has fully evaluated the economic impact of the proposed rule on affected small companies. In some instances, EPA proposes alternative regulatory approaches. This analysis reflects the most stringent of the alternative options. small companies, EPA examined the compliance cost to revenue ratio to identify the potential impact of the rule on small companies. EPA has determined that the range of compliance costs to revenues is between 0 and 1.91 percent with only three companies experiencing an impact of greater than 1%, using the most stringent set of co-proposed options. Furthermore, an economic achievability analysis was conducted using a discounted cash flow approach for facility impacts analysis and the Altman Z test for the firm impacts analysis (for a full discussion, see Section VI). EPA projects that one small company may incur an impact such as facility closure or firm failure. No small governments are regulated by this action.

Although this proposed rule will not have a significant economic impact on a substantial number of small entities, EPA nonetheless has tried to reduce the impact of this rule on small entities. The Agency has attempted to mitigate the potential impacts of the proposed rule to all entities, including small entities, by measures such as simplifying the structure of the existing regulation and encouraging the co-treatment of compatible wastewaters. EPA has engaged in very substantive outreach to the potentially affected entities via public meetings and trade association consultations. The outreach activities are described in detail in Section IV.D.5 of this preamble. We continue to be interested in the potential impacts of the proposed rule on small entities and welcome comments on issues related to such impacts.

C. Unfunded Mandates Reform Act

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Public Law 104–4, establishes requirements for Federal agencies to assess the effects of their regulatory actions on State, local, and tribal governments and the private sector. Under section 202 of the UMRA, EPA generally must prepare a written statement, including a cost-benefit analysis, for proposed and final rules with ''Federal mandates'' that may result in expenditures to State, local, and tribal governments, in the aggregate, or to the private sector, of $100 million or more in any one year. Before promulgating an EPA rule for which a written statement is needed, section 205 of the UMRA generally requires EPA to identify and consider a reasonable number of regulatory alternatives and adopt the least costly, most cost-

effective or least burdensome alternative that achieves the objectives of the rule. The provisions of section 205 do not apply when they are inconsistent with applicable law. Moreover, section 205 allows EPA to adopt an alternative other than the least costly, most cost-effective or least burdensome alternative if the Administrator publishes with the final rule an explanation why that alternative was not adopted. Before EPA establishes any regulatory requirements that may significantly or uniquely affect small governments, including tribal governments, it must have developed under section 203 of the UMRA a small government agency plan. The plan must provide for notifying potentially affected small governments, enabling officials of affected small governments to have meaningful and timely input in the development of EPA regulatory proposals with significant Federal intergovernmental mandates, and informing, educating, and advising small governments on compliance with the regulatory requirements.

EPA has determined that this rule does not contain a Federal mandate that may result in expenditures of $100 million or more for State, local, and tribal governments, in the aggregate, or the private sector in any one year. EPA has estimated total annualized costs of the rule as between $56.5 million to $61.4 million (1999 $, pre-tax). Accordingly, today's proposal is not subject to the requirements of sections 202 and 205 of the UMRA. EPA has, however, sought meaningful and timely input from the private sector, states, and small governments on the development of this notice. Prior to issuing this proposed rule, EPA met with members of the private sector as discussed earlier in the preamble.

EPA has determined that this rule contains no regulatory requirements that might significantly or uniquely affect small governments, including tribal governments. EPA recognizes that small governments may own or operate POTWs that will need to enter into pretreatment agreements with the indirect dischargers of the Iron and Steel industry that would be subject to this proposed rule. However, EPA currently estimates that the added costs of entering into or modifying existing pretreatment agreements will be minimal. The main costs resulting from this proposed rule will fall upon the private entities that own and operate the Iron and Steel facilities.

D. Paperwork Reduction Act

The proposed iron and steel effluent limitations guidelines and standards contain no information collection activities and, therefore, no information collection request will be submitted to OMB for review under the provisions of the Paperwork Reduction Act (PRA), 44 U.S.C. 3501 *et seq.*

E. National Technology Transfer and Advancement Act

As noted in the proposed rule, section 12(d) of the National Technology Transfer and Advancement Act (NTTAA) of 1995, (Pub L. 104–113 sec. 12(d) 15 U.S.C. 272 note) directs EPA to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (*e.g.,* materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standard bodies. The NTTAA directs EPA to provide Congress, through the Office of Management and Budget (OMB), explanations when the Agency decides not to use available and applicable voluntary consensus standards.

This rulemaking involves technical standards. The rule requires dischargers to measure for 7 metals, 4 organic contaminants, TSS, Oil and Grease (HEM), thiocyanate, total cyanide, total residual chlorine, ammonia as Nitrogen, 2,3,7,8-TCDF, nitrate and pH. EPA performed a search to identify potentially voluntary consensus standards that could be used to measure the analytes in today's final guideline. EPA's search revealed that consensus standards have already been promulgated in tables at 40 CFR 136.3 for measurement of all analytes except thiocyanate.

Today, EPA is proposing to promulgate two consensus standards for thiocyanate, Method 4500–CN M (Standard Methods for the Examination of Water and Wastewater, 20th Edition, 1998) and D4374–98 (Annual Book of ASTM Standards, volume 11.02, 1999). EPA welcomes comments on this aspect f the proposed rulemaking and, specifically, invites the public to identify additional potentially applicable voluntary consensus standards and to explain why such standards should be used in this regulation.

F. Executive Order 13045: Protection of Children From Environmental Health Risks and Safety Risks

The Executive Order ''Protection of Children from Environmental Health Risks and Safety Risks'' (62 FR 19885, April 23, 1997) applies to any rule that: (1) Is determined to be ''economically significant'' as defined under Executive Order 12866, and (2) concerns an environmental health or safety risk that EPA has reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, the Agency must evaluate the environmental health or safety effects of the planned rule on children and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives considered by the Agency. This proposed rule is not subject to E.O. 13045 because it is not ''economically significant'' as defined under Executive Order 12866 (EPA estimates that it would have an annual effect on the economy of less than $100 million), and is a technology-based rule that does not involve health standards or address an environmental health or safety risk that may have a disproportional effect on children.

G. Executive Order 13132: Federalism

Executive Order 13132, entitled ''Federalism'' (64 FR 43255, August 10, 1999), requires EPA to develop an accountable process to ensure ''meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications.'' ''Policies that have federalism implications'' is defined in the Executive Order to include regulations that have ''substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.''

This proposed rule does not have federalism implications. It will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. The proposed rule establishes effluent limitations imposing requirements that apply to iron and steel facilities when they discharge process wastewater or introduce process wastewater to a POTW. EPA has determined that there are no iron and steel facilities owned and operated by State and local governments that would be subject to this proposed rule; therefore, this proposed rule will not impose any treatment technology costs on State or local governments. Further, this proposed rule will only affect State and local governments incidentally in their capacity as implementers of CWA permitting programs. Therefore, the proposed rule, at most, imposes only

minimal administrative costs on States that have authorized NPDES programs and on local governments that are administering approved pretreatment programs. (These State and local governments must incorporate the new effluent limitations guidelines and standards in new and reissued NPDES permits or local pretreatment orders or permits). Thus, Executive Order 13132 does not apply to this rule.

Although Executive Order 13132 does not apply to this rule, EPA did consult with State government representatives in developing this proposal, as discussed in Section IV of this document. A summary of the concerns raised during consultation and EPA's response to those concerns is provided in Section IV.D.5 of this preamble. In addition, in the spirit of this Executive Order and consistent with EPA policy to promote communications between EPA and State and local governments, EPA specifically solicits comment on this proposed rule from State and local officials.

H. Executive Order 13084: Consultation and Coordination With Indian Tribal Governments

Under Executive Order 13084, EPA may not issue a regulation that is not required by statute, that significantly or uniquely affects the communities of Indian tribal governments, and that imposes substantial direct compliance costs on those communities, unless the Federal government provides the funds necessary to pay the direct compliance costs incurred by the tribal governments, or EPA consults with those governments. If EPA complies by consulting, Executive Order 13084 requires EPA to provide to the Office of Management and Budget, in a separately identified section of the preamble to the rule, a description of the extent of EPA's prior consultation with representatives of affected tribal governments, a summary of the nature of their concerns, and a statement supporting the need to issue the regulation. In addition, Executive Order 13084 requires EPA to develop an effective process permitting elected officials and other representatives of Indian tribal governments ''to provide meaningful and timely input in the development of regulatory policies on matters that significantly or uniquely affect their communities.''

Today's rule does not significantly or uniquely affect the communities of Indian tribal governments nor does it impose substantial direct compliance costs on them. EPA has determined that no communities of Indian tribal governments are affected by this rule. Accordingly, the requirements of section 3(b) of Executive Order 13084 do not apply to this rule.

I. Plain Language Directive

Executive Order 12866 and the President's memorandum of June 1, 1998, require each agency to write all rules in plain language. We invite your comments on how to make this proposed rule easier to understand. example: Have we organized the material to suit your needs? Are the requirements in the rule clearly stated? Does the rule contain technical language or jargon that isn't clear? Would a different format (grouping and order of sections, use of headings, paragraphing) make the rule easier to understand? Would more (but shorter) sections be better? Could we improve clarity by adding tables, lists, or diagrams? What else could we do to make the rule easier to understand?

XIII. Solicitation of Data and Comments

A. Introduction and General Solicitation

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

The Agency invites all parties to coordinate their data collection activities with EPA in order to facilitate mutually beneficial and cost-effective data submissions. EPA is interested in participating in study plans, data collection and documentation. Please refer to the '' Further Information'' section at the beginning of this preamble for technical contacts at EPA. Comments on the proposal must be received by February 26, 2001.

B. Specific Data and Comment Solicitations

1. Revised Production Basis for Regulation

EPA believes that some NPDES and pretreatment permit production rates have been derived in a manner that is not consistent with the term ''reasonable measure of actual production'' specified at §§ 122.45(b)(2)(i), 403.6(c)(3), and 420.04. Thus EPA is soliciting comment on four alternate approaches for establishing permit effluent limitations. These are described in detail in Section X.D.2, and summarized below:

Alternative A: Retaining essential requirements of the current rule while providing additional instructions for avoiding unrealistically high estimates of actual production

Alternative B: Including a requirement for the permit writer to establish multi-tiered permit limits

Alternative C: Revising the definition of production to be the average daily operating rate for the year with the highest annual production over the past five years

Alternative D: Establishing production-based maximum monthly average effluent limitations and standards in combination with daily-maximum concentration-based effluent limitations and standards.

2. Revised Subcategorization

The revised subcategorization described in Section IV.E simplifies the structure and use of the regulation. The proposed subcategorization removes defunct manufacturing processes, eliminates subsegments in the hot forming and finishing subcategories, creates a new subcategory for non-integrated steelmaking and hot forming processes, and creates new subcategories or segments for manufacturing processes not currently regulated. The Agency requests comments on the new subcategorization and its effects on the implementation of today's proposed rule.

3. Applicability Changes

As described in Section III, the Agency determined that certain facilities covered by the current Iron and Steel rule have manufacturing processes that more closely resemble those in facilities to be covered by the MP&M rule. These processes include: The cold forming for steel bar, rod, wire, pipe or tube; batch hot dip coating of steel; and wire drawing and coating. EPA is proposing to move these operations into the MP&M category, which will be regulated under 40 CFR part 438. The Agency also proposes coverage of the following operations not covered by the current Iron and Steel rule: continuous electroplating of flat steel products, direct-reduced ironmaking, briquetting, and steel forging operations. EPA solicits comments on these proposed applicability changes. EPA also solicits comments on its proposal to regulate continuous strip electroplating operations in the part 420.

4. Changes in Water Bubble

As discussed in Section X.E, EPA is proposing making the following changes to the water bubble rule:

- Allow trades for cokemaking where more stringent limits for cokemaking would result;
- Prohibit trades for sintering operations where less stringent

limitations for sintering would result, since discharge of dioxins could result;

- Allow trades for cold rolling operations which are currently excluded from the water bubble provisions; and
- Prohibit trades for oil & grease.

The Agency solicits comments on the economic and environmental impacts of the proposed changes.

5. Approach to PSES and PSNS for ammonia-N in Ironmaking Wastewaters

In Section IX.B, EPA proposes regulatory flexibility that would allow indirectly discharging ironmaking operations to not have to meet the pretretment standards for ammonia-N if the facility certifies to the pretreatment control authority under 40 CFR 403.12 that they discharge to POTWs with the capability, when considered together with the indirect discharger's removals, to achieve removals at least equivalent to those expected under BAT for ammonia-N. The Agency solicits comment on this certification alternative, particularly from POTWs currently receiving process wastewaters from ironmaking operations.

6. Alternative Approaches for Regulating Integrated and Stand-Alone Hot ming Mills

EPA is proposing two different BAT approaches for the carbon and alloy segment of the Integrated and Stand-Alone Hot ming Subcategory. The technology basis for these options is identical and consists of a scale pit with oil skimming, roughing clarifier, cooling tower with high-rate recycle and mixed-media filtration of blowdown.

The difference between BAT Option A and BAT Option B involves the amount of time that facilities in the segment would have to achieve BAT limitations. Under BAT Option A, all facilities would be subject to BAT limitations as soon as they are placed in the facility's NPDES permit. Under BAT Option B, in contrast, all facilities could obtain additional time to achieve BAT limitations. If EPA ultimately determines in April 2002 that BAT Option A is not economically achievable for the segment as a whole, it may decide to take final action based on BAT Option B.

more details on Options A and B, refer to Section IX.D. EPA solicits comment on both of these options. EPA also solicits comment on whether there is any rational basis to distinguish among mills in this segment, so as to apply BAT Option B only to a specific subsegment of mills for which the model technology is not economically achievable at the time of promulgation.

7. Compliance Monitoring Location for pH

Stakeholders have indicated that permit authorities often interpret the current regulation to require application of pH limitations at internal monitoring locations, prior to additional treatment or mixing with other wastewater. EPA is proposing to allow permit authorities the flexibility to establish pH effluent limitations at final outfalls such that redundant and unnecessary pH neutralization can be avoided.

8. ELGs and Standards in lbs/ton vs kg/kkg or lbs/1000 lbs

The current part 420 regulation and other previous mass-based regulations have presented pollutant limitations in terms of kilograms of allowable pollutant discharge per thousand kilograms of production (kg/kkg), also expressed as pounds of allowable pollutant discharge per thousand pounds of production (lbs/1,000 lbs). Today's proposed regulation presents pollutant limitations in terms of pounds of allowable pollutant discharge per ton of production (lbs/ton). The Agency made this change to express the limitations in terms of the production value that is a standard throughout the industry. The Agency requests comments on this format.

9. POTW Performance Criteria

In Section IX.A(2) and (3), EPA describes the traditional methodology used to determine POTW performance and the proposed revisions to that methodology, respectively. EPA used the traditional methodology to estimate POTW percent removals, which are a component of the pass-through methodology used to identify the pollutants to be regulated for PSES and PSNS and the analysis to determine net pollutant reductions. Previously, EPA edited data at or near the minimum level for POTW performance based on the editing criteria used to calculate BAT limitations. EPA is considering revising the POTW data editing criteria. Given the range of analytical minimum levels and their influence on calculated percent removals, EPA is considering several editing alternatives, detailed in Section IX.A(3). The Agency solicits comments on potential revisions to the pass-through methodology.

10. Mercury and Selenium in Cokemaking Wastewater

EPA is proposing regulation of mercury and selenium at cokemaking plants based on toxicity and presence in cokemaking wastewaters as discussed in Section IX.B(1) Currently, permits for several cokemaking sites require monitoring for mercury and selenium. EPA solicits comments on the need for limits for mercury and selenium, including any additional data available to support or oppose the need for limits.

11. Regulatory Approach for Dioxins and Furans at Sinter Plants

In Section IX, dioxins and furans were identified as pollutants of concern for sinter plants using wet air pollution controls. EPA proposes to limit dioxins and furans in wastewaters from sinter plants. The proposed limit would be for 2,3,7,8–TCDF and would be set to less than the minimum level. EPA proposes to require compliance monitoring after primary treatment of sinter plant wastewaters or after sinter plant and blast furnace wastewaters are co-treated, but before any additional process or non-process flows are combined with the wastewater. EPA solicits comments on this proposed regulatory approach. The Agency is also considering whether to limit dioxins and furans found in sinter plant wastewaters on the basis of 2,3,7,8-TCDD TEQs (toxicity equivalents) which would measure all of the 17 dioxin and furan congeners with chlorine substitutions at the 2,3,7 and 8 lateral positions. This is consistent with the international toxicity equivalents factors approach; consistent with EPA's approach to regulating dioxins in other media and for conducting risk assessments; and consistent with EPA's source characterization work to assess the national inventory of dioxin releases to environmental media.

12. Consideration of Zero Discharge as NSPS for the Non-Integrated Steelmaking and Hot ming Subcategory

As described in Section IV.F(5)c, non-integrated mills have demonstrated lower discharge flow rates than continuous casters and hot forming mills at integrated and stand alone mills. Many non-integrated sites report zero discharge of process wastewater using high-rate recycle systems for the entire mill. EPA determined that new facilities can incorporate process water treatment and water pollution control at the design stage, thus avoiding costs associated with retrofit situations. The Agency solicits comments on establishing zero discharge limitations at NSPS for the Non-Integrated Steelmaking and Hot ming Subcategory.

13. Zero Discharge for all EAFs

As described in Section IV.F(5)a, the proposed Non-Integrated Steelmaking and Hot ming Subcategory includes a segment for EAF steelmaking. Since the only EAF remaining in the United States

that discharges wastewater is now only used for emergency purposes, EPA did not cost the site to replace the wet air pollution control unit. If the unit is still being used at the time this rule is promulgated, BPJ will apply. The Agency solicits comments on excluding a segment for EAFs with wet air pollution control.

14. Surface Quality Issues for Steel Finishing Operations

the purposes of this proposal, the Agency has selected the median production-normalized flow rate (PNF) reported by the industry for steel finishing operations. This approach was intended to address product quality issues associated with water use. A number of mills engaging in steel finishing operations claim to need a relatively high PNF (*i.e.,* higher than the median PNF selected by EPA for this proposed subcategory). Therefore, the Agency requests comments on surface quality and any other issues that impact water use and necessitate high water use rates in steel finishing operations.

15. Limits for Nitrates/Nitrites at Stainless Finishing Facilities

In Section IX, nitrate/nitrite was identified as a pollutant of concern for stainless steel acid pickling operations where nitric acids and combinations of nitric and hydrofluoric acids are used for surface treatments for various grades of stainless steels. The model BAT technology for stainless steel finishing operations includes acid purification units for recovery and reuse of spent nitric and nitric/hydrofluoric acid pickling solutions. EPA is considering developing a limit, based on acid purification technology, for nitrate/nitrite (in the form of nitrate-nitrite-N) for stainless steel finishing operations with combination acid pickling. EPA solicits effluent quality monitoring data from stainless steel acid pickling operations using acid purification and from POTWs that receive wastewater from these operations.

EPA is aware of other process changes which may result in decreased nitrate concentrations in stainless steel acid pickling wastewaters, including chemical substitution for nitric acid. EPA solicits information on this or any other process capable of achieving substantial reduction or elimination of nitrates from stainless steel pickling wastewaters, particularly process details; for which grades of stainless steel the process can be used; performance data; and detailed cost estimates.

16. Revision of Subcategorization for BPT Effluent Limitations

EPA is considering converting the existing mass-based BPT limitations for conventional pollutants TSS and O&G to corresponding concentration-based BPT limitations via the production normalized flows used to develop the existing BPT limitations. By this conversion, EPA does not intend to change the substance of the current BPT limitations in any way. Rather, EPA intends to simplify application of the current BPT limitations in view of the new subcategorization arrangement. EPA solicits comments on this approach.

17. Best Management Practices

EPA is planning to include in guidance documents or in the technical development document for the final rule a number of recommended Best Management Practices (BMPs) for use in the NPDES and pretreatment programs. These BMPs would not be codified in part 420, but could be used by permit writers on a facility-by-facility basis as deemed appropriate to address site-specific issues. Among the BMPs being considered in this fashion are those listed at Section 6.5 of the Preliminary Study (EPA 821–R–95–037) and others dealing with management of oily wastewaters from hot forming operations and periodic reviews and assessments of the integrity of process water collection systems and wastewater treatment system operations. EPA solicits comments on this approach.

18. Cash Flow in the Economic Analysis

In the economic analysis, cash flow at the site-level is defined as the sum of net income and depreciation. The measure is widely used within industry in evaluating capital investment decisions because both net income and depreciation (which is an accounting offset against income, but not an actual cash expenditure) are potentially available to finance future investment. However, assuming that total cash flow is available over an extended time horizon (for example, 15 years) to finance investments related to environmental compliance could overstate a site's ability to comply. In particular, the cost of capital equipment (not associated with regulatory compliance) is not netted out of cash flow, as it is of income through the subtraction of depreciation. Thus, any costs associated with either replacing existing capital equipment, or repaying money that was previously borrowed to pay for it, are omitted from the site-level analysis. EPA solicits comment on its use of cash flow as a measure of resources available to finance environmental compliance and suggestions for alternative methodologies.

Appendix A: Definitions, Acronyms, and Abbreviations Used in This Notice

Administrator—The Administrator of the U.S. Environmental Protection Agency.

Agency—The U.S. Environmental Protection Agency.

Average Monthly Discharge Limitation—The highest allowable average of ''daily discharges'' over a calendar month, calculated as the sum of all ''daily discharges'' measured during the calendar month divided by the number of ''daily discharges'' measured during the month.

BAT—The best available technology economically achievable, applicable to effluent limitations for industrial discharges to surface waters, as defined by section 304(b)(2)(B) of the CWA.

BCT—The best control technology for conventional pollutants, applicable to discharges of conventional pollutants from existing industrial point sources, as defined by section 304(b)(4) of the CWA.

BPT—The best practicable control technology currently available, applicable to effluent limitations, for industrial discharges to surface waters, as defined by section 304(b)(1) of the CWA.

Clean Water Act (CWA)—The Federal Water Pollution Control Act Amendments of 1972 (33 U.S.C. Section 1251 *et seq.*), as amended *e.g.,* by the Clean Water Act of 1977 (Pub. L. 95–217), and the Water Quality Act of 1987 (Pub. L. 100–4).

Clean Water Act (CWA) Section 308 Questionnaire—A qestionnaire sent to facilities under the authority of section 308 of the CWA, which requests information to be used in the development of national effluent guidelines and standards.

Conventional Pollutants—Constituents of wastewater as determined by section 304(a)(4) of the CWA (and EPA regulations), *i.e.,* pollutants classified as biochemical oxygen demand, total suspended solids, oil and grease, fecal coliform, and pH.

Daily Discharge—The discharge of a pollutant measured during any calendar day or any 24-hour period that reasonably represents a calendar day.

Direct Discharger—A facility that discharges or may discharge treated or untreated wastewaters into waters of the United States.

Effluent Limitation—Under CWA section 502(1), any restriction, including schedules of compliance, established by a State or the Administrator on quantities, rates, and concentrations of chemical, physical, biological, and other constituents which are discharged from point sources into navigable waters, the waters of the contiguous zone, or the ocean (CWA sections 301(b) and 304(b)).

Existing Source— this rule, any facility from which there is or may be a discharge of pollutants, the construction of which is commenced before the publication of the final regulations prescribing a standard of performance under section 306 of the CWA.

Facility—All contiguous property owned, operated, leased, or under the control of the same person or entity.

Hazardous Waste—Any waste, including wastewater, defined as hazardous under RCRA, TSCA, or any state law.

Indirect Discharger—A facility that discharges or may discharge wastewaters into a publicly-owned treatment works.

LTA (Long-Term Average)— purposes of the effluent guidelines, average pollutant levels achieved over a period of time by a facility, subcategory, or technology option. LTAs were used in developing the effluent limitations guidelines and standards in today's proposed regulation.

Minimum Level—the lowest level at which the entire analytical system must give a recognizable signal and an acceptable calibration point for the analyte.

NAICS—North American Industry Classification System. NAICS was developed jointly by the U.S., Canada, and Mexico to provide new comparability in statistics about business activity across North America.

National Pollutant Discharge Elimination System (NPDES) Permit—A permit to discharge wastewater into waters of the United States issued under the National Pollutant Discharge Elimination system, authorized by section 402 of the CWA.

Non-Conventional Pollutants—Pollutants that are neither conventional pollutants nor priority pollutants listed at 40 CFR part 401.

Non-Water Quality Environmental Impact—Deleterious aspects of control and treatment technologies applicable to point source category wastes, including, but not limited to air pollution, noise, radiation, sludge and solid waste generation, and energy used. NSPS—New Sources Performance Standards, applicable to industrial facilities whose construction is begun after the effective date of the final regulations (if those regulations are promulgated after April 26, 2001). EPA is scheduled to take final action on this proposal in April 2002. See 40 CFR 122.2.

Outfall—The mouth of conduit drains and other conduits from which a facility effluent discharges into receiving waters.

Pass Through—A pollutant is determined to ''pass through'' a POTW when the average percentage removed by an efficiently operated POTW is less than the average percentage removed by the industry's direct dischargers that are using well-designed, well-operated BAT technology.

Point Source—Any discernable, confined, and discrete conveyance from which pollutants are or may be discharged. See CWA section 502(14).

Pollutants of Concern (POCs)—Pollutants commonly found in iron and steel wastewaters. Generally, a chemical is considered as a POC if it was detected in untreated process wastewater at 10 times the minimum level (ML) in more than 10% of the samples.

Priority Pollutant—One hundred twenty-six compounds that are a subset of the 65 toxic pollutants and classes of pollutants outlined in section 307 of the CWA. See 40 CFR part 403, Appendix A (reprinted after 40 CFR 423.17).

PSES—Pretreatment standards for existing sources of indirect discharges, under Section 307(b) of the CWA, applicable to indirect dischargers that commenced construction after December 27, 2001. See 40 CFR 403.3 (K)(1).

PSNS—Pretreatment standards for new sources under section 307(c) of the CWA.

Publicly Owned Treatment Works (POTW)—Any device or system, owned by a state or municipality, used in the treatment (including recycling and reclamation) of municipal sewage or industrial wastes of a liquid nature that is owned by a state or municipality. This includes sewers, pipes, or other conveyances only if they convey wastewater to a POTW providing treatment (40 CFR 122.2).

RCRA—The Resource Conservation and Recovery Act of 1976 (RCRA) (42 U.S.C. 6901 *et seq.*), which regulates the generation, treatment, storage, disposal, or recycling of solid and hazardous wastes.

SIC—Standard Industrial Classification (SIC)—A numerical categorization system used by the U.S. Department of Commerce to catalogue economic activity. SIC codes refer to the products, or group of products, produced or distributed, or to services rendered by an operating establishment. SIC codes are used to group establishments by the economic activities in which they are engaged. SIC codes often denote a facility's primary, secondary, tertiary, etc. economic activities.

Variability Factor—Used in calculating a limitation (or standard) to allow for reasonable variation in pollutant concentrations when processed through extensive and well designed treatment systems. Variability factors assure that normal fluctuations in a facility's treatment are accounted for in the limitations. By accounting for these reasonable excursions above the long-term average, EPA's use of variability factors results in limitations that are generally well above the actual long-term averages.

Zero or Alternative Discharge—No discharge of pollutants to waters of the United States or to a POTW. Also included in this definition is disposal of pollutants by way of evaporation, deep-well injection, off-site transfer, and land application.

List of Subjects in 40 CFR Part 420

Environmental protection, Iron, Steel, Waste treatment and disposal, Water pollution control.

Dated: October 31, 2000.

Carol M. Browner,

Administrator.

the reasons set out in the preamble, Title 40, Chapter I of the Code of Federal Regulations is amended by revising part 420 as follows:

Part 420—Iron and Steel Manufacturing Point Source Category

Sec.

420.1 General applicability.
420.2 General definitions.
420.3 Calculation of NPDES and pretreatment permit effluent limitations.
420.4 Alternative effluent limitations under the ''water bubble.''
420.5 Pretreatment standards compliance date.
420.6 Effluent limitations guidelines and standards for pH.
420.7 Supplemental NPDES permit application and pretreatment report requirements.

Subpart A—Cokemaking Subcategory

420.10 Applicability.
420.11 Subcategory definitions.
420.12 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).
420.13 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best control technology for conventional pollutants (BCT).
420.14 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available control technology economically achievable (BAT).
420.15 New source performance standards (NSPS).
420.16 Pretreatment standards for existing sources (PSES).
420.17 Pretreatment standards for new sources (PSNS).

Subpart B—Ironmaking Subcategory

420.20 Applicability.
420.21 Subcategory definitions.
420.22 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).
420.23 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best control technology for conventional pollutants (BCT).
420.24 Effluent limitations attainable by the application of the best available control technology economically achievable (BAT).
420.25 New source performance standards (NSPS).
420.26 Pretreatment standards for existing sources (PSES).
420.27 Pretreatment standards for new sources (PSNS).
420.28 Point of compliance monitoring.

Subpart C—Integrated Steelmaking Subcategory

420.30 Applicability.
420.31 Subcategory definitions.
420.32 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).
420.33 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best control technology for conventional pollutants (BCT).
420.34 Effluent limitations attainable by the application of the best available control technology economically achievable (BAT).
420.35 New source performance standards (NSPS).
420.36 Pretreatment standards for existing sources (PSES).

420.37 Pretreatment standards for new sources (PSNS).

Subpart D—Integrated and Stand-Alone Hot ming Subcategory

420.40 Applicability.
420.41 Subcategory definitions.
420.42 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).
420.43 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best control technology for conventional pollutants (BCT).
420.44 Effluent limitations attainable by the application of the best available control technology economically achievable (BAT).
420.45 New source performance standards (NSPS).
420.46 Pretreatment standards for existing sources (PSES).
420.47 Pretreatment standards for new sources (PSNS).

Subpart E—Non-Integrated Steelmaking and Hot ming Subcategory

420.50 Applicability.
420.51 Subcategory definitions.
420.52 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).
420.53 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best control technology for conventional pollutants (BCT).
420.54 Effluent limitations attainable by the application of the best available control technology economically achievable (BAT).
420.55 New source performance standards (NSPS).
420.56 Pretreatment standards for existing sources (PSES).
420.57 Pretreatment standards for new sources (PSNS).

Subpart F—Steel Finishing Subcategory

420.60 Applicability.
420.61 Subcategory definitions.
420.62 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT).
420.63 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best control technology for conventional pollutants (BCT).
420.64 Effluent limitations attainable by the application of the best available control technology economically achievable (BAT).
420.65 New source performance standards (NSPS).
420.66 Pretreatment standards for existing sources (PSES).
420.67 Pretreatment standards for new sources (PSNS).

Subpart G—Other Operations Subcategory

420.70 Applicability.
420.71 Subcategory definitions.
420.72 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).
420.73 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best control technology for conventional pollutants (BCT).
420.74 Effluent limitations attainable by the application of the best available control technology economically achievable (BAT).
420.75 New source performance standards (NSPS).
420.76 Pretreatment standards for existing sources (PSES).
420.77 Pretreatment standards for new sources (PSNS).

Authority: Secs. 301, 304, 306, 307, 308, 402 and 501 of the Clean Water Act, as amended; 33 U.S.C. 1311, 1314, 1316, 1317, 1318, 1342 and 1361.

§ 420.1 General applicability.

(a) This part applies to discharges and the introduction of pollutants to publicly owned treatment works (POTWs) resulting from the manufacture of metallurgical coke (furnace coke and foundry coke), sinter, iron, steel and semi-finishing steel products including hot and cold finished flat-rolled carbon and alloy and stainless steels; flat-rolled and other steel shapes coated with other metals or combinations of metals; plates; structural shapes and members; and hot rolled pipes and tubes. Manufacturing activities that may be subject to this part are generally reported under one or more of the following North American Industry Classification System (NAISC) codes: 32419, 331111, 331210, 331221 and 331222 (North American Industry Classification System, U.S. Office of Management and Budget, Washington, DC, 1997).

(b) This part does not apply to discharges and the introduction of pollutants to POTWs resulting from cold finished bar or cold finished pipe and tube operations; wire drawing or coating operations; or, stand-alone, hot-dipped coating operations for products other than flat-rolled products.

§ 420.2 General definitions.

As used in this part:

(a) The general definitions and abbreviations in 40 CFR part 401 shall apply, except as modified in this part.

(b) *Alloy steels* means steels which contain one or more of the following alloying elements in excess of the specified percentage: Manganese, 1.65%; silicon, 0.5%; copper, 0.6%; or in which a definite range or a definite minimum quantity of any of the following elements is specified or required within the limits of the recognized field of constructional alloy steels: aluminum, boron, chromium (less than 10%), cobalt, lead, molybdenum, nickel, niobium (columbium), titanium, tungsten, vanadium, zirconium, or any other alloying element added to obtain a desired alloying effect.

(c) *Billet* means a semi-finished piece of steel, usually smaller than a bloom, resulting from hot-rolling an ingot. The piece may be square, but not more than twice as wide as thick . It is normally used for ''long'' products, such as bars, channels or other structural shapes.

(d) *Bloom* means a semi-finished piece of steel resulting from rolling or forging an ingot. The piece is square, or not more than twice as wide as thick, and has a cross-sectional area of at least 8 square inches but usually 36 square inches or more.

(e) *Carbon steels* are those steels for which no minimum content of elements other than carbon is specified or necessary to obtain a desired alloying effect and when the maximum content for any of the following elements do not exceed the percentage specified: Manganese, 1.65%; silicon, 0.5%; copper, 0.6%.

(f) *Maximum daily* means the highest allowable discharge of wastewater pollutants during any one day.

(g) *Maximum monthly average* means the highest allowable average of daily discharges of wastewater pollutants over a calendar month, and is calculated as the sum of all daily values measured during a calendar month divided by the number of daily values measured during that month.

(h) *Plate* means finished sheet steel with a width of more than 8 inches and a thickness ranging from 0.25 inch to more than 12 inches.

(i) *Regulated parameters with approved methods of analysis in Table 1B at 40 CFR 136.3* are defined as follows:

(1) *Ammonia* (as N) means ammonia reported as nitrogen.

(2) *Chromium* means total chromium.

(3) *Chromium (VI)* means hexavalent chromium.

(4) *Copper* means total copper.

(5) *Cyanide* means total cyanide.

(6) *HEM* means oil and grease measured as hexane extractable material.

(7) *Lead* means total lead.

(8) *Mercury* means total mercury.

(9) *Nickel* means total nickel.

(10) *Nitrate+Nitrite (as N)* means nitrite and nitrate reported as nitrogen.

(11) *Selenium* means total selenium.

(12) *TRC* means total residual chlorine.

(13) *TSS* means total suspended solids.

(14) *Zinc* means total zinc.

(j) *Regulated parameters with approved methods of analysis in Table 1C at 40 CFR 136.3* are as follows:

(1) *Benzo(a)pyrene*

(2) *Naphthalene*

(3) *Phenol*

(k) *Regulated parameter with approved method of analysis by EPA Method 1613B* is defined as follows:

(1) 2,3,7,8-TCDF means 2,3,7,8-tetrachlorodibenzofuran.

(l) *Process wastewaters* are defined at 40 CFR 401.11.

(m) *Non-process wastewaters* mean utility wastewaters (for example, water treatment residuals); treated or untreated wastewaters from groundwater remediation systems; dewatering water for building foundations; and other wastewater streams not associated with a production process.

(n) *Rod* means a semi-finished length of steel with circular cross-section (diameter 0.25 inch or less) that is rolled from a billet and coiled for further processing. Rod is commonly drawn into wire products or used to make bolts and nails.

(o) *Semi-finished steel* means blooms, billets or slabs that are later worked into finished shapes (bar, rod, plate, sheet).

(p) *Sheet* means a thin flat steel shape created by hot-rolling a cast slab flat while maintaining the side dimensions. Sheets are within the following size limitations: 0.0499 to 0.2299 inches thick and 12 to over 48 inches width, and are often coiled.

(q) *Slab* means a semi-finished piece of steel resulting from hot-rolling an ingot into an oblong shape, which is relatively wide and thin.

(r) *Specialty steels* are steels containing alloying elements that are added to enhance the properties of the steel product when individual alloying elements (*e.g.,* aluminum, chromium, cobalt, columbium, molybdenum, nickel, titanium, tungsten, vanadium, zirconium) exceed 3%, or when the total of all alloying elements exceeds 5 percent. Specialty steel categories include: Electrical, alloy, stainless and tool.

(s) *Stainless* means steel containing 10% or more chromium, with or without other alloying elements. It is a trade name given to corrosion and heat resistant steel in which the chief alloying elements are chromium, nickel and silicon in various combinations and possibly a small per cent of titanium, vanadium, and other elements.

(t) *Strip* means thin flat steel resembling hot-rolled sheet, but normally narrower (up to 12 inches wide) and produced to more closely controlled thicknesses (0.0255 to 0.2299 inches).

§ 420.3 Calculation of NPDES and pretreatment permit effluent limitations.

(a) The following protocols shall be used when calculating the daily operating rate (reasonable meaure of actual production), except as specifically provided for in subparts A through G of this part:

(1) Production levels from unit operations that do not generate or discharge process wastewater shall not be included in the calculation of the daily operating rate.

(2) similar, multiple production facilities with process waters treated in the same process wastewater treatment system (*e.g.,* two blast furnaces equipped with one process water treatment and recycle system), the reasonable measure of production (daily operating rate) shall be determined from the combined production of the similar production facilities during the same time period.

(3) process wastewater treatment systems where wastewaters from two or more different production facilities (*e.g.,* blast furnaces and sintering) are co-treated in the same process wastewater treatment system, the reasonable measure of production (daily operating rate) shall be determined for each production facility or combination of similar, multiple production facilities separately (not necessarily during the same time period) and summed. The reasonable measure of production for each set of similar, multiple production facilities shall be established using the protocols in § 420.3(a)(2).

(b) all process operations regulated by subparts A through G of this part, mass effluent limitations and pretreatment requirements for each process operation shall be computed by multiplying the reasonable measure of actual production by the respective effluent limitations guidelines or standards. The mass effluent limitations or pretreatment requirements applicable at a given NPDES or pretreatment compliance monitoring point shall be the sum of the mass effluent limitations or pretreatment requirements for each process operation with process wastewaters discharging to that compliance monitoring point.

(c) Mass NPDES permit effluent limitations or pretreatment requirements derived from this part shall remain in effect for the term of the NPDES permit or pretreatment control mechanism, except:

(1) When the permit is modified in accordance with § 122.62 of this chapter or local POTW permit modification provisions; or

(2) Where alternate effluent limitations are established for increased or decreased production levels in accordance with § 122.45(b)(2)(ii)(A)(*1*) of this chapter.

(d) Permit and pretreatment control authorities may provide for increased loadings for non-process wastewaters defined at § 420.2 and for storm water from the immediate process area in NPDES permits and pretreatment control mechanisms using best professional judgment, but only to the extent such non-process wastewaters result in an increased flow.

§ 420.4 Alternative effluent limitations under the ''water bubble''.

(a) Except as provided in paragraphs (d) through (g) of this section, any existing and new source direct discharging point source subject to this part may qualify for alternative effluent limitations to those specified in subparts A through G of this part, representing the degree of effluent reduction attainable by the application of best practicable control technology currently available, best available technology economically achievable, best conventional technology, and best demonstrated technology. The alternative effluent limitations for each pollutant are determined for a combination of outfalls by totaling the mass limitations allowed under subparts A through G of this part for each pollutant and subtracting from each total the net reduction amount specified for that pollutant in paragraph (b) of this section. The permit authority shall determine a net reduction amount for each pollutant subject to this section that is greater than the minimum percentage specified in paragraph (b) of this section upon consideration of additional available control measures that would result in effluent reductions and which can be achieved without requiring significant additional expenditures at any outfall(s) in the combination for which the discharge is projected to be better than required by this regulation.

(b) The water bubble may be used to calculate alternative effluent limitations only for identical pollutants (*e.g.* lead for lead, not lead for zinc).

(c) In the case of Total Suspended Solids (TSS), the minimum net reduction amount shall be at least 15 percent of the amount(s) for existing sources and 20 percent of the amount(s) for new sources by which the TSS discharges from any waste stream(s) in

the combination will meet otherwise allowable effluent limitations for TSS. all other pollutants, the minimum net reduction amount shall be at least 10 percent of the amount(s) for existing sources and 20 percent of the amount(s) for new sources by which the discharges from any waste stream(s) in the combination will meet otherwise allowable effluent limitations for each pollutant under this regulation.

(d) Use of the water bubble to develop alternate effluent limitations for oil & grease is prohibited.

(e) A discharger cannot qualify for alternative effluent limitations if the application of such alternative effluent limitations would cause or contribute to an exceedance of any applicable water quality standards.

(f) Each outfall or internal NPDES permit compliance point from which process wastewaters are discharged must have specific, fixed effluent limitations for each pollutant limited by the applicable subparts A through G of this part.

(g) Subcategory-Specific Restrictions:

(1) There shall be no alternate effluent limitations for cokemaking process wastewater unless the alternative limitations are more stringent than the limitations in subpart A of this part;

(2) There shall be no alternate effluent limitations for sintering process wastewater unless the alternative limitations are more stringent than the sintering process wastewater limitations in subpart B of this part.

(h) The water bubble may be used to calculate alternative effluent limitations only for identical pollutants (*e.g.,* lead for lead, not lead for zinc).

§ 420.5 Pretreatment standards compliance dates.

Compliance with the pretreatment standards for existing sources set forth in this part is required not later than three years from date of publication of the final rule whether or not the pretreatment authority issues or amends a pretreatment permit requiring such compliance. Until that date, the pretreatment standards for existing sources set forth in the 2000 version of this part shall continue to apply.

§ 420.6 Effluent limitations guidelines and standards for pH.

(a) The pH level shall be maintained between 6.0 and 9.0 su at all times.

(b) The pH level in process wastewaters subject to a subpart within this part shall be monitored at the point of discharge to the receiving water or at the point at which the wastewater leaves the wastewater treatment facility operated to treated effluent subject to that subpart.

§ 420.7 Supplemental NPDES permit application and pretreatment report requirements.

In addition to the information and data for NPDES permit applications and pretreatment reports required by part 122, subpart B and § 403.12, respectively, the permit applicant shall provide the following information with its permit application or pretreatment report:

(a) Complete applications for any new variances or for renewal of any existing variances from the generally applicable effluent limitations;

(b) Any proposed alternative effluent limitations under the ''water bubble'' rule at § 420.4.

Subpart A—Cokemaking Subcategory

§ 420.10 Applicability.

The provisions of this subpart are applicable to discharges and the introduction of pollutants into publicly owned treatment works resulting from by-product and other cokemaking operations.

§ 420.11 Subcategory definitions.

As used in this subpart:

(a) *Product* means the average daily operating (production) rate of metallurgical coke plus coke breeze determined in accordance with § 420.3.

(b) *By-product cokemaking* means operations in which coal is heated in the absence of air to produce metallurgical coke (furnace coke and foundry coke) and recovery of by-products derived from the gases and liquids which are driven from the coal during cokemaking.

(c) *Cokemaking, non-recovery* means cokemaking operations for production of metallurgical coke (furnace coke and foundry coke) without recovery of by-products.

(d) *Coke* means a processed form of coal which serves as the basic fuel for the smelting of iron ore.

(1) *Foundry coke* means coke produced for foundry operations.

(2) *Furnace coke* means coke produced for blast furnace operations.

(e) *Iron and steel coke plant* means by-product cokemaking operations which provide more than fifty per cent of the coke produced to ironmaking blast furnaces associated with steel production.

(f) *Merchant coke plant* means by-product cokemaking operations other than those at iron and steel coke plants.

(g) *Merchant bar* means rounds, flats, angles, squares and channels that are used by fabricators to manufacture a wide variety of products such as furniture, stair railings and farm equipment.

(h) *Wet desulfurization system* means one that utilizes water to remove (scrub) sulfur compounds from coke oven off-gases.

(i) *NESHAPs* means National Emission Standards for Hazardous Air Pollutants applicable to by-product coke plants.

§ 420.12 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).

(a) *By-product cokemaking.* Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this segment 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):

Effluent Limitations (BPT)

Process wastewater source	Maximum daily [3]	Maximum monthly avg.[3]
(1) Iron and steel coke plants [1]		
Oil & grease	0.0654	0.0218
TSS	0.506	0.262
(2) Merchant coke plants [2]		
Oil & grease	0.0698	0.0232
TSS	0.540	0.280

[1] iron and steel coke plants, increased loadings, not to exceed 11 per cent of the above limitations, shall be provided for process wastewaters from wet desulfurization systems, but only to the extent such systems generate process wastewaters.

[2] merchant coke plants, increased loadings, not to exceed 10 per cent of the above limitations, shall be provided for process wastewaters from wet desulfurization systems, but only to the extent such systems generate process wastewaters. [3] Pounds per ton of product.

(b) *Cokemaking—non-recovery.* Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this segment 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): There shall be no discharge of process wastewater pollutants to waters of the U.S.

§ 420.13 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best control technology for conventional pollutants (BCT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best control technology for conventional pollutants (BCT): The limitations shall be the same as those specified for conventional pollutants (which are defined in 40 CFR 401.16) in § 420.12 for the best practicable control technology currently available (BPT).

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

(a) *By-product cokemaking.* Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best available control technology economically achievable (BAT):

EFFLUENT LIMITATIONS (BAT)

Regulated parameter	Maximum daily[1]	Maximum monthly avg.[1]
Ammonia (as N)	0.00137	0.000618
Benzo(a)pyrene	0.0000909	0.0000304
Cyanide	0.0104	0.00394
Mercury	0.000000864	0.000000523
Naphthalene	0.000103	0.0000345
Phenol	0.0000332	0.0000187
Selenium	0.000185	0.000159
Thiocyanate	0.00164	0.00115
TRC	0.000659	

[1]Pounds per ton of product.

(1) Increased loadings, not to exceed 9.5 per cent of the above limitations, shall be provided for process wastewaters from wet desulfurization systems, but only to the extent such systems generate process wastewaters.

(2) Increased loadings, not to exceed 6.3 per cent of the above limitations, shall be provided for process wastewaters generated as a result of control measures necessary for compliance with by-product coke plant NESHAPs, but only to the extent such systems generate process wastewaters.

(3) Increased loadings shall be provided for process wastewaters from other wet air pollution control systems (except those from coal charging and coke pushing emission controls), coal tar processing operations and coke plant groundwater remediation systems, but only to the extent such systems generate process wastewaters and those wastewaters are co-treated with process wastewaters from by-product cokemaking wastewaters.

(4) The effluent limitations for TRC shall be applicable only when chlorination of cokemaking wastewaters is practiced.

(b) *Cokemaking—non-recovery.* Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best available control technology economically achievable (BAT): There shall be no discharge of process wastewater pollutants to waters of the U.S.

§ 420.15 New source performance standards (NSPS).

New sources subject to this subpart must achieve the following new source performance standards (NSPS), as applicable.

(a) Any new source subject to the provisions of this section that commenced discharging after [insert date 10 years prior to the date that is 60 days after the publication date of the final rule] and before [insert date that is 60 days after the publication date of the final rule] must continue to achieve the standards specified in the 2000 version of § 420.14. toxic and nonconventional pollutants, those standards shall not apply after the expiration of the applicable time period specified in 40 CFR 122.29(d)(1); thereafter, the source must achieve the standards specified in § 420.14.

(b) *By-product cokemaking.* The following standards apply with respect to each new source that commences construction after [insert date that is 60 days after the publication date of the final rule:

EFFLUENT LIMITATIONS (BAT)

Regulated parameter	Maximum daily[1]	Maximum monthly avg.[1]
Ammonia (as N)	0.00137	0.000618
Benzo(a)pyrene	0.0000909	0.0000304
Cyanide	0.0104	0.00394
Mercury	0.000000864	0.000000523
Naphthalene	0.000103	0.0000345
Oil & grease	0.0246	0.0132

EFFLUENT LIMITATIONS (BAT)—Continued

Regulated parameter	Maximum daily[1]	Maximum monthly avg.[1]
Phenol	0.0000332	0.0000187
Selenium	0.000185	0.000159
Thiocyanate	0.00164	0.00115
TRC	0.000659	
TSS	0.0665	0.0337

[1]Pounds per ton of product.

(1) Increased loadings, not to exceed 9.5 per cent of the above limitations, shall be provided for process wastewaters from wet desulfurization systems, but only to the extent such systems generate process wastewaters.

(2) Increased loadings, not to exceed 6.3 per cent of the above limitations, shall be provided for process wastewaters generated as a result of control measures necessary for compliance with by-product coke plant NESHAPs, but only to the extent such systems generate process wastewaters.

(3) Increased loadings shall be provided for process wastewaters from other wet air pollution control systems (except those from coal charging and coke pushing emission controls), coal tar processing operations and coke plant groundwater remediation systems, but only to the extent such systems generate process wastewaters and those wastewaters are co-treated with process wastewaters from by-product cokemaking wastewaters.

(4) The effluent limitations for TRC shall be applicable only when chlorination of cokemaking wastewaters is practiced.

(c) *Cokemaking—non-recovery.* There shall be no discharge of process wasterwater pollutants to waters of the U.S.

§ 420.16 Pretreatment standards for existing sources (PSES).

Option 1 for paragraph (a): (a) *By-product cokemaking.* Except as provided in 40 CFR 403.7 and 403.13, any existing source subject to this subpart must achieve the following pretreatment standards for existing sources (PSES):

PHYSICAL CHEMICAL TREATMENT

[Pretreatment Standards (PSES)]

Regulated parameter	Maximum daily[1]	Maximum monthly avg.[1]
Ammonia (as N)	0.0845	0.0559
Cyanide	0.0244	0.0128
Naphthalene	0.00268	0.000869
Phenol	2.13	0.720
Selenium	0.00125	0.00104
Thiocyanate	0.402	0.317

[1] Pounds per ton of product.

(1) Increased loadings, not to exceed 13.9 per cent of the above limitations, shall be provided for process wastewaters from wet desulfurization systems, but only to the extent such systems generate process wastewaters.

(2) Increased loadings, not to exceed 9.3 per cent of the above limitations, shall be provided for process wastewaters generated as a result of control measures necessary for compliance with by-product coke plant NESHAPs, but only to the extent such systems generate process wastewaters.

(3) Increased loadings shall be provided for process wastwaters from other wet air pollution control systems (except those from coal charging and coke pushing emission controls), coal tar processing operations and coke plant groundwater remediation systems, but only to the extent such systems generate process wastewaters and those wastewaters are co-treated with process wastewaters from by-product cokemaking wastewaters.

Option 2 for paragraph (a): (a) *By-product cokemaking.* Except as provided in 40 CFR 403.7 and 403.13, any existing source subject to this subpart must achieve the following pretreatment standards for existing sources (PSES):

PHYSICAL CHEMICAL PLUS BIOLOGICAL TREATMENT

[Pretreatment Standards (PSES)]

Regulated parameter	Maximum daily[1]	Maximum monthly avg.[1]
Ammonia (as N)	0.00539	0.00357
Cyanide	0.00616	0.00422
Naphthalene	0.000103	0.0000345
Phenol	0.0000332	0.0000187
Selenium	0.000185	0.000159
Thiocyanate	0.00164	0.00115

[1] Pounds per ton of product.

(1) Increased loadings, not to exceed 9.5 percent of the above limitations, shall be provided for process wastewaters from wet desulfurization systems, but only to the extent such systems generate process wastewaters.

(2) Increased loadings, not to exceed 6.3 percent of the above limitations, shall be provided for process wastewaters generated as a result of control measures necessary for compliance with by-product coke plant NESHAPs, but only to the extent such systems generate process wastewaters.

(3) Increased loadings shall be provided for process wastewaters from other wet air pollution control systems (except those from coal charging and coke pushing emission controls), coal tar processing operations and coke plant groundwater remediation systems, but only to the extent such systems generate process wastewaters and those wastewaters are co-treated with process wastewaters from by-product cokemaking wastewaters.

(b) *Cokemaking-non-recovery.* There shall be no discharge of process wastewater pollutants to POTWs.

§ 420.17 Pretreatment standards for new sources (PSNS).

New sources subject to this subpart must achieve the following pretreatment standards for new sources (PSNS), as applicable.

(a) Any new source subject to the provisions of this section that commenced discharging after [insert date 10 years prior to the date that is 60 days after the publication date of the final rule] and before [insert date that is 60 days after the publication date of the final rule] must continue to achieve the standards specified in the 2000 version of § 420.16 for ten years beginning on the date the source commenced discharge or during the period of depreciation or amortization of the facility, whichever comes first, after which the source must achieve the standards specified in § 420.16.

(b) *By-product cokemaking.* Except as provided in 40 CFR 403.7, the following standards apply with respect to each new source that commences discharge after [insert date that is 60 days after the publication date of the final rule]:

PHYSICAL CHEMICAL PLUS BIOLOGICAL TREATMENT

[Pretreatment Standards (PSNS)]

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
Ammonia (as N)	0.00539	0.00357
Cyanide	0.00616	0.00422
Naphthalene	0.000103	0.0000345
Phenol	0.0000332	0.0000187
Selenium	0.000185	0.000159
Thiocyanate	0.00164	0.00115

[1] Pounds per ton of product.

(1) Increased loadings, not to exceed 9.5 percent of the above limitations, shall be provided for process wastewaters from wet desulfurization systems, but only to the extent such systems generate process wastewaters.

(2) Increased loadings, not to exceed 6.3 percent of the above limitations, shall be provided for process wastewaters generated as a result of control measures necessary for compliance with by-product coke plant NESHAPs, but only to the extent such systems generate process wastewaters.

(3) Increased loadings shall be provided for process wastewaters from other wet air pollution control systems (except those from coal charging and coke pushing emission controls), coal tar processing operations and coke plant groundwater remediation systems, but only to the extent such systems generate process wastewaters and those wastewaters are co-treated with process wastewaters from by-product cokemaking wastewaters.

(c) *Cokemaking—non-recovery.* There shall be no discharge of process wastewater pollutants to POTWs.

Subpart B—Ironmaking Subcategory

§ 420.20 Applicability.

The provisions of this subpart are applicable to discharges and the introduction of pollutants into publicly owned treatment works resulting from: Sintering operations conducted by heating in a traveling grate combustion system of iron bearing materials (*e.g.,* iron ore, mill scale, blast furnace flue dusts, blast furnace wastewater treatment sludges), limestone, coke fines and other materials to produce an agglomerate for charging to the blast furnace; and, ironmaking operations in which iron ore and other iron-bearing materials are reduced to molten iron in a blast furnace.

§ 420.21 Subcategory definitions.

As used in this subpart:

(a) *Product* means:

(1) Sinter agglomerated from iron-bearing materials; or

(2) Molten iron produced in a blast furnace, and does not include slag skimmed remotely from the blast furnace.

The average daily operating (production) rate of sinter and molten iron must be determined in accordance with § 420.3.

(b) *Dry-air pollution control system* is an emission control system that utilizes filters to remove iron-bearing particles (fines) from blast furnace or sintering off-gases.

(c) *Minimum level (ML)* means the level at which the analytical system gives recognizable signals and an acceptable calibration point. 2,3,7,8-tetrachlorodibenzofuran, the minimum level is 10 pg/L per EPA Method 1613B for water and wastewater samples.

(d) *Pg/L* means picograms per liter (ppt = 1.0×10^{-12} gm/L).

(e) *Sintering* means a process for agglomerating iron-bearing materials into small pellets (sinter) which can be charged to a blast furnace.

(f) *Wet-air pollution control system* is an emission control system that utilizes a water mist to clean process or furnace off-gases.

§ 420.22 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve, for each applicable operation, the following effluent limitations representing the degree of effluent reduction attainable by the application

of the best practicable control technology currently available (BPT):

EFFLUENT LIMITATIONS (BPT)

Process wastewater source	Maximum daily [1]	Maximum monthly avg [1]
(a) Sintering operations with wet air pollution controls:		
Oil & grease	0.0300	0.0100
TSS	0.150	0.050
(b) Blast furnaces:		
Oil & grease		
TSS	0.156	0.0520
(c) Sintering operations with dry air pollution controls	([2])	([2])

[1] Pounds per ton of product.
[2] There shall be no discharge of process wastewater pollutants to waters of the U.S. for sintering operations with dry air pollution controls.

§ 420.23 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best control technology for conventional pollutants (BCT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best control technology for conventional pollutants (BCT): The limitations shall be the same as those specified for conventional pollutants (which are defined in 40 CFR 401.16) in § 420.22 of this subpart for the best practicable control technology currently available (BPT).

§ 420.24 Effluent limitations attainable by the application of the best available control technology economically achievable (BAT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best available control technology economically achievable (BAT).

(a) *Sintering operations with wet air pollution control system.* The following table is effluent limitations (BAT) for sintering operations with wet air pollution control system:

EFFLUENT LIMITATIONS (BAT)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
Ammonia (as N)	0.000652	0.000293
Cyanide	0.00493	0.00187
Lead	0.0000913	0.0000476
Phenol	0.0000463	0.0000157
2,3,7,8–TCDF	[3]<ML	
TRC [2]	0.000313	
Zinc	0.000116	0.0000457

[1] Pounds per ton of product.
[2] Applicable only when sintering process wastewater is chlorinated.
[3] Ten parts per quadrillion (10×10^{-12} g/l).

(b) *Sintering operations with dry air pollution control system.* There shall be no discharge of process wastewater pollutants to waters of the U.S.

(c) *Blast furnaces.* The following table is effluent limitations (BAT) for blast furnaces:

EFFLUENT LIMITATIONS (BAT)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
Ammonia (as N)	0.000217	0.0000977
Cyanide	0.00164	0.000623
Lead	0.0000304	0.0000159
Phenol	0.0000154	0.00000523
2,3,7,8-TCDF [3]	[4]<ML	
TRC [2]	0.000104	
Zinc	0.0000387	0.0000152

[1] Pounds per ton of product.
[2] Applicable only when blast furnace process wastewater is chlorinated.
[3] Applicable only when process wastewaters from blast furnaces and sintering operations are co-treated.
[4] Ten parts per quadrillion (10×10^{-12} g/l).

§ 420.25 New Source Performance Standards (NSPS).

New sources subject to this subpart must achieve the following new source performance standards (NSPS), as applicable.

(a) Any new source subject to the provisions of this section that commenced discharging after *[insert date 10 years prior to the date that is 60 days after the publication date of the final rule]* and before *[insert date that is 60 days after the publication date of the final rule]* must continue to achieve the applicable standards specified in the 2000 version of §§ 420.24 and 420.34. toxic and nonconventional pollutants, those standards shall not apply after the expiration of the applicable time period specified in 40 CFR 122.29(d)(1); thereafter, the source must achieve the applicable standards specified in § 420.24.

(b) The following standards apply with respect to each new source that commences construction after *[insert date that is 60 days after the publication date of the final rule].*

(1) *Sintering operations with wet air pollution control system.* The following table is Performance Standards (NSPS) for sintering operations with wet air pollution control system:

PERFORMANCE STANDARDS (NSPS)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
Ammonia (as N)	0.000652	0.000293
Cyanide	0.00493	0.00187
Lead	0.0000913	0.0000476
Oil & grease	0.00531	0.00420
Phenol	0.0000463	0.0000157
2,3,7,8-TCDF	[3] <ML	
TRC [2]	0.000313	
TSS	0.0251	0.00939
Zinc	0.000116	0.0000457

[1] Pounds per ton of product.
[2] Applicable only when sintering process wastewater is chlorinated.
[3] Ten parts per quadrillion (10×10^{-2} g/l).

(2) *Sintering operations with dry air pollution control system.* There shall be no discharge of process wastewater pollutants to waters of the U.S.

(3) *Blast furnaces.* The following table is Performance Standards (NSPS) for blast furnaces:

PERFORMANCE STANDARDS (NSPS)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
Ammonia (as N)	0.000217	0.0000977
Cyanide	0.00164	0.000623
Lead	0.0000304	0.0000159
Oil & grease	0.00177	0.00140
Phenol	0.0000154	0.00000523
2,3,7,8-TCDF[3]	[4] <ML	
TRC [2]	0.000104	
TSS	0.00836	0.00313
Zinc	0.0000387	0.0000152

[1] Pounds per ton of product.
[2] Applicable only when blast furnace process wastewater is chlorinated.
[3] Applicable only when process wastewaters from blast furnaces and sintering operations are co-treated.
[4] Ten parts per quadrillion (10×10^{-12} g/l).

§ 420.26 Pretreatment Standards for Existing Sources (PSES).

Except as provided in 40 CFR 403.7, any existing source subject to this subpart must achieve the following pretreatment standards for existing sources (PSES):

(a) *Sintering operations with wet air pollution control system.* The following table is Pretreatment Standards (PSES) for sintering operations with wet air pollution control system:

PRETREATMENT STANDARDS (PSES)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
Ammonia (as N) [2]	0.000652	0.000293
Lead	0.0000913	0.0000476
2,3,7,8-TCDF	[3] <ML	
Zinc	0.000116	0.0000457

[1] Pounds per ton of product.

[2] Not applicable when the facilities discharge to POTWs with the capability, when considered together with the indirect discharger's removals, to achieve removals at least equivalent to those expected under BAT.
[3] Ten parts per quadrillion (10 x 10^{-12} g/l).

(b) *Sintering operations with dry air pollution control system.* There shall be no discharge of process wastewater pollutants to POTWs.

(c) *Blast furnaces.* The following table is Pretreatment Standards (PSES) for blast furnaces:

PRETREATMENT STANDARDS (PSES)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
Ammonia (as N) [2]	0.000217	0.0000977
Lead	0.0000304	0.0000159
2,3,7,8–TCDF [3]	[4] <ML	
Zinc	0.0000387	0.0000152

[1] Pounds per ton of product.
[2] Not applicable when the facilities discharge to POTWs with the capability, when considered together with the indirect discharger's removals, to achieve removals at least equivalent to those expected under BAT.
[3] Applicable only when process wastewater from blast furnaces and sintering operations are co-treated.
[4] Ten parts per quadrillion (10 x 10^{12} g/l).

§ 420.27 Pretreatment standards for new sources (PSNS).

New sources subject to this subpart must achieve the following pretreatment standards for new sources (PSNS), as applicable.

(a) Any new source subject to the provisions of this section that commenced discharging after *[insert date 10 years prior to the date that is 60 days after the publication date of the final rule]* and before *[insert date that is 60 days after the publication date of the final rule]* must continue to achieve the standards specified in the 2000 version of § 420.26 for ten years beginning on the date the source commenced discharge or during the period of depreciation or amortization of the facility, whichever comes first, after which the source must achieve the standards specified in § 420.26.

(b) Except as provided in 40 CFR 403.7, the following standards apply with respect to each new source that commences construction after *[insert date that is 60 days after the publication date of the final rule]*:

(1) *sintering operations with wet air pollution control system.* The following table is Pretreatment Standards (PSNS) for sintering operations with wet air pollution control system:

PRETREATMENT STANDARDS (PSNS)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
Ammonia (as N) [2]	0.000652	0.000293
Lead	0.0000913	0.0000476
2,3,7,8-TCDF	[3] <ML	
Zinc	0.000116	0.0000457

[1] Pounds per ton of product.
[2] Not applicable when the facilities discharge to POTWs with the capability, when considered together with the indirect discharger's removals, to achieve removals at least equivalent to those expected under BAT.
[3] Ten parts per quadrillion (10 x 10^{12} g/l).

(2) *Sintering operations with dry air pollution control system.* There shall be no discharge of process wastewater pollutants to POTWs.

(3) *Blast furnaces:* The following table is Pretreatment Standards (PSNS) for blast furnaces:

PRETREATMENT STANDARDS (PSNS)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
Ammonia (as N) [2]	0.000217	0.0000977
Lead	0.0000304	0.0000159
2,3,7,8-TCDF [3]	[4] <ML	
Zinc	0.0000387	0.0000152

[1] Pounds per ton of product.
[2] Not applicable when the facilities discharge to POTWs with the capability, when considered together with the indirect discharger's removals, to achieve removals at least equivalent to those expected under BAT.
[3] Applicable only when process wastewater from blast furnaces and sintering operations are co-treated.
[4] Ten parts per quadrillion (10 x 10^{12} g/l).

§ 420.28 Point of compliance monitoring.

(a) *Sinter Direct Dischargers.* Pursuant to 40 CFR 122.44(i) and 122.45(h), a direct discharger must demonstrate compliance with the effluent limitations and standards for 2,3,7,8-TCDF at the point after treatment of sinter plant wastewater separately or in combination with blast furnace wastewater, but prior to mixing with any other process or non-process wastewaters or non-contact cooling waters.

(b) *Sinter Indirect Dischargers.* An indirect discharger must demonstrate compliance with the pretreatment standards for 2,3,7,8=TCDF by monitoring at the point after treatment of sinter plant wastewater separately or in combination with blast furnace wastewater, but prior to mixing with any other process or non-process wastewaters or non-contact cooling waters.

Subpart C—Integrated Steelmaking Subcategory

§ 420.30 Applicability.

The provisions of this subpart are applicable to discharges and the introduction of pollutants into publicly owned treatment works resulting from steelmaking operations conducted at integrated steel mills. Such operations include steelmaking in basic oxygen furnaces and vacuum degassing and continuous casting of molten steels. The provisions of this subpart are also applicable to steelmaking in basic oxygen furnaces conducted at any location.

§ 420.31 Subcategory definitions.

As used in this subpart:

(a) *Product* means steel produced in a basic oxygen furnace (BOF) from molten iron, steel scrap, fluxes and alloying elements in various combinations by adding oxygen (air), before further processing in ladle metallurgy stations or casting operations. The average daily operating (production) rates shall be determined in accordance with § 420.3, except as noted in paragraph (b) of this section.

(b) *Average hourly operating rate and average daily operating rate* for vacuum degassing operations must be determined in accordance with the methods set out in § 420.3 for the week with the highest vacuum degassing production during the year with the highest annual production from the past five years.

(c) *Basic furnace* means one in which the brick lining is composed of refractory material derived from dolomite (CaO and MgO), limestone (CaO), or magnesite (MgO).

(d) *Semi-wet-air* means an emission control system in which water is added for the purpose of conditioning the temperature and/or the humidity of furnace or process off-gases prior to cleaning the gases in a dry-air emission control system.

(e) *Wet-air open combustion* means an emission control system which has been designed to add excess air to furnace or process off-gases so as to assure a more complete combustion (conversion) of carbon monoxide to carbon dioxide.

(f) *Wet-air suppressed combustion* means an emission control system which has been designed to restrict the amount of air available to furnace or process off-gases so as to assure minimal combustion (conversion) of carbon monoxide to carbon dioxide.

§ 420.32 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve, for each applicable operation, the following effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT):

EFFLUENT LIMITATIONS (BPT)

Process wastewater source	Maximum daily [1]	Maximum monthly Avg. [1]
(a) Basic oxygen furnaces:		
(1) semi-wet air pollution controls:	([3])	
Oil & grease		
TSS		
(2) wet-open combustion:		
Oil & grease		
TSS	0.137	0.0458
(3) wet-suppressed combustion:		
Oil & grease		
TSS	0.0624	0.0208
(b) Vacuum degassing:		
Oil & grease		
TSS	0.0312	0.0104
(c) Continuous casting:		
Oil & grease	0.0468	0.0156
TSS	0.156	0.052
(d) Ladle metallurgy	([2])	([2])

[1] Pounds per ton of product.
[2] There shall be no discharge of process wastewater pollutants to waters of the U.S. for ladle metallurgy.
[3] 1982 regulation allowed for no discharge of process wastewater from this operation.

§ 420.33 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best control technology for conventional pollutants (BCT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best control technology for conventional pollutants (BCT): The limitations shall be the same as those specified for conventional pollutants (which are defined in 40 CFR 401.16) in § 420.32 for the best practicable control technology currently available (BPT).

§ 420.34 Effluent limitations attainable by the application of the best available control technology economically achievable (BAT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point

source subject to this subpart must achieve, for each applicable operation, the following effluent limitations representing the degree of effluent reduction attainable by the application of the best available control technology economically achievable (BAT):

(a) *Basic oxygen furnaces with semi-wet air pollution control system; basic oxygen furnaces with wet-suppressed combustion air pollution control system; vacuum degassing; continuous casting.* This table is Effluent Limitations (BAT) for basic oxygen furnaces with semi-wet air pollution control system; basic oxygen furnaces with wet-suppressed combustion air pollution control system; vacuum degassing; and continuous casting:

EFFLUENT LIMITATIONS (BAT)

Process wastewater source	Maximum daily [1]	Maximum monthly avg. [1]
(1) Basic oxygen furnaces:		
(i) semi-wet air pollution controls:		
(A) Lead	0.0000122	0.00000634
(B) Zinc	0.0000140	0.00000795
(ii) wet-suppressed combustion:		
(A) Lead	0.0000243	0.0000127
(B) Zinc	0.0000279	0.0000159
(2) Vacuum degassing:		
(i) Lead	0.0000183	0.00000951
(ii) Zinc	0.0000209	0.0000119
(3) Continuous casting:		
(i) Lead	0.0000243	0.0000127
(ii) Zinc	0.0000279	0.0000159

[1] Pounds per ton of product.

(b) *Basic oxygen furnaces with wet-open combustion air pollution control system.* The following table is Effluent Limitations (BAT) for basic oxygen furnaces with wet-open combustion air pollution control system:

EFFLUENT LIMITATIONS (BAT)

	Maximum daily [1]	Maximum monthly avg.[1]
Lead	0.0000243	0.0000127
Zinc	0.0000279	0.0000159

[1] Pounds per ton of product.

(c) *Ladle Metallurgy.* There shall be no discharge of process wastewater pollutants to waters of the U.S.

§ 420.35 New Source Performance Standards (NSPS).

New sources subject to this subpart must achieve the following new source performance standards (NSPS), as applicable.

(a) Any new source subject to the provisions of this section that commenced discharging after *[insert date 10 years prior to the date that is 60 days after the publication date of the final rule]* and before *[insert date that is 60 days after the publication date of the final rule]* must continue to achieve the applicable standards specified in the 2000 version of §§ 420.44, 420.54 and 420.64. toxic and nonconventional pollutants, those standards shall not apply after the expiration of the applicable time period specified in 40 CFR 122.29(d)(1); thereafter, the source must achieve the applicable standards specified in § 420.34.

(b) The following standards apply with respect to each new source that commences construction after *[insert date that is 60 days after the publication date of the final rule].*

(1) *Basic oxygen furnaces with semi-wet air pollution control system; basic oxygen furnaces with wet-suppressed combustion air pollution control system; vacuum degassing; continuous casting.* The following table is Performance Standards (NSPS) for basic oxygen furnaces with semi-wet air pollution control system; basic oxygen furnaces with wet-suppressed combustion air pollution control system; vacuum degassing; and continuous casting:

PERFORMANCE STANDARDS (NSPS)

Process wastewater source	Maximum daily [1]	Maximum monthly avg.[1]
(i) Basic oxygen furnaces:		
(A) semi-wet air pollution controls:		
(*1*) Lead	0.0000122	0.00000634
(*2*) Zinc	0.0000140	0.00000795
(ii) wet-suppressed combustion:		
(A) Lead	0.0000243	0.0000127
(B) Zinc	0.0000279	0.0000159
(ii) Vacuum degassing		
(A) Lead	0.0000183	0.00000951

PERFORMANCE STANDARDS (NSPS)—Continued

Process wastewater source	Maximum daily [1]	Maximum monthly avg.[1]
(B) Zinc	0.0000209	0.0000119
(iii) Continuous casting		
(A) Lead	0.0000243	0.0000127
(B) Zinc	0.0000279	0.0000159

[1] Pounds per ton of product.

(2) *Basic oxygen furnaces with wet-open combustion air pollution control system.* The following table is Performance Standards (NSPS) for basic oxygen furnaces with wet-open combustion air pollution control system:

PERFORMANCE STANDARDS (NSPS)

	Maximum daily [1]	Maximum monthly avg.[1]
Lead	0.0000243	0.0000127
Zinc	0.0000279	0.0000159

[1] Pounds per ton of product.

(3) *Ladle Metallurgy.* There shall be no discharge of process wastewater pollutants to waters of the U.S.

§ 420.36 Pretreatment Standards for Existing Sources (PSES).

Except as provided in 40 CFR 403.7, any existing source subject to this subpart must achieve the following pretreatment standards for existing sources (PSES):

(a) *Basic oxygen furnaces with semi-wet air pollution control system; basic oxygen furnaces with wet-suppressed combustion air pollution control system; vacuum degassing; continuous casting.* The following table is Pretreatment Standards (PSES) for basic oxygen furnaces with semi-wet air pollution control system; basic oxygen furnaces with wet-suppressed combustion air pollution control system; vacuum degassing; and continuous casting:

PRETREATMENT STANDARDS (PSES)

Process Wastewater Source	Maximum daily [1]	Maximum monthly avg.[1]
(1) Basic oxygen furnaces:		
(i) semi-wet air pollution controls		
(A) Lead	0.0000122	0.00000634
(B) Zinc	0.0000140	0.00000795
(ii) wet-suppressed combustion		
(A) Lead	0.0000243	0.0000127
(B) Zinc	0.0000279	0.0000159
(2) Vacuum degassing:		
(i) Lead	0.0000183	0.00000951
(ii) Zinc	0.0000209	0.0000119
(3) Continuous casting:		
(i) Lead	0.0000243	0.0000127
(ii) Zinc	0.0000279	0.0000159

[1] Pounds per ton of product.

(b) *Basic oxygen furnaces with wet-open combustion air pollution control system.* The following table is Pretreatment Standards (PSES) for basic oxygen furnaces with wet-open combustion air pollution control system:

PRETREATMENT STANDARDS (PSES)

	Maximum daily [1]	Maximum monthly avg.[1]
Lead	0.0000243	0.0000127
Zinc	0.0000279	0.0000159

[1] Pounds per ton of product.

(c) *Ladle Metallurgy.* There shall be no discharge of process wastewater pollutants to POTWs.

§ 420.37 Pretreatment Standards for New Sources (PSNS).

New sources subject to this subpart must achieve the following pretreatment standards for new sources (PSNS), as applicable.

(a) Any new source subject to the provisions of this section that commenced discharging after *[insert date 10 years prior to the date that is 60 days after the publication date of the final rule]* and before *[insert date that is 60 days after the publication date of the final rule]* must continue to achieve the standards specified in the 2000 version of §§ 420.46, 420.56, and 420.66 for ten years beginning on the date the source commenced discharge or during the period of depreciation or amortization of the facility, whichever comes first, after which the source must achieve the standards specified in § 420.36.

(b) Except as provided in 40 CFR 403.7, the following standards apply with respect to each new source that commences construction after *[insert date that is 60 days after the publication date of the final rule]*:

(1) *Basic oxygen furnaces with semi-wet air pollution control system; basic oxygen furnaces with wet-suppressed combustion air pollution control system; vacuum degassing; continuous casting.* The following table is Pretreatment Standards (PSNS) for basic oxygen furnaces with semi-wet air pollution control system; basic oxygen furnaces with wet-suppressed combustion air pollution control system; vacuum degassing; and continuous casting:

PRETREATMENT STANDARDS (PSNS)

Process wastewater source	Maximum daily [1]	Maximum monthly avg.[1]
(i) Basic oxygen furnaces:		
(A) semi-wet air pollution controls:		
(1) Lead	0.0000122	0.00000634
(2) Zinc	0.0000140	0.00000795
(B) wet-suppressed combustion:		
(1) Lead	0.0000243	0.0000127
(2) Zinc	0.0000279	0.0000159
(ii) Vacuum degassing:		
(A) Lead	0.0000183	0.00000951
(B) Zinc	0.0000209	0.0000119
(iii) Continuous casting:		
(A) Lead	0.0000243	0.0000127
(B) Zinc	0.0000279	0.0000159

[1] Pounds per ton of product.

(2) *Basic oxygen furnaces with wet-open combustion air pollution control system.* The following table is Pretreatment Standards (PSNS) basic oxygen furnaces with wet-open combustion air pollution control system:

PRETREATMENT STANDARDS (PSNS)

	Maximum daily [1]	Maximum monthly avg.[1]
Lead	0.0000243	0.0000127
Zinc	0.0000279	0.0000159

[1] Pounds per ton of product.

(3) *Ladle Metallurgy.* There shall be no discharge of process wastewater pollutants to POTWs.

Subpart D—Integrated and Stand-Alone Hot ming Subcategory

§ 420.40 Applicability.

The provisions of this subpart are applicable to discharges and the introduction of pollutants into publicly owned treatment works resulting from primary, section, flat and pipe and tube hot forming operations conducted at integrated steel mills and at stand-alone hot forming mills.

§ 420.41 Subcategory definitions.

As used in this subpart:

(a) *Product* means the solid, flat-rolled steel, steel shapes or pipe and tube produced at primary, section, flat, pipe and tube hot-forming mills. The average daily operating (production) rate shall be determined in accordance with § 420.3.

(b) *Hot forming* means those steel processing operations in which solidified, heated steel is shaped by mechanical pressure applied through one or a series of rolls.

(c) *Primary mill* means the first hot forming operation performed on solidified steel after the steel is removed from ingot molds in which steel ingots are reduced to blooms or slabs by passing the heated steel between rotating steel rolls.

(d) *Section mill* means those steel hot forming operations that produce a variety of steel shapes other than those produced on primary mills, flat mills or pipe and tube mills.

(e) *Flat mill* means those steel hot forming operations that reduce heated slabs to plates, strip and sheet or skelp.

(f) *Pipe and tube mill* means steel hot forming operations that produce butt-welded or seamless tubular steel products.

(g) *Scarfing* means steel surface conditioning operations in which flames generated by combustion of oxygen and fuel are used to remove surface metal imperfections from blooms, billets or slabs.

(h) *Plate mill* means steel hot forming operations that produce flat, hot-rolled

products that are: Between 8 and 48 inches wide and over 0.23 inches thick; or greater than 48 inches wide and over 0.18 inches thick.

(i) *Hot strip and sheet mill* means operations that produce flat, hot rolled steel products other than plates.

(j) *Carbon steel hot-forming* means operations that produce a majority (tonnage basis) of carbon steels by hot forming.

(k) *Specialty steel hot-forming* means operations that produce less than a majority (tonnage basis) of carbon steel by hot forming.

(l) *Carbon and alloy steel* means operations that produce a majority (tonnage basis) of carbon and alloy steel products by hot forming.

(m) *Stainless steels* means operations that produce a majority (tonnage basis) of stainless steel products by hot forming.

(n) *Skep* means flat, hot-rolled steel strip or sheet used to form welded pipe or tube products.

§ 420.42 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve, for each applicable operation, the following effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT):

EFFLUENT LIMITATIONS (BPT)

Process wastewater source	Maximum daily [1]	Maximum monthly Avg.[1]
(a) Primary mills, carbon and specialty:		
(1) without scarfing:		
(i) Oil & grease	0.0748	
(ii) TSS	0.300	0.112
(2) with scarfing:		
(i) Oil & grease:	0.442	
(ii) TSS	0.111	0.166
(b) Section mills:		
(1) carbon:		
(i) Oil & grease	0.179	
(ii) TSS	0.714	0.268
(2) Specialty:		
(i) Oil & grease	0.112	
(ii) TSS	0.448	0.128
(c) Flat mills:		
(1) Hot strip and sheet, carbon and specialty:		
(i) Oil & grease	0.214	
(ii) TSS	0.854	0.320
(2) Plate mills, carbon:		
(i) Oil & grease	0.114	
(ii) TSS	0.454	0.170
(3) Plate mills, specialty:		
(i) Oil & grease	0.0500	
(ii) TSS	0.200	0.0752
(d) Pipe and tube mills, carbon and specialty:		
(i) Oil & grease	0.106	
(2) TSS	0.424	0.159

[1] Pounds per ton of product.

§ 420.43 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best control technology for conventional pollutants (BCT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best control technology for conventional pollutants (BCT): The limitations shall be the same as those specified for conventional pollutants (which are defined in 40 CFR 401.16) in § 420.42 of this subpart for the best practicable control technology currently available (BPT).

§ 420.44 Effluent limitations attainable by the application of the best available control technology economically achievable (BAT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best available control technology economically achievable (BAT):

(a) *Carbon and Alloy Steels.* The following table is Effluent Limitations (BAT) for carbon and alloy steels:

EFFLUENT LIMITATIONS (BAT)

	Maximum daily [1]	Maximum monthly avg.[1]
Lead	0.000122	0.0000634
Zinc	0.000131	0.0000907

[1] Pounds per ton of product.

(b) *Stainless Steels.* The following table is Effluent Limitations (BAT) for stainless steels:

EFFLUENT LIMITATIONS (BAT)

	Maximum daily [1]	Maximum monthly avg.[1]
Chromium	0.0000808	0.0000362
Nickel	0.000275	0.000144

[1] Pounds per ton of product.

§ 420.45 New Source Performance Standards (NSPS).

New sources subject to this subpart must achieve the following new source performance standards (NSPS), as applicable.

(a) Any new source subject to the provisions of this section that commenced discharging after *[insert date 10 years prior to the date that is 60 days after the publication date of the final rule]* and before *[insert date that is 60 days after the publication date of the final rule]* must continue to achieve the applicable standards specified in the 2000 version of §§ 420.44, 420.54, 420.64, and 420.74. toxic and nonconventional pollutants, those standards shall not apply after the expiration of the applicable time period specified in 40 CFR 122.29(d)(1); thereafter, the source must achieve the applicable standards specified in § 420.44.

(b) The following standards apply with respect to each new source that commences construction after *[insert date that is 60 days after the publication date of the final rule].*

(1) *Carbon and Alloy Steels.* The following table is Performance Standards (NSPS) for carbon and alloy steels:

PERFORMANCE STANDARDS (NSPS)

	Maximum daily [1]	Maximum monthly avg.[1]
Lead	0.000122	0.0000634
Oil & grease	0.00793	0.00628
TSS	0.0182	0.0124
Zinc	0.000131	0.0000907

[1] Pounds per ton of product.

(2) *Stainless Steels.* The following table is Performance Standards (NSPS) for stainless steels:

PERFORMANCE STANDARDS (NSPS)

	Maximum daily [1]	Maximum monthly avg.[1]
Chromium	0.0000808	0.0000362
Nickel	0.000275	0.000144
Oil & grease	0.0236	0.0119
TSS	0.0265	0.0109

[1] Pounds per ton of product.

§ 420.46 Pretreatment Standards for Existing Sources (PSES).

Except as provided in 40 CFR 403.7, any existing source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR part 403.

§ 420.47 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.

Subpart E—Non-Integrated Steelmaking and Hot ming Subcategory

§ 420.50 Applicability.

The provisions of this subpart are applicable to discharges and the introduction of pollutants into publicly owned treatment works resulting from steelmaking and hot forming operations conducted at non-integrated steel mills. Such operations include steelmaking in electric arc furnaces; vacuum degassing and continuous casting of molten steels; and, hot forming of flat-rolled steels, steel shapes and pipe and tube. The provisions of this subpart are also applicable to steelmaking operations in electric arc furnaces and related vacuum degassing, continuous casting and hot forming operations conducted at any location.

§ 420.51 Subcategory definitions.

As used in this subpart:

(a) *Product* means:

(1) Steel produced in electric furnaces before further processing in ladle metallurgy stations or casting operations;

(2) Flat-rolled steel, steel shapes or pipe and tube produced by hot-forming operations. The daily operating

(production) rate shall be determined in accordance with § 420.3.

(b) Except for the term ''product,'' definitions set out for subpart C of this part are applicable to this subpart.

(c) *Electric arc furnace* means one in which the heat is supplied by an electric arc from graphite electrodes to the molten metal bath. The charge is generally 100% scrap metal.

§ 420.52 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve, for each applicable operation, the following effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT):

EFFLUENT LIMITATIONS (BPT)

Process wastewater source	Maximum daily [1]	Maximum monthly avg.[1]
(a) Electric arc furnaces	([2])	([2])
(b) Vacuum degassing:		
(1) Oil & grease		
(2) TSS	0.0312	0.0104
(c) Continuous casting:		
(1) Oil & grease	0.0468	0.0156
(2) TSS	0.156	0.052
(d) Hot forming mills:		
(1) Oil & grease	0.0748	
(2) TSS	0.300	0.112
(e) Ladle metallurgy	([2])	([2])

[1] Pounds per ton of product.
[2] There shall be no discharge of process wastewater pollutants to waters of the U.S. for electric arc furnaces or ladle metallurgy.

§ 420.53 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best control technology for conventional pollutants (BCT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best control technology for conventional pollutants (BCT): The limitations shall be the same as those specified for conventional pollutants (which are defined in 40 CFR 401.16) in § 420.52 of this subpart for the best practicable control technology currently available (BPT).

§ 420.54 Effluent limitations attainable by the application of the best available control technology economically achievable (BAT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best available control technology economically achievable (BAT).

(a) *Carbon and Alloy Steels.* The following effluent limitations apply to discharges in the carbon and alloy steels segment for each operation as applicable.

(1) *Electric arc furnaces.* There shall be no discharge of process wastewater pollutants to waters of the U.S.

(2) *Vacuum degassing; continuous casting.* The following table is Effluent Limitations (BAT) for vacuum degassing and continuous casting:

CARBON AND ALLOY STEELS—EFFLUENT LIMITATIONS (BAT)

	Maximum daily [1]	Maximum monthly avg.[1]
Lead	0.0000122	0.00000634
Zinc	0.0000101	0.00000450

[1] Pounds per ton of product.

(3) *Hot forming operations.* The following table is Effluent Limitations (BAT) for hot forming operations:

CARBON AND ALLOY STEELS—EFFLUENT LIMITATIONS (BAT)

	Maximum daily [1]	Maximum monthly avg.[1]
Lead	0.0000609	0.0000317
Zinc	0.0000506	0.0000225

[1] Pounds per ton of product.

(4) *Ladle Metallurgy.* There shall be no discharge of process wastewater pollutants to waters of the U.S.

(b) *Stainless Steels.* The following effluent limitations apply to discharges in the stainless steels segment for each operation as applicable.

(1) *Electric arc furnaces.* There shall be no discharge of process wastewater pollutants to waters of the U.S.

(2) *Vacuum degassing; continuous casting.* The following table is Effluent Limitations (BAT) for vacuum degassing and continuous casting:

STAINLESS STEELS—EFFLUENT LIMITATIONS (BAT)

	Maximum daily [1]	Maximum monthly avg.[1]
Chromium	0.00000808	0.00000362
Nickel	0.0000275	0.0000144

[1] Pounds per ton of product.

(3) *Hot forming operations.* The following table is Effluent Limitations (BAT) for hot forming operations:

STAINLESS STEELS—EFFLUENT LIMITATIONS (BAT)

	Maximum daily [1]	Maximum monthly avg.[1]
Chromium	0.0000404	0.0000181
Nickel	0.000137	0.0000720

[1] Pounds per ton of product.

(4) *Ladle Metallurgy.* There shall be no discharge of process wastewater pollutants to waters of the U.S.

§ 420.55 New Source Performance Standards (NSPS).

New sources subject to this subpart must achieve the following new source performance standards (NSPS), as applicable.

(a) Any new source subject to the provisions of this section that commenced discharging after [insert date 10 years prior to the date that is 60 days after the publication date of the final rule] and before [insert date that is 60 days after the publication date of the final rule] must continue to achieve the standards specified in the 2000 version of § 420.74. toxic and nonconventional pollutants, those standards shall not apply after the expiration of the applicable time period specified in 40 CFR 122.29(d)(1); thereafter, the source must achieve the standards specified in § 420.54.

(b) The following standards apply with respect to each new source that commences construction after [insert date that is 60 days after the publication date of the final rule].

(1) *Carbon and alloy steels.* The following performance standards apply to discharges in the carbon and alloy steels segment for each operation as applicable: There shall be no discharge of process wastewater pollutants to waters of the U.S.

(2) *Stainless steels.* The following performance standards apply to discharges in the stainless steels segment for each operation as applicable: There shall be no discharge of process wastewater pollutants to waters of the U.S.

§ 420.56 Pretreatment Standards for Existing Sources (PSES).

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

(a) *Carbon and alloy steels.* The following pretreatment standards apply to discharges in the carbon and alloy steels segment for each operation as applicable:

(1) *Electric arc furnace steelmaking—semi-wet.* [Reserved.]

(2) *Vacuum degassing; continuous casting.* The following table is Pretreatment Standards (PSES) for vacuum degassing and continuous casting:

CARBON AND ALLOY STEELS.—PRETREATMENT STANDARDS (PSES)

	Maximum daily [1]	Maximum monthly avg.[1]
Lead	0.0001878	0.0000626
Zinc	0.000282	0.0000938

[1] Pounds per ton of product.

(3) *Hot forming operations.* Any existing source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR part 403.

(4) *Ladle Metallurgy.* There shall be no discharge of process wastewater pollutants to POTWs.

(b) *Stainless steels.* The following pretreatment standards apply to discharges in the stainless steels segment for each operation as applicable.

(1) *Electric arc furnaces.* There shall be no discharge of process wastewater pollutants to POTWs.

(2) *Vacuum degassing; continuous casting.* The following table is Pretreatment Standards (PSES) for vacuum degassing and continuous casting:

STAINLESS STEELS—PRETREATMENT STANDARDS (PSES)

	Maximum daily [1]	Maximum monthly avg.[1]
Chromium	0.00000808	0.00000362
Nickel	0.0000275	0.0000144

[1] Pounds per ton of product.

(3) *Hot forming operations.* The following table is Pretreatment Standards (PSES) for hot forming operations:

STAINLESS STEELS—PRETREATMENT STANDARDS (PSES)

	Maximum daily [1]	Maximum monthly avg.[1]
Chromium	0.0000404	0.0000181
Nickel	0.000137	0.0000720

[1] Pounds per ton of product.

(4) *Ladle Metallurgy.* There shall be no discharge of process wastewater pollutants to POTWs.

§ 420.57 Pretreatment Standards for New Sources (PSNS).

New sources subject to this subpart must achieve the following pretreatment standards for new sources (PSNS), as applicable.

(a) Any new source subject to the provisions of this section that commenced discharging after [insert date 10 years prior to the date that is 60 days after the publication date of the final rule] and before [insert date that is 60 days after the publication date of the final rule] must continue to achieve the standards specified in the 2000 version of § 420.76 for ten years beginning on the date the source commenced discharge or during the period of depreciation or amortization of the facility, whichever comes first, after which the source must achieve the standards specified in § 420.56.

(b) Except as provided in 40 CFR 403.7, the following standards apply with respect to each new source that commences construction after [insert date that is 60 days after the publication date of the final rule]:

(1) *Carbon and alloy steels.* The following performance standards apply to discharges in the carbon and alloy steels segment for each operation as applicable: There shall be no discharge of process wastewater pollutants to POTWs.

(2) *Stainless steels.* The following effluent limitations apply to discharges in the stainless steels segment for each operation as applicable: There shall be no discharge of process wastewater pollutants to POTWs.

Subpart F—Steel Finishing Subcategory

§ 420.60 Applicability.

(a) The provisions of this subpart are applicable to discharges and the introduction of pollutants into publicly owned treatment works resulting from carbon, alloy and stainless steel finishing operations. Such operations include descaling, acid pickling, cold rolling and annealing, acid and alkaline cleaning, continuous hot dip coating and electroplating of metals on steels.

(b) Wastewater discharges from the following operations on steel are subject to this subpart: Cold forming, continuous electroplating, or continuous hot dip coating of sheets, strips or plates.

(c) This subpart does not apply to discharges of process wastewater from surface finishing or cold forming operations on steel wire, rod, bar, pipe or tubing. This subpart does not apply to process wastewater from these same operations when they are performed on base materials other than steel. Wastewater discharges from performing these operations are subject to 40 CFR part 438.

§ 420.61 Subcategory definitions.

As used in this subpart:

(a) *Product* means:

(1) Steel processed (including rework) for descaling, acid pickling and acid or alkaline cleaning operations;

(2) Finished rolled steel for cold rolling and annealing operations; and

(3) Finished coated steel for hot coating and electroplating operations. The daily operating (production) rate shall be determined in accordance with § 420.3.

(b) *Acid cleaning* means surface treatment of steel products using acid solutions conducted after cold rolling operations and prior to subsequent surface coating operations, and associated rinsing operations.

(c) *Acid pickling* means the first surface treatment of steel products using acid solutions conducted after hot forming operations for chemical removal of oxides and scale, and associated rinsing operations.

(d) *Acid purification units* or acid recovery units means those devices used for recovery and/or reconstitution of acid solutions from used acid pickling solutions.

(e) *Acid regeneration* means recovery of hydrochloric acid from used pickling solutions.

(f) *Alkaline cleaning* means surface treatment of steel products using alkaline solutions and associated rinses, which are conducted after cold rolling operations and prior to subsequent surface coating operations.

(g) *Bar* means a finished hot-rolled steel product.

(h) *Batch* means those steel finishing operations in which semi-finished steel products are processed in discrete batches.

(i) *Cold forming* means operations conducted on unheated steel for purposes of imparting desired mechanical properties and surface qualities (density, smoothness) to the steel.

(j) *Cold working* means operations (rolling, forging, stretching) conducted on unheated (often ambient temperature) steel that change structure, shape and create a permanent increase in hardness and strength.

(k) *Combination* means cold rolling operations which include recirculation of rolling solutions at one or more mill stands, and once-through use of rolling solutions at the remaining stand or stands.

(l) *Combination pickling* means acid pickling operations using more than one acid solution or mixed acid solutions.

(m) *Continuous* means operations in which semi-finished steel products are processed on a continuous or semi-continuous basis.

(n) *Descaling* means removal of scale from semi-finished steel products by action of molten salt baths or chemical solutions.

(o) *Direct application* means cold rolling operations which include once-through use of rolling solutions at all mill stands.

(p) *Electrolytic descaling* means removal of scale from semi-finished steel products by electrolysis utilizing sodium sulfate solutions.

(q) *Electroplating* means the application of metal coatings including, but not limited to, chromium, copper, nickel, tin, zinc and combinations thereof on steel products using an electro-chemical process.

(r) *Flat bar* means a semi-finished hot-rolled flat steel product.

(s) *Fume scrubbers* means emission control devices used to collect and clean fumes originating in acid pickling, acid cleaning, alkaline cleaning and steel coating operations.

(t) *Hot coating-galvanizing* means coating steel products with zinc or mixtures of zinc and aluminum by the hot dip process, including related operations preceding and subsequent to immersing the steel in the molten metal.

(u) *Hot coating-terne* means coating steel products with terne (lead and zinc) metal by the hot dip process, including related operations proceeding and subsequent to immersing the steel in the molten metal.

(v) *Hydrochloric acid pickling* means acid pickling operations using hydrochloric acid solutions.

(w) *Miscellaneous steel products* means flat rolled strip and sheet steel products other than wire and fasteners.

(x) *Multiple stands* means those recirculation or direct application cold rolling mills which include more than one stand of work rolls.

(y) *Other hot coating* means coating steel products with metals other than zinc or terne metal by the hot dip process, including related operations preceding and subsequent to immersing the steel in the molten metal.

(z) *Pickling* means the descaling process by which the hard black oxide formed on the steel surface during hot rolling is removed by the chemical action of acids.

(aa) *Recirculation* means cold rolling operations which include recirculation of rolling solutions at all mill stands.

(bb) *Salt bath descaling-reducing* means the removal of scale from semi-finished steel products by action of molten salt baths containing sodium hydride.

(cc) *Salt bath descaling-oxidizing* means removal of scale from semi-finished steel by action of molten salt baths other than those containing sodium hydride.

(dd) *Single stand* means those recirculation or direct application cold rolling mills which include only one stand of work rolls.

(ee) *Spent acid solution (or spent pickle liquor)* means acid solutions which are no longer effective and are discharged or removed from the pickling process.

(ff) *Tube* means a hollow steel cylinder formed usually from a strip.

(gg) *Wire rod* means a semi-finished steel product of circular cross section, generally with a diameter of approximately 0.25 inches.

§ 420.62 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).

(a) Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve, for each applicable operation, the following effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT):

PERFORMANCE STANDARDS (BPT)

Pollutant TSS	Maximum daily [1]	Maximum monthly avg.[1]
(a) Salt bath descaling-oxidizing:		
(1) batch, sheet and plate	0.408	0.175
(2) batch, rod	0.246	0.105
(3) batch, pipe and tubes	0.992	0.426
(4) continuous	0.193	0.0826
(b) Salt bath descaling-reducing:		
(1) batch	0.190	0.0814
(2) continuous	1.06	0.456
(c) Acid pickling-sulfuric:		
(1) rod, coil	0.164	0.070
(2) bar, billet, bloom	0.0526	0.0226
(3) strip, sheet and plate	0.105	0.045
(4) pipe, tubes and other products	0.292	0.125
(d) Acid pickling-hydrochloric:		
(1) rod, coil	0.286	0.123
(2) strip, sheet and plate	0.164	0.070
(3) pipe, tubes and other products	0.596	0.256
(e) Acid pickling-combination:		
(1) rod, coil	0.298	0.128
(2) bar, billet, bloom	0.134	0.0576
(3) strip, sheet and plate-continuous	0.876	0.376
(4) strip, sheet and plate-batch	0.268	0.115
(5) pipe, tubes and other products	0.450	0.193
(f) Cold rolling mills:		
(1) recirculation-single stand	0.0025	0.00125

PERFORMANCE STANDARDS (BPT)—Continued

Pollutant TSS	Maximum daily [1]	Maximum monthly avg.[1]
(2) recirculation-multiple stands	0.0125	0.00626
(3) combination	0.150	0.0752
(4) direct application-single stand	0.045	0.0226
(5) direct application-mult. stands	0.200	0.100
(g) Alkaline cleaning:		
(1) batch	0.146	0.0626
(2) continuous	0.204	0.0876
(h) Hot coating: galvanizing, terne, other metals:		
(1) strip, sheet and miscellaneous products	0.350	0.150
(i) Electroplating	[2] 60	[2] 31
(j) Fume scrubbers		
Acid pickling, alkaline cleaning, hot coating, other	[3] 12.58	[3] 5.39
(k) Absorber vent scrubber, hydrochloric acid regeneration	[3] 84.04	[3] 35.86

Pollutant oil & grease	Maximum daily [1]	Maximum monthly avg.[1]
(a) Salt bath descaling-oxidizing:		
(1) batch, sheet and plate	NA	NA
(2) batch, rod	NA	NA
(3) batch, pipe and tubes	NA	NA
(4) continuous	NA	NA
(b) Salt bath descaling-reducing:		
(1) batch	NA	NA
(2) continuous	NA	NA
(c) Acid pickling-sulfuric [4]:		
(1) rod, coil	0.0700	0.0234
(2) bar, billet, bloom	0.0226	0.00750
(3) strip, sheet and plate	0.0450	0.0150
(4) pipe, tubes and other products	0.125	0.0418
(d) Acid pickling-hydrochloric [4]:		
(1) rod, coil	0.123	0.0408
(2) strip, sheet and plate	0.0700	0.0234
(3) pipe, tubes and other products	0.256	0.0852
(e) Acid pickling-combination [4]:		
(1) rod, coil	0.128	0.0426
(2) bar, billet, bloom	0.0576	0.0192
(3) strip, sheet and plate-continuous	0.376	0.125
(4) strip, sheet and plate-batch	0.115	0.0384
(5) pipe, tubes and other products	0.193	0.0644
(f) Cold rolling mills:		
(1) recirculation-single stand	0.00104	0.000418
(2) recirculation-multiple stands	0.0522	0.00208
(3) combination	0.0626	0.0250
(4) direct application-single stand	0.0188	0.00752
(5) direct application-mult. stands	0.0834	0.0334
(g) Alkaline cleaning:		
(1) batch	0.0626	0.0208
(2) continuous	0.0876	0.0292
(h) Hot coating: galvanizing, terne, other metals:		
(1) strip, sheet and miscellaneous products	0.150	0.0500
(i) Electroplating	[2] 52	[2] 26
(j) Fume scrubbers:		
Acid pickling, alkaline cleaning, hot coating, other	[3] 5.39	[3] 1.76
(k) Absorber vent scrubber, hydrochloric acid regeneration	[3] 35.86	[3] 11.99

[1] Pounds per ton of product for all operations except electroplating, fume scrubbers, and adsorber vent scrubbers.
[2] The values are expressed in milligrams per liter for this operation.
[3] The values are expressed in pounds per day for this operation.
[4] The limitations for oil and grease shall be applicable when acid pickling wastewaters are treated with cold rolling wastewaters.

§ 420.63 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best control technology for conventional pollutants (BCT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best control technology for conventional pollutants (BCT): The limitations shall be the same as those specified for conventional pollutants (which are defined in 40 CFR 401.16) in § 420.62 of this subpart for the best practicable control technology currently available (BPT).

§ 420.64 Effluent limitations attainable by the application of the best available control technology economically achievable (BAT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best available control technology economically achievable (BAT).

(a) *Ammonia (as N)* (1) *Stainless Steel.* The following effluent limitations apply to discharges in the stainless steels segment for each operation as applicable. Increased mass discharges may be provided by the permit authority on a site-specific basis to account for unregulated process wastewaters and non-process wastewaters (*e.g.*, oily wastewater from hot forming mill basements and roll shops, tramp oils from mill oil collection systems, utility wastewaters, groundwater remediation wastewaters), but only to the extent such flows are co-treated with process wastewaters regulated by this subpart and generate an increased effluent volume. Such increased mass discharges shall be calculated as a percentage increase of the mass discharge otherwise applicable on the basis of the increased effluent volume.

EFFLUENT LIMITATIONS (BAT)

	Maximum daily [1]	Maximum monthly avg.[1]
(i) Acid pickling and other descaling:		
(A) bar, billet	0.0437	0.0287
(B) pipe, tube	0.146	0.0960
(C) plate	0.00665	0.00436
(D) strip, sheet	0.133	0.0873
(ii) Wet air pollution control devices:		
(A) fume scrubbers	[2] 4.109	[2] 2.69

[1] Pounds per ton of product for all operations except fume scrubbers.
[2] The values are expressed in pounds per day for this operation.

(b) *Chromium (VI).* (1) *Carbon and Alloy Steel.* The following effluent limitations apply to discharges in the carbon and alloy steels segment for each operation as applicable. Increased mass discharges may be provided by the permit authority on a site-specific basis to account for unregulated process wastewaters and non-process wastewaters (*e.g.,* oily wastewater from hot forming mill basements and roll shops, tramp oils from mill oil collection systems, utility wastewaters, groundwater remediation wastewaters), but only to the extent such flows are co-treated with process wastewaters regulated by this subpart and generate an increased effluent volume. Such increased mass discharges shall be calculated as a percentage increase of the mass discharge otherwise applicable on the basis of the increased effluent volume. The effluent limitations for chromium (VI) shall be applicable only when chromium (VI) is present in untreated wastewaters as a result of process or other operations.

EFFLUENT LIMITATIONS (BAT)

	Maximum daily [1]	Maximum monthly avg.[1]
(i) Acid pickling—hydrochloric:		
(A) bar, billet, rod, coil	0.0000508	0.0000463
(B) pipe, tube	0.000106	0.0000963
(C) plate	0.0000363	0.00000330
(D) strip, sheet	0.0000518	0.00000472
(ii) Acid pickling—sulfuric:		
(A) bar, billet, rod, coil	0.0000290	0.0000264
(B) pipe, tube	0.0000518	0.0000472
(C) plate	0.00000363	0.00000330
(D) strip, sheet	0.0000238	0.0000217
(iii) Acid regeneration:		
(A) fume scrubbers	[2] 0.0149	[2] 0.0136
(iv) Alkaline cleaning:		
(A) pipe, tube	0.00000207	0.00000189
(B) strip, sheet	0.0000363	0.0000330
(v) Cold forming:		
(A) direct application-single stand	0.000000311	0.000000283
(B) direct application-multiple stands	0.0000285	0.0000260
(C) recirculation-single stand	0.000000104	0.000000944
(D) recirculation-multiple stands	0.00000259	0.00000236
(E) combination-multiple stand	0.0000148	0.0000135
(vi) Continuous annealing lines	0.00000207	0.00000189

EFFLUENT LIMITATIONS (BAT)—Continued

	Maximum daily [1]	Maximum monthly avg.[1]
(vii) Electroplating:		
(A) plate	0.00000363	0.00000330
(B) strip, sheet: tin, chromium	0.000114	0.000104
(C) strip, sheet: zinc, other metals	0.0000570	0.0000519
(viii) Hot coating:		
(A) galvanizing, terne and other metals	0.0000570	0.0000519
(ix) Wet air pollution control devices:		
(A) fume scrubbers	[2] 0.00224	[2] 0.00204

[1] Pounds per ton of product for all operations except fume scrubbers.
[2] The values are expressed in pounds per day for this operation.

(2) *Stainless Steel.* The following effluent limitations apply to discharges in the stainless steels segment for each operation as applicable. Increased mass discharges may be provided by the permit authority on a site-specific basis to account for unregulated process wastewaters and non-process wastewaters (*e.g.,* oily wastewater from hot forming mill basements and roll shops, tramp oils from mill oil collection systems, utility wastewaters, groundwater remediation wastewaters), but only to the extent such flows are co-treated with process wastewaters regulated by this subpart and generate an increased effluent volume. Such increased mass discharges shall be calculated as a percentage increase of the mass discharge otherwise applicable on the basis of the increased effluent volume.

EFFLUENT LIMITATIONS (BAT)

	Maximum daily [1]	Maximum monthly avg.[1]
(i) Acid pickling and other descaling:		
(A) bar, billet	0.000318	0.000196
(B) pipe, tube	0.00107	0.000655
(C) plate	0.0000484	0.0000298
(D) strip, sheet	0.000969	0.000595
(ii) Acid regeneration:		
(A) fume scrubbers	[2] 0.199	[2] 0.122
(iii) Alkaline cleaning:		
(A) pipe, tube	0.0000277	0.0000170
(B) strip, sheet	0.00346	0.00213
(iv) Cold forming:		
(A) direct application-single stand	0.0000484	0.0000298
(B) direct application-multiple stands	0.000381	0.000234
(C) recirculation-single stand	0.00000415	0.00000255
(D) recirculation-multiple stands	0.0000221	0.0000136
(E) combination-multiple stand	0.000198	0.000122
(v) Continuous annealing	0.0000277	0.0000170
(vi)Wet air pollution control devices:		
(A) fume scrubbers	[2] 0.0299	[2] 0.0184

[1] Pounds per ton of product for all operations except fume scrubbers.
[2] The values are expressed in pounds per day for this operation.

(c) *Chromium.* (1) *Carbon and Alloy Steel.* The following effluent limitations apply to discharges in the carbon and alloy steels segment for each operation as applicable. Increased mass discharges may be provided by the permit authority on a site-specific basis to account for unregulated process wastewaters and non-process wastewaters (*e.g.,* oily wastewater from hot forming mill basements and roll shops, tramp oils from mill oil collection systems, utility wastewaters, groundwater remediation wastewaters), but only to the extent such flows are co-treated with process wastewaters regulated by this subpart and generate an increased effluent volume. Such increased mass discharges shall be calculated as a percentage increase of the mass discharge otherwise applicable on the basis of the increased effluent volume. The effluent limitations for chromium shall be applicable only when chromium is present in untreated wastewaters as a result of process or other operations.

EFFLUENT LIMITATIONS (BAT)

	Maximum daily [1]	Maximum monthly avg.[1]
(i) Acid pickling—hydrochloric:		
(A) bar, billet, rod, coil	0.000227	0.000117
(B) pipe, tube	0.000472	0.000243
(C) plate	0.0000162	0.00000834

EFFLUENT LIMITATIONS (BAT)—Continued

	Maximum daily [1]	Maximum monthly avg.[1]
(D) strip, sheet	0.0000231	0.0000119
(ii) Acid pickling—sulfuric:		
(A) bar, billet, rod, coil	0.000130	0.0000668
(B) pipe, tube	0.000231	0.000119
(C) plate	0.0000162	0.00000834
(D) strip, sheet	0.000106	0.0000548
(iii) Acid regeneration:		
(A) fume scrubbers	[2] 0.0666	[2] 0.0343
(iv) Alkaline cleaning:		
(A) pipe, tube	0.00000925	0.00000477
(B) strip, sheet	0.000162	0.0000834
(v) Cold forming:		
(A) direct application-single stand	0.00000139	0.000000715
(B) direct application-multiple stands	0.000127	0.0000656
(C) recirculation-single stand	0.000000463	0.000000238
(D) recirculation-multiple stands	0.0000116	0.00000596
(E) combination-multiple stand	0.0000662	0.0000341
(vi) Continuous annealing lines	0.00000925	0.00000477
(vii) Electroplating:		
(A) plate	0.0000162	0.00000834
(B) strip, sheet: tin, chromium	0.000509	0.000262
(C) strip, sheet: zinc, other metals	0.000255	0.000131
(viii) Hot coating:		
(A) galvanizing, terne and other metals	0.000255	0.000131
(ix) Wet air pollution control devices:		
(A) fume scrubbers	[2] 0.00999	[2] 0.00515

[1] Pounds per ton of product for all operations except fume scrubbers.
[2] The values are expressed in pounds per day for this operation.

(2) *Stainless Steel.* The following effluent limitations apply to discharges in the stainless steels segment for each operation as applicable. Increased mass discharges may be provided by the permit authority on a site-specific basis to account for unregulated process wastewaters and non-process wastewaters (*e.g.,* oily wastewater from hot forming mill basements and roll shops, tramp oils from mill oil collection systems, utility wastewaters, groundwater remediation wastewaters), but only to the extent such flows are co-treated with process wastewaters regulated by this subpart and generate an increased effluent volume. Such increased mass discharges shall be calculated as a percentage increase of the mass discharge otherwise applicable on the basis of the increased effluent volume.

EFFLUENT LIMITATIONS (BAT)

	Maximum daily [1]	Maximum monthly avg.[1]
(i) Acid pickling and other descaling:		
(A) bar, billet	0.000500	0.000280
(B) pipe, tube	0.00167	0.000939
(C) plate	0.0000760	0.0000427
(D) strip, sheet	0.00152	0.000854
(ii) Acid regeneration:		
(A) fume scrubbers	[2] 0.313	[2] 0.176
(iii) Alkaline cleaning:		
(A) pipe, tube	0.0000434	0.0000244
(B) strip, sheet	0.00543	0.00305
(iv) Cold forming:		
(A) direct application-single stand	0.0000760	0.0000427
(B) direct application-multiple stands	0.000597	0.000335
(C) recirculation-single stand	0.00000652	0.00000366
(D) recirculation-multiple stands	0.0000348	0.0000195
(E) combination-multiple stand	0.000311	0.000174
(v) Continuous annealing	0.0000434	0.0000244
(vi) Wet air pollution control devices:		
(A) fume scrubbers	[2] 0.0469	[2] 0.0263

[1] Pounds per ton of product for all operations except fume scrubbers.
[2] The values are expressed in pounds per day for this operation.

(d) *Fluoride.* (1) *Stainless Steel.* The following effluent limitations apply to discharges in the stainless steels segment for each operation as applicable. Increased mass discharges may be provided by the permit authority on a site-specific basis to account for unregulated process wastewaters and non-process wastewaters (*e.g.,* oily wastewater from hot forming mill basements and roll shops, tramp oils from mill oil collection systems, utility wastewaters, groundwater remediation wastewaters), but only to the extent such flows are co-treated with process wastewaters regulated by this subpart and generate an increased effluent volume. Such increased mass discharges shall be calculated as a percentage increase of the mass discharge otherwise applicable on the basis of the increased effluent volume.

EFFLUENT LIMITATIONS (BAT)

	Maximum daily [1]	Maximum monthly avg.[1]
(i) Acid pickling and other descaling:		
(A) bar, billet	0.0446	0.0356
(B) pipe, tube	0.149	0.119
(C) plate	0.00679	0.00542
(D) strip, sheet	0.136	0.108
(ii) Wet air pollution control devices:		
(A) fume scrubbers	[2] 4.19	[2] 3.34

[1] Pounds per ton of product for all operations except fume scrubbers.
[2] The values are expressed in pounds per day for this operation.

(e) *Lead.* (1) *Carbon and Alloy Steel.* The following effluent limitations apply to discharges in the carbon and alloy steels segment for each operation as applicable. Increased mass discharges may be provided by the permit authority on a site-specific basis to account for unregulated process wastewaters and non-process wastewaters (*e.g.,* oily wastewater from hot forming mill basements and roll shops, tramp oils from mill oil collection systems, utility wastewaters, groundwater remediation wastewaters), but only to the extent such flows are co-treated with process wastewaters regulated by this subpart and generate an increased effluent volume. Such increased mass discharges shall be calculated as a percentage increase of the mass discharge otherwise applicable on the basis of the increased effluent volume.

EFFLUENT LIMITATIONS (BAT)

	Maximum daily[1]	Maximum monthly avg.[1]
(i) Acid pickling—hydrochloric:		
(A) bar, billet, rod, coil	0.000596	0.000311
(B) pipe, tube	0.00124	0.000647
(C) plate	0.0000426	0.0000222
(D) strip, sheet	0.00609	0.0000317
(ii) Acid pickling—sulfuric:		
(A) bar, billet, rod, coil	0.000341	0.000178
(B) pipe, tube	0.000609	0.000317
(C) plate	0.0000426	0.0000222
(D) strip, sheet	0.000280	0.000146
(iii) Acid regeneration:		
(A) fume scrubbers	[2] 0.175	[2] 0.913
(iv) Alkaline cleaning:		
(A) pipe, tube	0.0000243	0.0000127
(B) strip, sheet	0.000426	0.000222
(v) Cold forming:		
(A) direct application-single stand	0.00000365	0.00000190
(B) direct application-multiple stands	0.000335	0.000174
(C) recirculation-single stand	0.00000122	0.00000634
(D) recirculation-multiple stands	0.0000304	0.0000159
(E) combination-multiple stand	0.000174	0.0000907
(vi) Continuous annealing lines	0.0000243	0.0000127
(vii) Electroplating:		
(A) plate	0.0000426	0.0000222
(B) strip, sheet: tin, chromium	0.000134	0.000698
(C) strip, sheet: zinc, other metals	0.000669	0.000349
(viii) Hot coating:		
(A) galvanizing, terne and other metals	0.000669	0.000349
(ix) Wet air pollution control devices:		
(A) fume scrubbers	[2] 0.026396	[2] 0.0137

[1] Pounds per ton of product for all operations except fume scrubbers.
[2] The values are expressed in pounds per day for this operation.

(f) *Nickel.* (1) *Stainless Steel.* The following effluent limitations apply to discharges in the stainless steels segment for each operation as applicable. Increased mass discharges may be provided by the permit authority on a site-specific basis to account for unregulated process wastewaters and non-process wastewaters (*e.g.,* oily wastewater from hot forming mill basements and roll shops, tramp oils from mill oil collection systems, utility wastewaters, groundwater remediation wastewaters), but only to the extent such flows are co-treated with process wastewaters regulated by this subpart and generate an increased effluent volume. Such increased mass discharges shall be calculated as a percentage increase of the mass discharge otherwise applicable on the basis of the increased effluent volume.

EFFLUENT LIMITATIONS (BAT)

	Maximum daily [1]	Maximum monthly avg.[1]
(i) Acid pickling and other descaling:		
(A) bar, billet	0.000147	0.000104
(B) pipe, tube	0.000494	0.000347
(C) plate	0.0000224	0.0000158
(D) strip, sheet	0.000449	0.000315
(ii) Acid regeneration:		
(A) fume scrubbers	[2] 0.0923	[2] 0.0649
(iii) Alkaline cleaning:		
(A) pipe, tube	0.0000128	0.00000901
(B) strip, sheet	[2] 0.00160	[2] 0.00113
(iv) Cold forming:		
(A) direct application-single stand	0.0000224	0.0000158
(B) direct application-multiple stands	0.000176	0.000124
(C) recirculation-single stand	0.00000192	0.00000135
(D) recirculation-multiple stands	0.0000103	0.00000721
(E) combination-multiple stand	0.0000917	0.0000644
(v) Continuous annealing	0.0000128	0.00000901
(vi) Wet air pollution control devices:		
(A) fume scrubbers	[2] 0.0138	[2] 0.00973

[1] Pounds per ton of product for all operations except fume scrubbers.
[2] The values are expressed in pounds per day for this operation.

(g) *Zinc.* (1) *Carbon and Alloy Steel.* The following effluent limitations apply to discharges in the carbon and alloy steels segment for each operation as applicable. Increased mass discharges may be provided by the permit authority on a site-specific basis to account for unregulated process wastewaters and non-process wastewaters (*e.g.,* oily wastewater from hot forming mill basements and roll shops, tramp oils from mill oil collection systems, utility wastewaters, groundwater remediation wastewaters), but only to the extent such flows are co-treated with process wastewaters regulated by this subpart and generate an increased effluent volume. Such increased mass discharges shall be calculated as a percentage increase of the mass discharge otherwise applicable on the basis of the increased effluent volume.

EFFLUENT LIMITATIONS (BAT)

	Maximum daily [1]	Maximum monthly avg.[1]
(i) Acid pickling—hydrochloric:		
(A) bar, billet, rod, coil	0.000637	0.000262
(B) pipe, tube	0.00133	0.00546
(C) plate	0.0000455	0.0000187
(D) strip, sheet	0.0000650	0.0000267
(i) Acid pickling—sulfuric:		
(A) bar, billet, rod, coil	0.000364	0.000150
(B) pipe, tube	0.000650	0.000267
(C) plate	0.0000455	0.0000187
(D) strip, sheet	0.000299	0.000123
(ii) Acid regeneration:		
(A) fume scrubbers	[2] 0.187	[2] 0.0770
(iii) Alkaline cleaning:		
(A) pipe, tube	0.0000260	0.0000107
(B) strip, sheet	0.000455	0.000187
(iv) Cold forming:		
(A) direct application-single stand	0.00000390	0.00000160
(B) direct application-multiple stands	0.000357	0.000147
(C) recirculation-single stand	0.00000130	0.00000535
(D) recirculation-multiple stands	0.0000325	0.0000134
(E) combination-multiple stand	0.000186	0.0000765
(v) Continuous annealing	0.0000260	0.0000107
(vii) Electroplating:		

EFFLUENT LIMITATIONS (BAT)—Continued

	Maximum daily [1]	Maximum monthly avg.[1]
(A) plate	0.0000455	0.0000187
(B) strip, sheet: tin, chromium	0.00143	0.000588
(C) strip, sheet: zinc, other metals	0.000715	0.000294
(viii) Hot coating:		
(A) galvanizing, terne and other metals	0.000715	0.000294
(ix) Wet air pollution control devices:		
(A) fume scrubbers	[2] 0.0281	[2] 0.0116

[1] Pounds per ton of product for all operations except fume scrubbers.
[2] The values are expressed in pounds per day for this operation.

§ 420.65 New Source Performance Standards (NSPS).

New sources subject to this subpart must achieve the following new source performance standards (NSPS), as applicable.

(a) Any new source subject to the provisions of this section that commenced discharging after *[insert date 10 years prior to the date that is 60 days after the publication date of the final rule]* and before *[insert date that is 60 days after the publication date of the final rule]* must continue to achieve the applicable standards specified in the 2000 version of §§ 420.84, 420.94, 420.104, 420.114, and 420.124. toxic and nonconventional pollutants, those standards shall not apply after the expiration of the applicable time period specified in 40 CFR 122.29(d)(1); thereafter, the source must achieve the applicable standards specified in § 420.64.

(b) The following standards apply with respect to each new source that commences construction after *[insert date that is 60 days after the publication date of the final rule].*

(1) *Total Suspended Solids.* (i) *Carbon and Alloy Steel.* The following performance standards apply to discharges in the carbon and alloy steels segment for each operation as applicable. Increased mass discharges may be provided by the permit authority on a site-specific basis to account for unregulated process wastewaters and non-process wastewaters (e.g., oily wastewater from hot forming mill basements and roll shops, tramp oils from mill oil collection systems, utility wastewaters, groundwater remediation wastewaters), but only to the extent such flows are co-treated with process wastewaters regulated by this subpart and generate an increased effluent volume. Such increased mass discharges shall be calculated as a percentage increase of the mass discharge otherwise applicable on the basis of the increased effluent volume.

PERFORMANCE STANDARDS (NSPS)

	Maximum daily [1]	Maximum monthly avg.[1]
(i) Acid pickling—hydrochloric:		
(A) bar, billet, rod, coil	0.0566	0.0308
(B) pipe, tube	0.118	0.0641
(C) plate	0.00405	0.00220
(D) strip, sheet	0.00578	0.00314
(ii) Acid pickling—sulfuric:		
(A) bar, billet, rod, coil	0.0324	0.0176
(B) pipe, tube	0.0578	0.0314
(C) plate	0.00405	0.00220
(D) strip, sheet	0.0266	0.0145
(iii) Acid regeneration:		
(A) fume scrubbers	[2] 16.6	[2] 9.05
(iv) Alkaline cleaning:		
(A) pipe, tube	0.00231	0.00126
(B) strip, sheet	0.0405	0.0220
(v) Cold forming:		
(A) direct application-single stand	0.000347	0.000189
(B) direct application-multiple stands	0.0318	0.0173
(C) recirculation-single stand	0.000116	0.0000628
(D) recirculation-multiple stands	0.00289	0.00157
(E) combination-multiple stand	0.0165	0.00899
(vi) Continuous annealing lines	0.00231	0.00126
(vii) Electroplating:		
(A) plate	0.00405	0.00220
(B) strip, sheet: tin, chromium	0.127	0.0691
(C) strip, sheet: zinc, other metals	0.0636	0.0346
(viii) Hot coating:		
(A) galvanizing, terne and other metals	0.0636	0.0346
(ix) Wet air pollution control devices:		
(A) fume scrubbers	[2] 2.50	[2] 1.36

[1] Pounds per ton of product for all operations except fume scrubbers.
[2] The values are expressed in pounds per day for this operation.

(ii) *Stainless Steel.* The following performance standards apply to discharges in the stainless steels segment for each operation as applicable. Increased mass discharges may be provided by the permit authority on a site-specific basis to account for unregulated process wastewaters and non-process wastewaters (e.g., oily wastewater from hot forming mill basements and roll shops, tramp oils from mill oil collection systems, utility wastewaters, groundwater remediation wastewaters), but only to the extent such flows are co-treated with process wastewaters regulated by this subpart and generate an increased effluent volume. Such increased mass discharges shall be calculated as a percentage increase of the mass discharge otherwise applicable on the basis of the increased effluent volume.

PERFORMANCE STANDARDS (NSPS)

	Maximum daily [1]	Maximum monthly avg.[1]
(A) Acid pickling and other descaling:		
(1) bar, billet	0.0242	0.0121
(2) pipe, tube	0.0809	0.0406
(3) plate	0.00368	0.00184
(4) strip, sheet	0.0735	0.0369
(B) Acid regeneration:		
(1) fume scrubbers	[2] 15.1	[2] 7.59
(C) Alkaline cleaning:		
(1) pipe, tube	0.00210	0.00105
(2) strip, sheet	0.263	0.132
(D) Cold forming:		
(1) direct application-single stand	0.00368	0.00184
(2) direct application-multiple stands	0.0289	0.0145
(3) recirculation-single stand	0.000315	0.000158
(4) recirculation-multiple stands	0.00168	0.000843
(5) combination-multiple stand	0.0150	0.00754
(E) Continuous annealing	0.00210	0.00105
(F) Wet air pollution control devices:		
(1) fume scrubbers	[2] 2.27	[2] 1.14

[1] Pounds per ton of product for all operations except fume scrubbers.
[2] The values are expressed in pounds per day for this operation.

(2) *Oil & Grease.* (i) *Carbon and Alloy Steel.* The following performance standards apply to discharges in the carbon and alloy steels segment for each operation as applicable. Increased mass discharges may be provided by the permit authority on a site-specific basis to account for unregulated process wastewaters and non-process wastewaters (e.g., oily wastewater from hot forming mill basements and roll shops, tramp oils from mill oil collection systems, utility wastewaters, groundwater remediation wastewaters), but only to the extent such flows are co-treated with process wastewaters regulated by this subpart and generate an increased effluent volume. Such increased mass discharges shall be calculated as a percentage increase of the mass discharge otherwise applicable on the basis of the increased effluent volume.

PERFORMANCE STANDARDS (NSPS)

	Maximum daily [1]	Maximum monthly avg.[1]
(A) Acid pickling—hydrochloric:		
(1) bar, billet, rod, coil	0.0307	0.0274
(2) pipe, tube	0.638	0.0571
(3) plate	0.00219	0.00196
(4) strip, sheet	0.00313	0.00280
(B) Acid pickling—sulfuric:		
(1) bar, billet, rod, coil	0.0175	0.0157
(2) pipe, tube	0.0313	0.0280
(3) plate	0.00219	0.00196
(4) strip, sheet	0.0144	0.0129
(C) Acid regeneration:		
(1) fume scrubbers	[2] 9.01	[2] 8.07
(D) Alkaline cleaning:		
(1) pipe, tube	0.00125	0.00112
(2) strip, sheet	0.0219	0.0196
(E) Cold forming:		
(1) direct application-single stand	0.000188	0.000168
(2) direct application-multiple stands	0.0172	0.0154
(3) recirculation-single stand	0.0000626	0.0000560
(4) recirculation-multiple stands	0.00156	0.00140
(5) combination-multiple stand	0.0895	0.00801
(F) Continuous annealing lines	0.00125	0.00112
(G) Electroplating:		

PERFORMANCE STANDARDS (NSPS)—Continued

	Maximum daily [1]	Maximum monthly avg.[1]
(1) strip, sheet: tin, chromium	0.00219	0.0196
(2) strip, sheet: zinc, other metals	0.0688	0.0616
(3) plate	0.0344	0.0308
(H) Hot coating:		
(1) galvanizing, terne and other metals	0.0344	0.0308
(I) Wet air pollution control devices:		
(1) fume scrubbers	[2] 1.35	[2] 1.21

[1] Pounds per ton of product for all operations except fume scrubbers.
[2] The values are expressed in pounds per day for this operation.

(ii) *Stainless Steel.* The following performance standards apply to discharges in the stainless steels segment for each operation as applicable. Increased mass discharges may be provided by the permit authority on a site-specific basis to account for unregulated process wastewaters and non-process wastewaters (e.g., oily wastewater from hot forming mill basements and roll shops, tramp oils from mill oil collection systems, utility wastewaters, groundwater remediation wastewaters), but only to the extent such flows are co-treated with process wastewaters regulated by this subpart and generate an increased effluent volume. Such increased mass discharges shall be calculated as a percentage increase of the mass discharge otherwise applicable on the basis of the increased effluent volume.

PERFORMANCE STANDARDS (NSPS)

	Maximum daily [1]	Maximum monthly avg.[1]
(A) Acid pickling and other descaling:		
(1) bar, billet	0.0172	0.0136
(2) pipe, tube	0.0576	0.0456
(3) plate	0.00262	0.00207
(4) strip, sheet	0.0523	0.0414
(B) Acid regeneration:		
(1) fume scrubbers	[2] 10.8	[2] 8.52
(C) Alkaline cleaning:		
(1) pipe, tube	0.00149	0.00118
(2) strip, sheet	0.187	0.148
(D) Cold forming:		
(1) direct application-single stand	0.00262	0.00207
(2) direct application-multiple stands	0.0206	0.0163
(3) recirculation-single stand	0.000224	0.000177
(4) recirculation-multiple stands	0.00120	0.000947
(5) combination-multiple stand	0.0107	0.00846
(E) Continuous annealing	0.00149	0.00118
(F) Wet air pollution control devices:		
(1) fume scrubbers	[2] 1.61	[2] 1.28

[1] Pounds per ton of product for all operations except fume scrubbers.
[2] The values are expressed in pounds per day for this operation.

(3) *Ammonia as (N).* (i) *Stainless Steel.* The following performance standards apply to discharges in the stainless steels segment for each operation as applicable. Increased mass discharges may be provided by the permit authority on a site-specific basis to account for unregulated process wastewaters and non-process wastewaters (e.g., oily wastewater from hot forming mill basements and roll shops, tramp oils from mill oil collection systems, utility wastewaters, groundwater remediation wastewaters), but only to the extent such flows are co-treated with process wastewaters regulated by this subpart and generate an increased effluent volume. Such increased mass discharges shall be calculated as a percentage increase of the mass discharge otherwise applicable on the basis of the increased effluent volume.

PERFORMANCE STANDARDS (NSPS)

	Maximum daily [1]	Maximum monthly avg.[1]
(A) Acid pickling and other descaling:		
(1) bar, billet	0.0437	0.0287
(2) pipe, tube	0.146	0.0960
(3) plate	0.00665	0.00436
(4) strip, sheet	0.133	0.0873
(B) Wet air pollution control devices:		

PERFORMANCE STANDARDS (NSPS)—Continued

	Maximum daily [1]	Maximum monthly avg.[1]
(1) fume scrubbers	[2] 4.10	[2] 2.69

[1] Pounds per ton of product for all operations except fume scrubbers.
[2] The values are expressed in pounds per day for this operation.

(4) *Chromium (VI).* (i) *Carbon and Alloy Steel.* The following performance standards apply to discharges in the carbon and alloy steels segment for each operation as applicable. Increased mass discharges may be provided by the permit authority on a site-specific basis to account for unregulated process wastewaters and non-process wastewaters (e.g., oily wastewater from hot forming mill basements and roll shops, tramp oils from mill oil collection systems, utility wastewaters, groundwater remediation wastewaters), but only to the extent such flows are co-treated with process wastewaters regulated by this subpart and generate an increased effluent volume. Such increased mass discharges shall be calculated as a percentage increase of the mass discharge otherwise applicable on the basis of the increased effluent volume. The performance standards for chromium (VI) shall be applicable only when chromium (VI) is present in untreated wastewaters as a result of process or other operations.

PERFORMANCE STANDARDS (NSPS)

	Maximum daily [1]	Maximum monthly avg.[1]
(A) Acid pickling—hydrochloric:		
(1) bar, billet, rod, coil	0.0000508	0.0000463
(2) pipe, tube	0.000106	0.0000963
(3) plate	0.00000363	0.00000330
(4) strip, sheet	0.00000518	0.00000472
(B) Acid pickling—sulfuric:		
(1) bar, billet, rod, coil	0.0000290	0.0000264
(2) pipe, tube	0.0000518	0.0000472
(3) plate	0.00000363	0.00000330
(4) strip, sheet	0.0000238	0.0000217
(C) Acid regeneration:		
(1) fume scrubbers	[2] 0.0149	[2] 0.0136
(D) Alkaline cleaning:		
(1) pipe, tube	0.00000207	0.00000189
(2) strip, sheet	0.0000363	0.0000330
(E) Cold forming:		
(1) direct application-single stand	0.000000311	0.000000283
(2) direct application-multiple stands	0.0000285	0.0000260
(3) recirculation-single stand	0.000000104	0.000000944
(4) recirculation-multiple stands	0.00000259	0.00000236
(5) combination-multiple stand	0.0000148	0.0000135
(F) Continuous annealing lines	0.00000207	0.00000189
(G) Electroplating:		
(1) plate	0.00000363	0.00000330
(2) strip, sheet: tin, chromium	0.000114	0.000104
(3) strip, sheet: zinc, other metals	0.0000570	0.0000519
(H) Hot coating:		
(1) galvanizing, terne and other metals	0.0000570	0.0000519
(I) Wet air pollution control devices:		
(1) fume scrubbers	[2] 0.00224	[2] 0.00204

[1] Pounds per ton of product for all operations except fume scrubbers.
[2] The values are expressed in pounds per day for this operation.

(ii) *Stainless Steel.* The following performance standards apply to discharges in the stainless steels segment for each operation as applicable. Increased mass discharges may be provided by the permit authority on a site-specific basis to account for unregulated process wastewaters and non-process wastewaters (e.g., oily wastewater from hot forming mill basements and roll shops, tramp oils from mill oil collection systems, utility wastewaters, groundwater remediation wastewaters), but only to the extent such flows are co-treated with process wastewaters regulated by this subpart and generate an increased effluent volume. Such increased mass discharges shall be calculated as a percentage increase of the mass discharge otherwise applicable on the basis of the increased effluent volume.

PERFORMANCE STANDARDS (NSPS)

	Maximum daily [1]	Maximum monthly avg.[1]
(A) Acid pickling and other descaling:		
(1) bar, billet	0.000318	0.000196
(2) pipe, tube	0.00107	0.000655
(3) plate	0.0000484	0.0000298
(4) strip, sheet	0.000969	0.000595
(B) Acid regeneration:		
(1) fume scrubbers	[2] 0.199	[2] 0.122
(C) Alkaline cleaning:		
(1) pipe, tube	0.0000277	0.0000170
(2) strip, sheet	0.00346	0.00213
(D) Cold forming:		
(1) direct application-single stand	0.0000484	0.0000298
(2) direct application-multiple stands	0.000381	0.000234
(3) recirculation-single stand	0.00000415	0.00000255
(4) recirculation-multiple stands	0.0000221	0.0000136
(5) combination-multiple stand	0.000198	0.000122
(E) Continuous annealing	0.0000277	0.0000170
(F) Wet air pollution control devices:		
(1) fume scrubbers	[2] 0.0299	[2] 0.0184

[1] Pounds per ton of product for all operations except fume scrubbers.
[2] The values are expressed in pounds per day for this operation.

(5) *Chromium.* (i) *Carbon and Alloy Steel.* The following performance standards apply to discharges in the carbon and alloy steels segment for each operation as applicable. Increased mass discharges may be provided by the permit authority on a site-specific basis to account for unregulated process wastewaters and non-process wastewaters (*e.g.,* oily wastewater from hot forming mill basements and roll shops, tramp oils from mill oil collection systems, utility wastewaters, groundwater remediation wastewaters), but only to the extent such flows are co-treated with process wastewaters regulated by this subpart and generate an increased effluent volume. Such increased mass discharges shall be calculated as a percentage increase of the mass discharge otherwise applicable on the basis of the increased effluent volume. The performance standards for chromium shall be applicable only when chromium is present in untreated wastewaters as a result of process or other operations.

PERFORMANCE STANDARDS (NSPS)

	Maximum daily [1]	Maximum monthly avg.[1]
(A) Acid pickling—hydrochloric:		
(1) bar, billet, rod, coil	0.000227	0.000117
(2) pipe, tube	0.000472	0.000243
(3) plate	0.0000162	0.00000834
(4) strip, sheet	0.0000231	0.0000119
(B) Acid pickling—sulfuric:		
(1) bar, billet, rod, coil	0.000130	0.0000668
(2) pipe, tube	0.000231	0.000119
(3) plate	0.0000162	0.00000834
(4) strip, sheet	0.000106	0.0000548
(C) Acid regeneration:		
(1) fume scrubbers	[2] 0.0666	[2] 0.0343
(D) Alkaline cleaning:		
(1) pipe, tube	0.00000925	0.00000477
(2) strip, sheet	0.000162	0.0000834
(D) Cold forming:		
(1) direct application-single stand	0.00000139	0.000000715
(2) direct application-multiple stands	0.000127	0.0000656
(3) recirculation-single stand	0.000000463	0.000000238
(4) recirculation-multiple stands	0.0000116	0.00000596
(5) combination-multiple stand	0.0000662	0.0000341
(F) Continuous annealing lines	0.00000925	0.00000477
(G) Electroplating:		
(1) plate	0.0000162	0.00000834
(2) strip, sheet: tin, chromium	0.000509	0.000262
(3) strip, sheet: zinc, other metals	0.000255	0.000131
(H) Hot coating:		
(1) galvanizing, terne and other metals	0.000255	0.000131
(I) Wet air pollution control devices:		
(1) fume scrubbers	[2] 0.0010	[2] 0.00515

[1] Pounds per ton of product for all operations except fume scrubbers.

[2] The values are expressed in pounds per day for this operation.

(ii) *Stainless Steel.* The following performance standards apply to discharges in the stainless steels segment for each operation as applicable. Increased mass discharges may be provided by the permit authority on a site-specific basis to account for unregulated process wastewaters and non-process wastewaters (*e.g.,* oily wastewater from hot forming mill basements and roll shops, tramp oils from mill oil collection systems, utility wastewaters, groundwater remediation wastewaters), but only to the extent such flows are co-treated with process wastewaters regulated by this subpart and generate an increased effluent volume. Such increased mass discharges shall be calculated as a percentage increase of the mass discharge otherwise applicable on the basis of the increased effluent volume.

PERFORMANCE STANDARDS (NSPS)

	Maximum daily [1]	Maximum monthly avg.[1]
(A) Acid pickling and other descaling:		
(1) bar, billet	0.000500	0.000280
(2) pipe, tube	0.00167	0.000939
(3) plate	0.0000760	0.0000427
(4) strip, sheet	0.00152	0.000854
(B) Acid regeneration:		
(1) fume scrubbers	[2] 0.313	[2] 0.176
(C) Alkaline cleaning:		
(1) pipe, tube	0.0000434	0.0000244
(2) strip, sheet	0.00543	0.00305
(D) Cold forming:		
(1) direct application-single stand	0.0000760	0.0000427
(2) direct application-multiple stands	0.000597	0.000335
(3) recirculation-single stand	0.00000652	0.00000366
(4) recirculation-multiple stands	0.0000348	0.0000195
(5) combination-multiple stand	0.000311	0.000174
(E) Continuous annealing	0.0000434	0.0000244
(F) Wet air pollution control devices:		
(1) fume scrubbers	[2] 0.0469	[2] 0.0263

[1] Pounds per ton of product for all operations except fume scrubbers.
[2] The values are expressed in pounds per day for this operation.

(6) *Fluoride.* (i) *Stainless Steel.* The following performance standards apply to discharges in the stainless steels segment for each operation as applicable. Increased mass discharges may be provided by the permit authority on a site-specific basis to account for unregulated process wastewaters and non-process wastewaters (*e.g.,* oily wastewater from hot forming mill basements and roll shops, tramp oils from mill oil collection systems, utility wastewaters, groundwater remediation wastewaters), but only to the extent such flows are co-treated with process wastewaters regulated by this subpart and generate an increased effluent volume. Such increased mass discharges shall be calculated as a percentage increase of the mass discharge otherwise applicable on the basis of the increased effluent volume.

PERFORMANCE STANDARDS (NSPS)

	Maximum daily [1]	Maximum monthly avg.[1]
(A) Acid pickling and other descaling:		
(1) bar, billet	0.0446	0.0356
(2) pipe, tube	0.149	0.119
(3) plate	0.00679	0.00542
(4) strip, sheet	0.136	0.108
(B) Wet air pollution control devices:		
(1) fume scrubbers	[2] 4.19	[2] 3.34

[1] Pounds per ton of product for all operations except fume scrubbers.
[2] The values are expressed in pounds per day for this operation.

(7) *Lead.* (i) *Carbon and Alloy Steel.* The following performance standards apply to discharges in the carbon and alloy steels segment for each operation as applicable. Increased mass discharges may be provided by the permit authority on a site-specific basis to account for unregulated process wastewaters and non-process wastewaters (*e.g.,* oily wastewater from hot forming mill basements and roll shops, tramp oils from mill oil collection systems, utility wastewaters, groundwater remediation wastewaters), but only to the extent such flows are co-treated with process wastewaters regulated by this subpart and generate an increased effluent volume. Such increased mass discharges shall be calculated as a percentage increase of the mass discharge otherwise

applicable on the basis of the increased effluent volume.

PERFORMANCE STANDARDS (NSPS)

	Maximum daily [1]	Maximum monthly avg.[1]
(A) Acid pickling—hydrochloric:		
(1) bar, billet, rod, coil	0.000596	0.000311
(2) pipe, tube	0.00124	0.000647
(3) plate	0.0000426	0.0000222
(4) strip, sheet	0.0000609	0.0000317
(B) Acid pickling—sulfuric:		
(1) bar, billet, rod, coil	0.000341	0.000178
(2) pipe, tube	0.000609	0.000317
(3) plate	0.0000426	0.0000222
(4) strip, sheet	0.000280	0.000146
(C) Acid regeneration:		
(1) fume scrubbers	[2] 0.175	[2] 0.0913
(D) Alkaline cleaning:		
(1) pipe, tube	0.0000243	0.0000127
(2) strip, sheet	0.000426	0.000222
(E) Cold forming:		
(1) direct application-single stand	0.00000365	0.00000190
(2) direct application-multiple stands	0.000335	0.000174
(3) recirculation-single stand	0.00000122	0.000000634
(4) recirculation-multiple stands	0.0000304	0.0000159
(5) combination-multiple stands	0.000174	0.0000907
(F) Continuous annealing lines	0.0000243	0.0000127
(G) Electroplating:		
(1) strip, sheet: tin, chromium	0.0000426	0.0000222
(2) strip, sheet: zinc, other metals	0.00134	0.000698
(3) plate	0.000669	0.000349
(H) Hot coating:		
(1) galvanizing, terne and other metals	0.000669	0.000349
(I) Wet air pollution control devices:		
(1) fume scrubbers	[2] 0.0263	[2] 0.0137

[1] Pounds per ton of product for all operations except fume scrubbers.
[2] The values are expressed in pounds per day for this operation.

(8) *Nickel.* (i) *Stainless Steel.* The following performance standards apply to discharges in the stainless steels segment for each operation as applicable. Increased mass discharges may be provided by the permit authority on a site-specific basis to account for unregulated process wastewaters and non-process wastewaters (*e.g.,* oily wastewater from hot forming mill basements and roll shops, tramp oils from mill oil collection systems, utility wastewaters, groundwater remediation wastewaters), but only to the extent such flows are co-treated with process wastewaters regulated by this subpart and generate an increased effluent volume. Such increased mass discharges shall be calculated as a percentage increase of the mass discharge otherwise applicable on the basis of the increased effluent volume.

PERFORMANCE STANDARDS (NSPS)

	Maximum daily [1]	Maximum monthly avg.[1]
(A) Acid pickling and other descaling:		
(1) bar, billet	0.000147	0.000104
(2) pipe, tube	0.000494	0.000347
(3) plate	0.0000224	0.0000158
(4) strip, sheet	0.000449	0.000315
(B) Acid regeneration:		
(1) fume scrubbers	[2] 0.0923	[2] 0.0649
(C) Alkaline cleaning:		
(1) pipe, tube	0.0000128	0.00000901
(2) strip, sheet	0.00160	0.00113
(D) Cold forming:		
(1) direct application-single stand	0.0000224	0.0000158
(2) direct application-multiple stands	0.000176	0.000124
(3) recirculation-single stand	0.00000192	0.00000135
(4) recirculation-multiple stands	0.0000103	0.00000721
(5) combination-multiple stand	0.0000917	0.0000644
(E) Continuous annealing	0.0000128	0.00000901
(F) Wet air pollution control devices:		

PERFORMANCE STANDARDS (NSPS)—Continued

	Maximum daily [1]	Maximum monthly avg.[1]
(1) fume scrubbers	0.01382	0.009732

[1] Pounds per ton of product for all operations except fume scrubbers.
[2] The values are expressed in pounds per day for this operation.

(9) *Zinc.* (i) *Carbon and Alloy Steel.* The following performance standards apply to discharges in the carbon and alloy steels segment for each operation as applicable. Increased mass discharges may be provided by the permit authority on a site-specific basis to account for unregulated process wastewaters and non-process wastewaters (*e.g.,* wastewater from hot forming mill basements and roll shops, tramp oils from mill oil collection systems, utility wastewaters, groundwater remediation wastewaters), but only to the extent such flows are co-treated with process wastewaters regulated by this subpart and generate an increased effluent volume. Such increased mass discharges shall be calculated as a percentage increase of the mass discharge otherwise applicable on the basis of the increased effluent volume.

PERFORMANCE STANDARDS (NSPS)

	Maximum daily [1]	Maximum monthly avg.[1]
(i) Acid pickling—hydrochloric:		
(A) bar, billet, rod, coil	0.000637	0.000262
(B) pipe, tube	0.00133	0.000546
(C) plate	0.0000455	0.0000187
(D) strip, sheet	0.0000650	0.0000267
(ii) Acid pickling—sulfuric:		
(A) bar, billet, rod, coil	0.000364	0.000150
(B) pipe, tube	0.000650	0.000267
(C) plate	0.0000455	0.0000187
(D) strip, sheet	0.000299	0.000123
(iii) Acid regeneration:		
(A) fume scrubbers	[2] 0.1872	[2] 0.07702
(iv) Alkaline cleaning:		
(A) pipe, tube	0.0000260	0.0000107
(B) strip, sheet	0.000455	0.000187
(v) Cold forming:		
(A) direct application-single stand	0.00000390	0.00000160
(B) direct application-multiple stands	0.000357	0.000147
(C) recirculation-single stand	0.00000130	0.000000535
(D) recirculation-multiple stands	0.0000325	0.0000134
(E) combination-multiple stand	0.000186	0.0000765
(vi) Continuous annealing lines	0.0000260	0.0000107
(vii) Electroplating:		
(A) plate	0.0000455	0.0000187
(B) strip, sheet: tin, chromium	0.00143	0.000588
(C) strip, sheet: zinc, other metals	0.000715	0.000294
(viii) Hot coating:		
(A) galvanizing, terne and other metals	0.000715	0.000294
(ix) Wet air pollution control devices:		
(A) fume scrubbers	0.02812	0.01162

[1] Pounds per ton of product for all operations except fume scrubbers.
[2] The values are expressed in pounds per day for this operation.

§ 420.66 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.

(a) Salt bath descaling, oxidizing.

(1) Batch, sheet and plate.

PRETREATMENT STANDARDS (PSES)

Pollutant	Maximum daily [1]	Maximum monthly avg.[1]
Chromium	0.00584	0.00234
Nickel	0.00526	0.001752

[1] Pounds per ton of product.

(2) Batch, rod and wire.

PERFORMANCE STANDARDS (PSES)

Pollutant	Maximum daily [1]	Maximum monthly avg.[1]
Chromium	0.00350	0.001402
Nickel	0.00316	0.001052

[1] Pounds per ton of product.

(3) Batch, pipe and tube.

PERFORMANCE STANDARDS (PSES)

Pollutant	Maximum daily [1]	Maximum monthly avg.[1]
Chromium	0.01418	0.00568
Nickel	0.01276	0.00426

[1] Pounds per ton of product.

(4) Continuous.

PERFORMANCE STANDARDS (PSES)

Pollutant	Maximum daily [1]	Maximum monthly avg.[1]
Chromium	0.00276	0.001102
Nickel	0.00248	0.000826

[1] Pounds per ton of product.

(b) Salt bath descaling, reducing. (1) Batch.

PERFORMANCE STANDARDS (PSES)

Pollutant	Maximum daily [1]	Maximum monthly avg.[1]
Chromium	0.00272	0.00108
Nickel	0.00244	0.000814

[1] Pounds per ton of product.

(2) Continuous.

PERFORMANCE STANDARDS (PSES)

Pollutant	Maximum daily [1]	Maximum monthly avg.[1]
Chromium	0.0152	0.00608
Nickel	0.01366	0.00456

[1] Pounds per ton of product.

(c) Sulfuric acid (spent acid solutions and rinse waters). (1) Rod, wire, and coil.

PERFORMANCE STANDARDS (PSES)

Pollutant	Maximum daily [1]	Maximum monthly avg.[1]
Lead	0.001052	0.000350
Zinc	0.001402	0.000468

[1] Pounds per ton of product.

(2) Bar, billet, and bloom.

PERFORMANCE STANDARDS (PSES)

Pollutant	Maximum daily [1]	Maximum monthly avg.[1]
Lead	0.000338	0.0001126
Zinc	0.000450	0.0001502

[1] Pounds per ton of product.

(3) Strip, sheet, and plate.

PERFORMANCE STANDARDS (PSES)

Pollutant	Maximum daily [1]	Maximum monthly avg.[1]
Lead	0.000676	0.000226
Zinc	0.000902	0.000300

[1] Pounds per ton of product.

(4) Pipe, tube, and other products.

PERFORMANCE STANDARDS (PSES)

Pollutant	Maximum daily [1]	Maximum monthly avg.[1]
Lead	0.001878	0.000626
Zinc	0.00250	0.000834

[1] Pounds per ton of product.

(5) Fume scrubber.

PERFORMANCE STANDARDS (PSES) [2]

Pollutant	Maximum daily [1]	Maximum monthly avg.[1]
Lead	0.0810	0.0271
Zinc	0.1080	0.0361

[1] Pounds per day.
[2] The above limitations shall be applicable for each fume scrubber associated with sulfuric acid pickling operations.

(d) Hydrochloric acid pickling (spent acid solutions and rinse waters).

(1) Rod, wire, and coil.

PERFORMANCE STANDARDS (PSES)

Pollutant	Maximum daily[1]	Maximum monthly avg.[1]
Lead	0.00184	0.000614
Zinc	0.00246	0.000818

[1] Pounds per ton of product.

(2) Strip, sheet, and plate.

PERFORMANCE STANDARDS (PSES)

Pollutant	Maximum daily[1]	Maximum monthly avg.[1]
Lead	0.001052	0.000350
Zinc	0.001402	0.000468

[1] Pounds per ton of product.

(3) Pipe, tube, and other products.

PERFORMANCE STANDARDS (PSES)

Pollutant	Maximum daily[1]	Maximum monthly avg.[1]
Lead	0.00384	0.001276
Zinc	0.00510	0.001702

[1] Pounds per ton of product.

(4) Fume scrubber.

PERFORMANCE STANDARDS (PSES) [2]

Pollutant	Maximum daily[1]	Maximum monthly avg.[1]
Lead	0.0810	0.0271
Zinc	0.1080	0.0361

[1] Pounds per day.
[2] The above limitations shall be applicable for each fume scrubber associated with hydrochloric acid pickling operations.

(5) Acid regeneration (absorber vent scrubber).

PERFORMANCE STANDARDS (PSES) [2]

Pollutant	Maximum daily[1]	Maximum monthly avg.[1]
Lead	0.539	0.1802
Zinc	0.719	0.240

[1] Pounds per day.
[2] The above limitations shall be applicable to the absorber vent scrubber wastewater associated with hydrochloric acid regeneration plants.

(e) Combination acid pickling (spent acid solutions and rinse waters).

(1) Rod, wire, and coil.

PERFORMANCE STANDARDS (PSES)

Pollutant	Maximum daily[1]	Maximum monthly avg.[1]
Chromium	0.00426	0.001704
Nickel	0.00384	0.001276

[1] Pounds per ton of product.

(2) Bar, billet, and bloom.

PERFORMANCE STANDARDS (PSES)

Pollutant	Maximum daily[1]	Maximum monthly avg.[1]
Chromium	0.001920	0.000768
Nickel	0.001728	0.000576

[1] Pounds per ton of product.

(3) Strip, sheet, and plat-continuous.

PERFORMANCE STANDARDS (PSES)

Pollutant	Maximum daily[1]	Maximum monthly avg.[1]
Chromium	0.01252	0.00500

PERFORMANCE STANDARDS (PSES)—Continued

Pollutant	Maximum daily[1]	Maximum monthly avg.[1]
Nickel	0.01126	0.00376

[1] Pounds per ton of product.

(4) Strip, sheet, and plate-batch.

PERFORMANCE STANDARDS (PSES)

Pollutant	Maximum daily[1]	Maximum monthly avg.[1]
Chromium	0.00384	0.001536
Nickel	0.00346	0.001152

[1] Pounds per ton of product.

(5) Pipe, tube, and other products.

PERFORMANCE STANDARDS (PSES)

Pollutant	Maximum daily[1]	Maximum monthly avg.[1]
Chromium	0.00644	0.00258
Nickel	0.00578	0.001928

[1] Pounds per ton of product.

(6) Fume scrubber.

PERFORMANCE STANDARDS (PSES)

Pollutant	Maximum daily[1]	Maximum monthly avg.[1]
Chromium	0.1802	0.0719
Nickel	0.1617	0.0539

[1] Pounds per day.
[2] The above limitations shall be applicable to each fume scrubber associated with a combination acid pickling operation.

(f) Cold rolling.

(1) Recirculation-single stand.

PERFORMANCE STANDARDS (PSES)

Pollutant	Maximum daily[1]	Maximum monthly avg.[1]
Chromium[2]	0.0000418	0.0000168
Lead	0.0000188	0.0000062
Nickel[2]	0.0000376	0.0000126
Zinc	0.0000126	0.0000042

[1] Pounds per ton of product.
[2] The limitations for chromium and nickel shall be applicable in lieu of those for lead and zinc when cold rolling wastewaters are treated with descaling or combination acid pickling wastewaters.

(2) Recirculation-multiple stands.

PERFORMANCE STANDARDS (PSES)

Pollutant	Maximum daily[1]	Maximum monthly avg.[1]
Chromium[2]	0.000208	0.0000836
Lead	0.0000938	0.0000312
Nickel[2]	0.0001878	0.0000626

PERFORMANCE STANDARDS (PSES)—Continued

Pollutant	Maximum daily[1]	Maximum monthly avg.[1]
Zinc	0.0000626	0.0000208

[1] Pounds per ton of product.
[2] The limitations for chromium and nickel shall be applicable in lieu of those for lead and zinc when cold rolling wastewaters are treated with descaling or combination acid pickling wastewaters.

(3) Combination.

PERFORMANCE STANDARDS (PSES)

Pollutant	Maximum daily[1]	Maximum monthly avg.[1]
Chromium[2]	0.00250	0.001002
Lead	0.001126	0.000376
Nickel[2]	0.00226	0.000752
Zinc	0.000752	0.000250

[1] Pounds per ton of product.
[2] The limitations for chromium and nickel shall be applicable in lieu of those for lead and zinc when cold rolling wastewaters are treated with descaling or combination acid pickling wastewaters.

(4) Direct application-single stand.

PERFORMANCE STANDARDS (PSES)

Pollutant	Maximum daily[1]	Maximum monthly avg.[1]
Chromium[2]	0.000752	0.000300
Lead	0.000338	0.0001126
Nickel[2]	0.000676	0.000226
Zinc	0.000226	0.0000752

[1] Pounds per ton of product.
[2] The limitations for chromium and nickel shall be applicable in lieu of those for lead and zinc when cold rolling wastewaters are treated with descaling or combination acid pickling wastewaters.

(5) Direct application-multiple stands.

PERFORMANCE STANDARDS (PSES)

Pollutant	Maximum daily[1]	Maximum monthly avg.[1]
Chromium[2]	0.00334	0.001336
Lead	0.001502	0.000500
Nickel[2]	0.0030	0.001002
Zinc	0.001002	0.000334

[1] Pounds per ton of product.
[2] The limitations for chromium and nickel shall be applicable in lieu of those for lead and zinc when cold rolling wastewaters are treated with descaling or combination acid pickling wastewaters.

(g) Electroplating.

PRETREATMENT STANDARDS (PSES)

Pollutant	Maximum daily[1]	Maximum monthly avg.[1]
Chromium	2.77	1.71
Lead	0.69	0.43
Nickel	3.98	2.38
Zinc	2.61	1.48

[1] Milligrams per liter.

(h) Galvanizing, terne coating and other coatings.

(1) Strip, sheet, and miscellaneous products.

PERFORMANCE STANDARDS (PSES)

Pollutant	Maximum daily [1]	Maximum monthly avg.[1]
Chromium (hexavalent) [2]	0.000300	0.0001002
Lead	0.00226	0.000752
Zinc	0.00300	0.001000

[1] Pounds per ton of product.
[2] The limitations for hexavalent chromium shall be applicable only to galvanizing operations which discharge wastewaters from the chromate rinse step.

(2) Fume scrubbers.

PERFORMANCE STANDARDS (PSES)

Pollutant	Maximum daily [1]	Maximum monthly avg.[1]
Chromium (hexavalent) [2]	0.01078	0.003586
Lead	0.0810	0.0271
Zinc	0.1080	0.0361

[1] Pounds per day.
[2] The limitations for hexavalent chromium shall be applicable only to galvanizing operations which discharge wastewaters from the chromate rinse step.

§ 420.67 Pretreatment Standards for New Sources (PSNS).

New sources subject to this subpart must achieve the following pretreatment standards for new sources (PSNS), as applicable.

(a) Any new source subject to the provisions of this section that commenced discharging after *[insert date 10 years prior to the date that is 60 days after the publication date of the final rule]* and before *[insert date that is 60 days after the publication date of the final rule]* must continue to achieve the standards specified in the 2000 version of §§ 420.86, 420.96, 420.106, 420.116, and 420.126 for ten years beginning on the date the source commenced discharge or during the period of depreciation or amortization of the facility, whichever comes first, after which the source must achieve the standards specified in § 420.66.

(b) Except as provided in 40 CFR 403.7, the following standards apply with respect to each new source that commences construction after *[insert date that is 60 days after the publication date of the final rule]:*

(1) *Ammonia as (N).* (i) *Stainless Steel.* The following pretreatment standards apply to discharges in the stainless steels segment for each operation as applicable. Increased mass discharges may be provided by the permit authority on a site-specific basis to account for unregulated process wastewaters and non-process wastewaters (*e.g.,* oily wastewater from hot forming mill basements and roll shops, tramp oils from mill oil collection systems, utility wastewaters, groundwater remediation wastewaters), but only to the extent such flows are co-treated with process wastewaters regulated by this subpart and generate an increased effluent volume. Such increased mass discharges shall be calculated as a percentage increase of the mass discharge otherwise applicable on the basis of the increased effluent volume.

PERFORMANCE STANDARDS (PSNS)

	Maximum daily [1]	Maximum monthly avg.[1]
(A) Acid pickling and other descaling:		
(1) bar, billet	0.0437	0.0287
(2) pipe, tube	0.146	0.0960
(3) plate	0.00665	0.00436
(4) strip, sheet	0.133	0.0873
(B) Wet air pollution control devices:		
(1) fume scrubbers	[2] 4.10	[2] 2.69

[1] Pounds per ton of product for all operations except fume scrubbers.
[2] The values are expressed in pounds per day for this operation.

(2) *Chromium (VI).* (i) *Carbon and Alloy Steel.* The following pretreatment standards apply to discharges in the carbon and alloy steels segment for each operation as applicable. Increased mass discharges may be provided by the permit authority on a site-specific basis to account for unregulated process wastewaters and non-process wastewaters (*e.g.,* oily wastewater from hot forming mill basements and roll shops, tramp oils from mill oil collection systems, utility wastewaters, groundwater remediation wastewaters), but only to the extent such flows are co-treated with process wastewaters regulated by this subpart and generate an increased effluent volume. Such

increased mass discharges shall be calculated as a percentage increase of the mass discharge otherwise applicable on the basis of the increased effluent volume. The pretreatment standards for chromium (VI) shall be applicable only when chromium (VI) is present in untreated wastewaters as a result of process or other operations.

PRETREATMENT STANDARDS (PSNS)

	Maximum daily [1]	Maximum monthly avg.[1]
(A) Acid pickling—hydrochloric:		
(1) bar, billet, rod, coil	0.0000508	0.0000463
(2) pipe, tube	0.000106	0.0000963
(3) plate	0.00000363	0.00000330
(4) strip, sheet	0.00000518	0.00000472
(B) Acid pickling—sulfuric:		
(1) bar, billet, rod, coil	0.0000290	0.0000264
(2) pipe, tube	0.0000518	0.0000472
(3) plate	0.00000363	0.00000330
(4) strip, sheet	0.0000238	0.0000217
(C) Acid regeneration:		
(1) fume scrubbers	[2] 0.0149	[2] 0.0136
(D) Alkaline cleaning:		
(1) pipe, tube	0.00000207	0.00000189
(2) strip, sheet	0.0000363	0.0000330
(E) Cold forming:		
(1) direct application-single stand	0.000000311	0.000000283
(2) direct application-multiple stands	0.0000285	0.0000260
(3) recirculation-single stand	0.000000104	0.000000944
(4) recirculation-multiple stands	0.00000259	0.00000236
(5) combination-multiple stand	0.0000148	0.0000135
(F) Continuous annealing lines	0.00000207	0.00000189
(G) Electroplating:		
(1) plate	0.00000363	0.00000330
(2) strip, sheet: tin, chromium	0.000114	0.000104
(3) strip, sheet: zinc, other metals	0.0000570	0.0000519
(H) Hot coating:		
(1) galvanizing, terne and other metals	0.0000570	0.0000519
(I) Wet air pollution control devices:		
(1) fume scrubbers	[2] 0.00224	[2] 0.00204

[1] Pounds per ton of product for all operations except fume scrubbers.
[2] The values are expressed in pounds per day for this operation.

(ii) *Stainless Steel.* The following pretreatment standards apply to discharges in the stainless steels segment for each operation as applicable. Increased mass discharges may be provided by the permit authority on a site-specific basis to account for unregulated process wastewaters and non-process wastewaters (*e.g.,* oily wastewater from hot forming mill basements and roll shops, tramp oils from mill oil collection systems, utility wastewaters, groundwater remediation wastewaters), but only to the extent such flows are co-treated with process wastewaters regulated by this subpart and generate an increased effluent volume. Such increased mass discharges shall be calculated as a percentage increase of the mass discharge otherwise applicable on the basis of the increased effluent volume.

PRETREATMENT STANDARDS (PSNS)

	Maximum daily [1]	Maximum monthly avg.[1]
(A) Acid pickling and other descaling:		
(1) bar, billet	0.000318	0.000196
(2) pipe, tube	0.00107	0.000655
(3) plate	0.0000484	0.0000298
(4) strip, sheet	0.000969	0.000595
(B) Acid regeneration:		
(1) fume scrubbers	[2] 0.199	[2] 0.122
(C) Alkaline cleaning:		
(1) pipe, tube	0.0000277	0.0000170
(2) strip, sheet	0.00346	0.00213
(D) Cold forming:		
(1) direct application-single stand	0.0000484	0.0000298
(2) direct application-multiple stands	0.000381	0.000234
(3) recirculation-single stand	0.00000415	0.00000255
(4) recirculation-multiple stands	0.0000221	0.0000136
(5) combination-multiple stand	0.000198	0.000122
(E) Continuous annealing	0.0000277	0.0000170

PRETREATMENT STANDARDS (PSNS)—Continued

	Maximum daily [1]	Maximum monthly avg.[1]
(F) Wet air pollution control devices:		
(1) fume scrubbers	[2] 0.0299	[2] 0.0184

[1] Pounds per ton of product for all operations except fume scrubbers.
[2] The values are expressed in pounds per day for this operation.

(3) *Chromium.* (i) *Carbon and Alloy Steel.* The following pretreatment standards apply to discharges in the carbon and alloy steels segment for each operation as applicable. Increased mass discharges may be provided by the permit authority on a site-specific basis to account for unregulated process wastewaters and non-process wastewaters (*e.g.,* oily wastewater from hot forming mill basements and roll shops, tramp oils from mill oil collection systems, utility wastewaters, groundwater remediation wastewaters), but only to the extent such flows are co-treated with process wastewaters regulated by this subpart and generate an increased effluent volume. Such increased mass discharges shall be calculated as a percentage increase of the mass discharge otherwise applicable on the basis of the increased effluent volume. The pretreatment standards for chromium shall be applicable only when chromium is present in untreated wastewaters as a result of process or other operations.

PRETREATMENT STANDARDS (PSNS)

	Maximum daily[1]	Maximum monthly avg.[1]
(A) Acid pickling—hydrochloric:		
(1) bar, billet, rod, coil	0.000227	0.000117
(2) pipe, tube	0.000472	0.000243
(3) plate	0.0000162	0.00000834
(4) strip, sheet	0.0000231	0.0000119
(B) Acid pickling—sulfuric:		
(1) bar, billet, rod, coil	0.000130	0.0000668
(2) pipe, tube	0.000231	0.000119
(3) plate	0.0000162	0.00000834
(4) strip, sheet	0.000106	0.0000548
(C) Acid regeneration:		
(1) fume scrubbers	[2] 0.0666	[2] 0.0343
(D) Alkaline cleaning:		
(1) pipe, tube	0.00000925	0.00000477
(2) strip, sheet	0.000162	0.0000834
(E) Cold forming:		
(1) direct application-single stand	0.00000139	0.000000715
(2) direct application-multiple stands	0.000127	0.0000656
(3) recirculation-single stand	0.000000463	0.000000238
(4) recirculation-multiple stands	0.0000116	0.00000596
(5) combination-multiple stand	0.0000662	0.0000341
(F) Continuous annealing lines	0.00000925	0.00000477
(G) Electroplating:		
(1) plate	0.0000162	0.00000834
(2) strip, sheet: tin, chromium	0.000509	0.000262
(3) strip, sheet: zinc, other metals	0.000255	0.000131
(H) Hot coating:		
(1) galvanizing, terne and other metals	0.000255	0.000131
(I) Wet air pollution control devices:		
(1) fume scrubbers	[2] 0.00999	[2] 0.00515

[1] Pounds per ton of product for all operations except fume scrubbers.
[2] The values are expressed in pounds per day for this operation.

(ii) *Stainless Steel.* The following pretreatment standards apply to discharges in the stainless steels segment for each operation as applicable. Increased mass discharges may be provided by the permit authority on a site-specific basis to account for unregulated process wastewaters and non-process wastewaters (*e.g.,* oily wastewater from hot forming mill basements and roll shops, tramp oils from mill oil collection systems, utility wastewaters, groundwater remediation wastewaters), but only to the extent such flows are co-treated with process wastewaters regulated by this subpart and generate an increased effluent volume. Such increased mass discharges shall be calculated as a percentage increase of the mass discharge otherwise applicable on the basis of the increased effluent volume.

PRETREATMENT STANDARDS (PSNS)

	Maximum daily [1]	Maximum monthly avg.[1]
(A) Acid pickling and other descaling:		
(1) bar, billet	0.000500	0.000280
(2) pipe, tube	0.00167	0.000939
(3) plate	0.0000760	0.0000427
(4) strip, sheet	0.00152	0.000854
(B) Acid regeneration:		
(1) fume scrubbers	[2] 0.313	[2] 0.176
(C) Alkaline cleaning:		
(1) pipe, tube	0.0000434	0.0000244
(2) strip, sheet	0.00543	0.00305
(D) Cold forming:		
(1) direct application-single stand	0.0000760	0.0000427
(2) direct application-multiple stands	0.000597	0.000335
(3) recirculation-single stand	0.00000652	0.00000366
(4) recirculation-multiple stands	0.0000348	0.0000195
(5) combination-multiple stand	0.000311	0.000174
(E) Continuous annealing	0.0000434	0.0000244
(F)Wet air pollution control devices:		
(1) fume scrubbers	[2] 0.0469	[2] 0.0263

[1] Pounds per ton of product for all operations except fume scrubbers.
[2] The values are expressed in pounds per day for this operation.

(4) *Fluoride.* (i) *Stainless Steel.* The following pretreatment standards apply to discharges in the stainless steels segment for each operation as applicable. Increased mass discharges may be provided by the permit authority on a site-specific basis to account for unregulated process wastewaters and non-process wastewaters (*e.g.,* oily wastewater from hot forming mill basements and roll shops, tramp oils from mill oil collection systems, utility wastewaters, groundwater remediation wastewaters), but only to the extent such flows are co-treated with process wastewaters regulated by this subpart and generate an increased effluent volume. Such increased mass discharges shall be calculated as a percentage increase of the mass discharge otherwise applicable on the basis of the increased effluent volume.

PRETREATMENT STANDARDS (PSNS)

	Maximum daily [1]	Maximum monthly avg.[1]
(A) Acid pickling and other descaling:		
(1) bar, billet	0.0446	0.0356
(2) pipe, tube	0.149	0.119
(3) plate	0.00679	0.00542
(4) strip, sheet	0.136	0.108
(B) Wet air pollution control devices		
(1) fume scrubbers	[2] 4.19	[2] 3.34

[1] Pounds per ton of product for all operations except fume scrubbers.
[2] The values are expressed in pounds per day for this operation.

(5) *Lead.* (i) *Carbon and Alloy Steel.* The following pretreatment standards apply to discharges in the carbon and alloy steels segment for each operation as applicable. Increased mass discharges may be provided by the permit authority on a site-specific basis to account for unregulated process wastewaters and non-process wastewaters (*e.g.,* oily wastewater from hot forming mill basements and roll shops, tramp oils from mill oil collection systems, utility wastewaters, groundwater remediation wastewaters), but only to the extent such flows are co-treated with process wastewaters regulated by this subpart and generate an increased effluent volume. Such increased mass discharges shall be calculated as a percentage increase of the mass discharge otherwise applicable on the basis of the increased effluent volume.

PRETREATMENT STANDARDS (PSNS)

	Maximum daily[1]	Maximum monthly avg.[1]
(A) Acid pickling—hydrochloric:		
(1) bar, billet, rod, coil	0.000596	0.000311
(2) pipe, tube	0.00124	0.000647
(3) plate	0.0000426	0.0000222
(4) strip, sheet	0.0000609	0.0000317
(B) Acid pickling—sulfuric:		

PRETREATMENT STANDARDS (PSNS)—Continued

	Maximum daily[1]	Maximum monthly avg.[1]
(1) bar, billet, rod, coil	0.000341	0.000178
(2) pipe, tube	0.000609	0.000317
(3) plate	0.0000426	0.0000222
(4) strip, sheet	0.000280	0.000146
(C) Acid regeneration:		
(1) fume scrubbers	[2] 0.175	[2] 0.0913
(D) Alkaline cleaning:		
(1) pipe, tube	0.0000243	0.0000127
(2) strip, sheet	0.000426	0.000222
(E) Cold forming:		
(1) direct application-single stand	0.00000365	0.00000190
(2) direct application-multiple stands	0.000335	0.000174
(3) recirculation-single stand	0.00000122	0.000000634
(4) recirculation-multiple stands	0.0000304	0.0000159
(5) combination-multiple stands	0.000174	0.0000907
(F) Continuous annealing lines	0.0000243	0.0000127
(G) Electroplating:		
(1) strip, sheet: tin, chromium	0.0000426	0.0000222
(2) strip, sheet: zinc, other metals	0.00134	0.000698
(3) plate	0.000669	0.000349
(H) Hot coating:		
(1) galvanizing, terne and other metals	0.000669	0.000349
(I) Wet air pollution control devices:		
(1) fume scrubbers	[2] 0.0263	[2] 0.0137

[1] Pounds per ton of product for all operations except fume scrubbers.
[2] The values are expressed in pounds per day for this operation.

(6) *Nickel.* (i) *Stainless Steel.* The following pretreatment standards apply to discharges in the stainless steels segment for each operation as applicable. Increased mass discharges may be provided by the permit authority on a site-specific basis to account for unregulated process wastewaters and non-process wastewaters (*e.g.,* oily wastewater from hot forming mill basements and roll shops, tramp oils from mill oil collection systems, utility wastewaters, groundwater remediation wastewaters), but only to the extent such flows are co-treated with process wastewaters regulated by this subpart and generate an increased effluent volume. Such increased mass discharges shall be calculated as a percentage increase of the mass discharge otherwise applicable on the basis of the increased effluent volume.

PRETREATMENT STANDARDS (PSNS)

	Maximum daily[1]	Maximum monthly avg.[1]
(A) Acid pickling and other descaling:		
(1) bar, billet	0.000147	0.000104
(2) pipe, tube	0.000494	0.000347
(3) plate	0.0000224	0.0000158
(4) strip, sheet	0.000449	0.000315
(B) Acid regeneration:		
(1) fume scrubbers	[2] 0.0923	[2] 0.0649
(C) Alkaline cleaning:		
(1) pipe, tube	0.0000128	0.00000901
(2) strip, sheet	0.00160	0.00113
(D) Cold forming:		
(1) direct application-single stand	0.0000224	0.0000158
(2) direct application-multiple stands	0.000176	0.000124
(3) recirculation-single stand	0.00000192	0.00000135
(4) recirculation-multiple stands	0.0000103	0.00000721
(5) combination-multiple stand	0.0000917	0.0000644
(E) Continuous annealing	0.0000128	0.00000901
(F) Wet air pollution control devices:		
(1) fume scrubbers	[2] 0.0138	[2] 0.00973

[1] Pounds per ton of product for all operations except fume scrubbers.
[2] The values are expressed in pounds per day for this operation.

(7) *Zinc.* (i) *Carbon and Alloy Steel.* The following pretreatment standards apply to discharges in the carbon and alloy steels segment for each operation as applicable. Increased mass discharges may be provided by the permit authority on a site-specific basis to account for unregulated process wastewaters and non-process wastewaters (*e.g.,* oily

wastewater from hot forming mill basements and roll shops, tramp oils from mill oil collection systems, utility wastewaters, groundwater remediation wastewaters), but only to the extent such flows are co-treated with process wastewaters regulated by this subpart and generate an increased effluent volume. Such increased mass discharges shall be calculated as a percentage increase of the mass discharge otherwise applicable on the basis of the increased effluent volume.

PRETREATMENT STANDARDS (PSNS)

	Maximum daily [1]	Maximum monthly avg. [1]
(i) Acid pickling—hydrochloric:		
(A) bar, billet, rod, coil	0.000637	0.000262
(B) pipe, tube	0.00133	0.000546
(C) plate	0.0000455	0.0000187
(D) strip, sheet	0.0000650	0.0000267
(ii) Acid pickling—sulfuric:		
(A) bar, billet, rod, coil	0.000364	0.000150
(B) pipe, tube	0.000650	0.000267
(C) plate	0.0000455	0.0000187
(D) strip, sheet	0.000299	0.000123
(iii) Acid regeneration:		
(A) fume scrubbers	[2]0.187	[2]0.0770
(iv) Alkaline cleaning:		
(A) pipe, tube	0.0000260	0.0000107
(B) strip, sheet	0.000455	0.000187
(v) Cold forming:		
(A) direct application-single stand	0.00000390	0.00000160
(B) direct application-multiple stands	0.000357	0.000147
(C) recirculation-single stand	0.00000130	0.000000535
(D) recirculation-multiple stands	0.0000325	0.0000134
(E) combination-multiple stand	0.000186	0.0000765
(vi) Continuous annealing lines	0.0000260	0.0000107
(vii) Electroplating:		
(A) plate	0.0000455	0.0000187
(B) strip, sheet: tin, chromium	0.00143	0.000588
(C) strip, sheet: zinc, other metals	0.000715	0.000294
(viii) Hot coating:		
(A) galvanizing, terne and other metals	0.000715	0.000294
(ix) Wet air pollution control devices:		
(A) fume scrubbers	[2]0.0281	[2]0.0116

[1] Pounds per ton of product for all operations except fume scrubbers.
[2] The values are expressed in pounds per day for this operation.

Subpart G—Other Operations Subcategory

§ 420.70 Applicability.

The provisions of this subpart are applicable to discharges and the introduction of pollutants into publicly owned treatment works resulting from production of direct-reduced iron and forging operations.

§ 420.71 Subcategory definitions.

As used in this subpart:

(a) *Product* means:

(1) Direct-reduced iron, including any undersize product;

(2) Direct-reduced iron after forging operations, but prior to any further shaping or finishing operations; and

(3) Direct-reduced iron briquetted, including any undersized product. The average daily operating (production) rate must be determined as specified in § 420.3.

(b) *Briquetting operations* means a hot or cold process that agglomerates (presses together) iron-bearing materials into small lumps without melting or fusion. Used as a concentrated iron ore substitute for scrap in electric furnaces.

(c) *Direct-reduced iron* means iron produced by reduction of iron ore (pellets or briquettes) using gaseous (carbon monoxide-carbon dioxide, hydrogen) or solid reactants.

(d) *ging* means the hot-working of heated steel shapes (*e.g.,* ingots, blooms, billets, slabs) using hydraulic presses.

§ 420.72 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve, for each applicable segment, the following effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT):

(a) *Direct-reduced iron.* This table is Effluent Limitations (BPT) for direct-reduced iron:

EFFLUENT LIMITATIONS (BPT)

Pollutant	Maximum daily [1]	Maximum monthly avg. [1]
TSS	0.0200	0.00929

[1] Pounds per ton of product.

(b) *ging operations.* This table is Effluent Limitations (BPT) for forging operations:

EFFLUENT LIMITATIONS (BPT)

Pollutant	Maximum daily [1]	Maximum monthly avg. [1]
Oil and grease	0.0149	0.00889
TSS	0.0235	0.0118

[1] Pounds per ton of product.

(c) *Briquetting.* There shall be no discharge of process wastewater pollutants.

§ 420.73 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best control technology for conventional pollutants (BCT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best control technology for conventional pollutants (BCT): The limitations shall be the same as those specified for conventional pollutants (which are defined in 40 CFR 401.16) in § 420.72 of this subpart for the best practicable control technology currently available (BPT).

§ 420.74 Effluent limitations attainable by the application of the best available control technology economically achievable (BAT).

(a) *Direct-reduced iron; forging operations.* (Reserved)

(b) *Briquetting.* Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best available control technology economically achievable (BAT): There shall be no discharge of process wastewater pollutants.

§ 420.75 New Source Performance Standards (NSPS).

New sources subject to this subpart must achieve the following new source performance standards (NSPS), as applicable.

(a) *Direct-reduced iron.* This table is Performance Standards (NSPS) for direct-reduced iron:

PERFORMANCE STANCARDS (NSPS)

Pollutant	Maximum daily [1]	Maximum monthly avg. [1]
TSS	0.0200	0.00929

[1] Pounds per ton of product.

(b) *ging operations.* This table is for Performance Standards (NSPS):

PERFORMANCE STANCARDS (NSPS)

Pollutant	Maximum daily [1]	Maximum monthly avg. [1]
Oil and grease	0.0149	0.00889
TSS	0.0235	0.0118

[1] Pounds per ton of product.

(c) *Briquetting.* There shall be no discharge of process wastewater pollutants.

§ 420.76 Pretreatment Standards for Existing Sources (PSES).

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

(a) *Direct-reduced iron; forging operations.* (Reserved)

(b) *Briquetting.* There shall be no discharge of process wastewater pollutants to POTWs.

§ 420.77 Pretreatment Standards for New Sources (PSNS).

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

(a) *Direct-reduced iron; forging operations.* (Reserved)

(b) *Briquetting.* There shall be no discharge of process wastewater pollutants to POTWs.

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