

**ENVIRONMENTAL PROTECTION AGENCY**

**40 CFR Part 420**

[FRL-7206-7]

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:** Final rule.

**SUMMARY:** This final rule represents the culmination of the Agency's effort to revise Clean Water Act (CWA) effluent limitations guidelines and standards for wastewater discharges from the iron and steel manufacturing industry. The final regulation revises technology-based effluent limitations guidelines and standards for certain wastewater discharges associated with metallurgical cokemaking, sintering, and ironmaking operations; and codifies new effluent limitations guidelines and standards for direct reduced ironmaking, briquetting, and forging. EPA is also revising the regulations for the steelmaking subcategory, to provide an allowance for existing basic oxygen furnaces operating

semi-wet air pollution control systems; and to establish technology-based effluent limitations guidelines and standards for electric arc furnaces operating semi-wet pollution control systems. EPA is eliminating rule references to the following obsolete operations: beehive cokemaking in the cokemaking subcategory, ferromanganese blast furnaces in the ironmaking subcategory, and open hearth furnace operations in the steelmaking subcategory. EPA is not revising effluent limitations guidelines and standards for the remaining subcategories within this industrial category: vacuum degassing, continuous casting, hot forming, salt bath descaling, acid pickling, cold forming, alkaline cleaning and hot coating. Nor is EPA codifying a new subcategorization scheme and associated definitions to support the new subcategorization for this industrial category.

EPA expects compliance with this regulation to reduce the discharge of conventional pollutants by at least 351,000 pounds per year and toxic and non-conventional pollutants by at least 1,018,000 pounds per year. EPA estimates the annual cost of the rule will be \$12.0 million (pre-tax \$2001). EPA estimates that the annual benefits of the rule will range from \$1.4 million to \$7.3 million (\$2001).

**DATES:** This regulation shall become effective November 18, 2002.

**ADDRESSES:** The public record for this rulemaking has been established under docket number W-00-25 II and will be located in the Water Docket, East Tower Basement, room #57, 401 M St. SW., Washington, DC 20460 until August 15, 2002. After August 27, 2002 the public record will be located at EPA West, 1301 Constitution Avenue, NW., Room B135, Washington, DC 20460. The record is available for inspection from 9 a.m. to 4 p.m., Monday through Friday, excluding legal holidays. For access to the docket materials before August 15, call (202) 260-3027 to schedule an appointment. After August 27, call (202) 566-2426. You may have to pay a reasonable fee for copying.

**FOR FURTHER INFORMATION CONTACT:** For technical information concerning today's final rule, contact Mr. George Jett at (202) 566-1070, or Ms. Yu-ting Guilaran at (202) 566-1072. For economic information contact Mr. William Anderson at (202) 566-1008.

**SUPPLEMENTARY INFORMATION:**

**Regulated Entities**

Entities potentially regulated by this action include facilities of the following types that discharge pollutants to waters of the U.S.:

Category	Examples of regulated entities	Primary SIC and NAICS codes
Industry	Discharges from facilities engaged in metallurgical cokemaking, sintering, ironmaking, steelmaking, direct reduced ironmaking, briquetting, and forging.	SIC 3312, 3316; NAICS 3311, 3312.

This table is not intended to be exhaustive, but rather provides a guide for readers regarding entities likely to be regulated by this action. Other types of entities not listed in the table could also be regulated. To determine whether your facility is regulated by this action, you should carefully examine the applicability criteria listed in § 420.01 and the applicability criteria in § 420.10 (metallurgical cokemaking), § 420.40 (steelmaking), and § 420.130 (other operations) of today's rule and applicability criteria in § 420.20 (sintering), § 420.30 (ironmaking), § 420.50 (vacuum degassing), § 420.60 (continuous casting), § 420.70 (hot forming), § 420.80 (salt bath descaling), § 420.90 (acid pickling), § 420.100 (cold forming), § 420.110 (alkaline cleaning), and § 420.120 (hot coating) of Title 40 of the Code of Federal Regulations. The table lists the types of entities that EPA is now aware could potentially be regulated by this action. If you still have questions regarding the applicability of

this action to a particular entity (after consulting relevant subsections), consult one of the persons listed for technical information in the preceding **FOR FURTHER INFORMATION CONTACT** section.

**Judicial Review**

In accordance with 40 CFR 23.2, today's rule is promulgated for the purposes of judicial review as of 1 pm Eastern Daylight Time on October 31, 2002. Under section 509(b)(1) of the Clean Water Act (CWA), judicial review of today's effluent limitations guidelines and standards is available in the United States Circuit Court of Appeals by filing a petition for review within 120 days from the date of promulgation of these guidelines and standards. Under Section 509(b)(2) of the CWA the requirements of this regulation may not be challenged later in civil or criminal proceedings brought by EPA to enforce these requirements.

**Compliance Dates**

Existing direct dischargers must comply with limitations based on the best practicable control technology currently available (BPT), the best conventional pollutant control technology (BCT), and the best available technology economically achievable (BAT) as soon as their National Pollutant Discharge Elimination System (NDPES) permits include such limitations. Existing indirect dischargers subject to today's regulations must comply with the pretreatment standards for existing sources no later than October 17, 2005. New direct and indirect discharging sources must comply with applicable guidelines and standards on the date the new sources begin discharging. For purposes of new source performance standards (NSPS) and pretreatment standards for new sources (PSNS), a source is a new source if it commenced construction after November 18, 2002.

## Supporting Documentation

The final regulations are supported by three major documents:

1. "Development Document for Final Effluent Limitations Guidelines and Standards for the Iron and Steel Manufacturing Point Source Category" (EPA-821-R-02-004), referred to in the preamble as the Technical Development Document (TDD). This TDD presents the technical information that formed the basis for EPA's decisions concerning the final rule. In it, EPA describes, among other things, the data collection activities, the wastewater treatment technology options considered, the pollutants found in the iron and steel manufacturing wastewaters, and the estimation of costs to the industry to comply with the final limitations and standards.

2. "Economic Analysis of Final Effluent Limitations Guidelines and Standards for the Iron and Steel Manufacturing Point Source Category" (EPA-821-R-02-006) referred to in this preamble as the Economic Analysis (EA). The EA estimates the economic and financial costs of compliance with the final regulation on individual process lines, facilities and companies.

3. "Environmental Assessment of the Final Effluent Limitations Guidelines and Standards for the Iron and Steel Manufacturing Point Source Category" (EPA-821-R-02-005) referred to as the Environmental Assessment in this preamble.

## How To Obtain Supporting Documents

Supporting documents are available on the internet at [www.epa.gov/ost/ironsteel](http://www.epa.gov/ost/ironsteel) and before August 15, 2002 from the Office of Water Resource Center, MC-4100, U.S. EPA, 401 M Street, SW., Washington, DC 20460; telephone (202) 260-7786 for publication requests. After August 18, 2002, the Office of Water Resources will be located at 1200 Pennsylvania Avenue, NW., Washington, DC 20460. The telephone number will be 202-566-1729.

## Protection of Confidential Business Information (CBI)

EPA notes that certain information and data in the record supporting the final 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 rulemaking while preserving confidentiality claims, EPA

is presenting in the public record certain information in aggregated form or, alternatively, is masking facility identities or employing other strategies. This approach assures that the information in the public record explains the basis for today's final rule without compromising CBI claims.

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6. Pretreatment Standards for New Sources (PSNS)

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## I. Legal Authority

The U.S. Environmental Protection Agency is promulgating these regulations 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 for facilities that discharge wastewater through sewers flowing to publicly-owned treatment works (POTWs) (Section 307(b) and (c), 33 U.S.C. 1317(b) and (c)). National pretreatment standards are established for those pollutants in wastewater from indirect dischargers which pass through, interfere with, or are otherwise incompatible with POTW operations. Generally, pretreatment standards are designed to ensure that wastewater from direct and indirect industrial dischargers are subject to similar levels of treatment. In addition, POTWs are required to develop and enforce local pretreatment limits applicable to their industrial indirect dischargers to satisfy any local requirements (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. These limitations 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)—Section 304(b)(1) of the CWA

In the regulations, EPA defines BPT effluent limits for conventional, toxic, and non-conventional pollutants. Section 304(a)(4) designates the following as conventional pollutants: biochemical oxygen demand (BOD5), 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). EPA has identified 126 pollutants as priority toxic pollutants. See Appendix A to Part 403 (reprinted after 40 CFR 423.17). All other pollutants are considered to be non-conventional.

In specifying BPT, EPA looks at a number of factors. EPA first considers the total cost of applying the control technology in relation to the effluent reduction benefits. The Agency also considers the age of the equipment and facilities, the processes employed and any required process changes, engineering aspects of the control technologies, non-water quality environmental impacts (including energy requirements), and such other factors as the EPA Administrator deems appropriate (CWA 304(b)(1)(B)). Traditionally, EPA establishes BPT effluent limitations based on the average of the best performances of facilities within the industry of various ages, sizes, processes or other common characteristics. Where existing performance is uniformly inadequate, BPT may reflect higher levels of control than currently in place in an industrial category if the Agency determines that the technology can be practically applied.

2. Best Conventional Pollutant Control Technology (BCT)—Section 304(b)(4) of the CWA

The 1977 amendments to the CWA required EPA to identify effluent reduction levels for conventional pollutants associated with BCT for discharges from existing industrial point sources. In addition to the 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).

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

In general, BAT effluent limitations guidelines represent the best available economically achievable performance of plants in the industrial subcategory or category. 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. The Agency retains considerable discretion in assigning the weight to be accorded these factors. BAT limitations may be based on effluent reductions attainable through changes in a facility's processes and operations. Where existing performance is uniformly inadequate, BAT may reflect a higher level of performance than is currently being achieved within a particular subcategory 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)—Section 306 of the CWA

NSPS reflect effluent reductions that are achievable based on the best available demonstrated control technology. New sources 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 demonstrated control technology for all pollutants (i.e., conventional, non-conventional, 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)—Section 307(b) of the CWA

PSES 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 (POTWs), including sludge disposal methods at POTWs. Pretreatment standards for existing sources are technology-based and are analogous to BAT effluent limitations guidelines.

The General Pretreatment Regulations, which set forth the

framework for the implementation of national pretreatment standards, are found at 40 CFR part 403.

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

Like PSES, PSNS are designed to prevent the discharges of pollutants that pass through, interfere with, or are otherwise incompatible with the operation of POTWs. PSNS are to be issued at the same time as NSPS. 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) Requirements

Section 304(m) of the CWA, added by the Water Quality Act of 1987, requires EPA to establish schedules for (1) reviewing and revising existing effluent limitations guidelines and standards ("effluent guidelines"); and (2) promulgating new effluent guidelines. On January 2, 1990, EPA published its first Effluent Guidelines Plan (55 FR 80), which established schedules for developing new and revised effluent guidelines for several industry categories.

The Natural Resources Defense Council (NRDC) and Public Citizen, Inc. filed suit against the Agency, alleging violation of Section 304(m) and other statutory authorities requiring promulgation of effluent guidelines (*NRDC, et al. v. Reilly*, Civ. No. 89-2980 (D.D.C.)). Plaintiffs and EPA settled the litigation by means of 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 to be selected by EPA. After completing a preliminary study (EPA 821-R95-037, September 1995) as required by the decree, EPA selected the iron and steel industry as the subject for a revised rule. 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 no later than April 30, 2002.

### III. Iron and Steel Manufacturing Industry Effluent Guideline Rulemaking History

#### A. 1982 Rule and 1984 Amendments

EPA promulgated effluent limitations guidelines and standards for the Iron

and Steel Manufacturing Point Source Category, 40 CFR part 420 in May 1982 (47 FR 23258). This rule established BPT, BCT, and BAT effluent limitations that apply to wastewater discharges to waters of the U.S. from existing iron and steel facilities and NSPS limits that apply to wastewater discharges to waters of the U.S. from new iron and steel facilities. It also established pretreatment standards that apply to wastewater discharges to POTWs from existing and new iron and steel facilities (PSES and PSNS).

The 1982 rule was based on an approach that mirrored the sequential process steps through a typical mill. EPA concluded that it was reasonable to establish a subcategorization structure based on the type of manufacturing operation employed. This resulted in twelve subcategories.

The American Iron and Steel Institute, certain members of the iron and steel industry, and NRDC filed petitions to review the 1982 regulation. On February 4, 1983, the parties in the consolidated lawsuit entered into a comprehensive settlement agreement that resolved all issues raised by the petitioners. In accordance with the settlement agreement, EPA modified and clarified certain parts of the Iron and Steel rule and published additional preamble language regarding the rule. The Iron and Steel rule was amended on May 17, 1984 (49 FR 21024). The major changes included in the amendment are discussed in the preamble to the 2000 proposed rule (65 FR 81964-82083) and in Chapter 2 of the Technical Development Document for today's final rule. The 1982 regulation, as amended in 1984, can be found on line at: [www.epa.gov/ost/ironsteel/reg.html](http://www.epa.gov/ost/ironsteel/reg.html).

#### B. Preliminary Study

The Clean Water Act requires EPA to review effluent limitations guidelines and standards periodically to determine whether it is appropriate to revise them. Furthermore, under the consent decree discussed in Section II.B, EPA is also required to undertake rulemaking with respect to the effluent limitations guidelines and standards on a set schedule and was required to complete a study of the iron and steel industry. Accordingly, EPA developed and published the "Preliminary Study of the Iron and Steel Category" (EPA 821-R-95-037) in September 1995.

In the preliminary study, EPA assessed the status of the iron and steel 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. This study concluded that the industry has changed substantially in production technology and pollution control since the 1982 regulations were promulgated. Pollutant loadings had decreased due to advances in treatment system operations and improved wastewater treatment processes. In addition, the study also found that many pollution prevention opportunities exist in the areas of increased process water recycle and reuse, the cascade of process wastewaters from one operation to another, residuals management, and non-discharge disposal methods. At the time of the study, many better-

performing mills were discharging wastewater loadings far below the current standards; however, not all of the industry had improved wastewater treatment or implemented proactive pollution prevention practices. As a result of the study, EPA initiated this rulemaking to reassess the effluent limitations guidelines and standards for the Iron and Steel Manufacturing Point Source Category. The Preliminary Study can be found on line at [www.epa.gov/OST/ironsteel/pstudy.html](http://www.epa.gov/OST/ironsteel/pstudy.html).

*C. October 31, 2000 Proposed Regulation*

On October 31, 2000, the EPA Administrator signed proposed revisions to technology-based effluent limitations guidelines and standards for wastewater discharges from new and existing iron and steel facilities. The proposed rule was published in the **Federal Register** on December 27, 2000 (65 FR 81964). EPA proposed to alter the applicability and scope of the

existing rule by adding electroplating operations and by including direct iron reduction, briquetting, and forging operations. In addition, EPA proposed excluding from the iron and steel guideline in Part 420 some wiring, cold forming, and hot dip coating operations. In a proposed rule for the Metal Products and Machinery (MP&M) industrial category published on January 3, 2001 (66 FR 424), EPA proposed to address these operations under Part 438.

The Agency proposed to revise the subcategorization scheme to create seven subcategories of iron and steel facilities based on co-treatment of compatible waste streams. This would have replaced the present structure of 12 subcategories. The proposed subcategorization approach would have reflected the way treatment systems are run in the iron and steel industry. EPA proposed the following seven subcategories:

Subcategory	Segment
Subpart A Cokemaking Subcategory .....	By-product. Non-recovery. Blast Furnace. Sintering.
Subpart B Ironmaking Subcategory .....	
Subpart C Steelmaking Subcategory	
Subpart D Integrated and Stand Alone Hot Forming Mills Subcategory .....	Carbon and Alloy. Stainless.
Subpart E Non-integrated Steelmaking and Hot Forming Operations Subcategory .....	Carbon and Alloy. Stainless.
Subpart F Steel Finishing Subcategory .....	Carbon and Alloy. Stainless.
Subpart G Other Operations .....	Direct-Reduced Ironmaking. Forging. Briquetting.

For most of the subcategories, except for cokemaking, finishing, and the newly added subcategory for other operations, the Agency proposed limits based on improved performance and operation of the same technologies that were the basis for the limits and standards promulgated in 1982 and amended in 1984. Consequently, the proposed limitations were more stringent than the limitations

promulgated in 1982. For the cokemaking subcategory, EPA proposed BAT limits based on a technology option that was essentially the same as the 1982 technology basis but included an additional treatment step—alkaline chlorination. For finishing, EPA proposed limits based on the 1982 technology basis with the addition of counter-current rinsing and acid purification.

For many of the proposed subcategories, wastewater flow reduction steps, in concert with better performance of the blowdown treatment systems, provided the primary basis for the proposal limits and standards. The subcategorization scheme and technology bases for the proposed limits and standards are summarized below:

PROPOSED SUBCATEGORIES, OPTIONS, AND TECHNICAL COMPONENTS

Subcategory (segment)	Regulatory level	Option proposed	Summary of technical basis
Subpart A. Cokemaking: (By-Product Recovery) .....	BAT/NSPS .....	BAT-3 .....	Tar removal, equalization, free and fixed ammonia stripping, temperature control, equalization, single-stage biological treatment with nitrification, alkaline chlorination, and sludge dewatering.
	PSES/PSNS .....	PSES-3 .....	Tar removal, equalization, free and fixed ammonia stripping, temperature control, equalization, and single-stage biological treatment with nitrification.

PROPOSED SUBCATEGORIES, OPTIONS, AND TECHNICAL COMPONENTS—Continued

Subcategory (segment)	Regulatory level	Option proposed	Summary of technical basis
(Non-Recovery) ..... Subpart B. Ironmaking: (Blast Furnaces and Sintering) .....	Co-proposed PSES .....	PSES-1 .....	Tar removal, equalization, and free and fixed ammonia stripping.
	BAT/NSPS/PSES/PSNS	Zero discharge .....	No wastewater generated.
	BAT/NSPS .....	BAT-1 .....	Solids removal, high-rate recycle, metals precipitation, alkaline chlorination, and mixed-media filtration of blowdown, and sludge dewatering.
Subpart C. Integrated Steelmaking .....	PSES/PSNS .....	PSES-1 .....	Solids removal, high-rate recycle and metals precipitation of blowdown and sludge dewatering.
	BAT/NSPS/PSES/PSNS	BAT-1 .....	Solids removal, high-rate recycle, metals precipitation of blowdown, 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, 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, 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 blowdown or of recycled flow, and sludge dewatering.
	PSES .....	N/A .....	No proposed modification from existing PSES.
(Stainless Steel) .....	NSPS/PSNS .....	Zero discharge .....	Water re-use, evaporation, or contract hauling.
	BAT/PSES .....	BAT-1 .....	Solids removal, cooling tower, high rate recycle, mixed-media filtration of blowdown or of recycled flow, and sludge dewatering.
Subpart F. Steel Finishing: (Carbon & Alloy Steel) .....	NSPS/PSNS .....	Zero discharge .....	Water re-use, evaporation, or contract hauling.
	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.
(Stainless Steel) .....	PSES .....	N/A .....	No proposed modification from existing PSES.
	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.
Subpart G. Other Operations: (Direct Reduced Ironmaking) .....	PSES .....	NA .....	No proposed modification from existing PSES.
	BPT/BCT/NSPS .....	BPT-1 .....	Solids removal, clarifier, high-rate recycle, filtration of blowdown, and sludge dewatering.
(Forging) .....	BAT/PSES/PSNS .....	Reserved. ....	No new facilities expected.
	BPT/BCT/NSPS .....	BPT-1 .....	High rate recycle, and oil/water separator for blowdown.
(Briquetting) .....	BAT/PSES/PSNS .....	Reserved. ....	No new facilities expected.
	BPT/BCT/BAT/.		

PROPOSED SUBCATEGORIES, OPTIONS, AND TECHNICAL COMPONENTS—Continued

Subcategory (segment)	Regulatory level	Option proposed	Summary of technical basis
	NSPS/ PSES/PSNS. ....	zero discharge .....	No wastewater generated.

The proposed regulation is on line at: [www.epa.gov/ost/ironsteel/notices.html](http://www.epa.gov/ost/ironsteel/notices.html).

*D. February 2001 Notice of Data Availability*

On February 14, 2001, EPA published a Notice of Data Availability (NODA) at 66 FR 10253. This notice provided additional discussion and clarification on some of the issues raised in the proposal. For example, the notice discussed EPA's new finding that phenol does not pass through POTWs, and indicated that EPA was rethinking its proposal to establish a nation-wide limit on ammonia from steel finishing operations.

EPA also noticed changes to certain portions of the proposed regulation and accompanying preamble to eliminate inconsistencies. Finally, it corrected potentially confusing typographical errors and extended the proposal's comment period from February 26, 2001 to March 26, 2001. The complete details of the February NODA are located on line at: [www.epa.gov/ost/ironsteel/reg.html](http://www.epa.gov/ost/ironsteel/reg.html).

*E. April 4, 2001 Notice*

On April 4, 2001, EPA published a notice (66 FR 17842) reopening the comment period to April 25, 2001.

**IV. Current Economic Condition of the Industry**

The financial situation of the domestic iron and steel industry changed dramatically between 1997 and 2001 due to factors including the Asian financial crisis, slow economic growth in Eastern Europe, the continued strength of the dollar versus other currencies, a period of increased prices for natural gas and electricity, and a sharp drop in domestic demand as the U.S. economy slowed. The following analysis of economic conditions occurring after the 1995–1997 time frame is based upon publicly available sources such as trade journal reports, Securities and Exchange Commission filings, and trade case filings with the U.S. Department of Commerce and the U.S. International Trade Commission.

The relatively high value of the dollar compared to the currencies of many steel exporting nations has led to a sharp increase in import penetration in the domestic steel market. The U.S. is, and has been, the world's largest steel

importer (and a net importer for at least the last two decades); indeed, the U.S. was nearly the only viable steel market to which other countries such as South Korea, Russia and Ukraine could export during 1998. U.S. imports of steel mill products jumped by 10.4 million tons from 31.1 million tons to 41.5 million ton, a 25 percent increase, from 1997 to 1998. The previous record level of imports had been established in 1997. The high levels of imports persisted in 1999 and 2000, with 35.7 million tons and 38.0 million tons, respectively. The sustained high level of steel imports has been associated with a substantial drop in the market value of steel products. The prevailing prices for commodities such as hot rolled sheet, cold rolled sheet, and many other products have fallen by 20 to 40 percent since 1996.

Substantial increases in energy prices, including natural gas and electricity, during the last few years have also affected domestic producers. Natural gas is used extensively in reheat and annealing furnaces, coke oven underfiring and blast furnace injection, as well as in direct reduced iron production. Electricity is necessary throughout the steel production process, with electric arc furnaces, of course, being particularly dependent on electricity costs and availability. Finally, in the last year, the domestic market for steel has declined as domestic industrial production in the United States has fallen. Industries, such as automotive and major appliances, that use significant amounts of steel have been particularly impacted.

The coke industry is comprised of two types of producers: Integrated and merchant. Integrated producers typically supply furnace coke for their own blast furnace facilities. Merchant producers may produce and sell furnace coke (used in blast furnaces), foundry coke (used in foundries to make iron castings) and other industrial coke. Both integrated and merchant producers of furnace coke have been affected by the trends described regarding iron and steel production. Foundry coke producers have been affected by falling automotive production, the largest consumer sector for iron castings. Foundry coke has also been affected by sharply increasing imports from China.

As a result of the increased imports, declining demand, and falling prices, the financial health of the domestic iron

and steel industry experienced a precipitous decline after 1997. Based upon publicly available sources, at least twenty companies, that could be subject to the iron and steel effluent guidelines, have filed for bankruptcy since 1997. The companies are Bethlehem Steel, LTV Steel, National Steel, Republic Technologies, Wheeling Pittsburgh Steel, Geneva Steel, Gulf States Steel, Acme Metals, Laclede Steel, Qualitech Steel, Northwestern Steel and Wire, Erie Forge and Steel, CSC Ltd., Heartland Steel, GS Industries, Trico Steel, Freedom Forge, J&L Structural Steel, Empire Specialty Steel and Riverview Steel. In aggregate, these companies represent more than a third of domestic steelmaking capacity. Of the bankrupt firms, Empire Specialty, Acme Steel, Laclede Steel, Qualitech Steel, Gulf States Steel, Northwestern Steel and Wire, CSC Ltd., and LTV Steel have ceased steelmaking operations, affecting over 15,000 employees.

The industry filed numerous countervailing duty and anti-dumping cases over the 1998-2001 period with the U.S. Department of Commerce and U.S. International Trade Commission (hereafter "ITC"), charging various countries (for example, Japan, Russia, China, and Brazil) with unfair trade practices concerning carbon steel products, stainless steel products, and foundry coke. The ITC ruled in favor of the U.S. industry in many cases (for example, hot rolled carbon sheet and carbon plate), meaning that it determined that the domestic industry was materially injured or threatened with material injury by the unfairly traded imports.

More significantly, on June 22, 2001, the Office of the United States Trade Representative requested the initiation of an investigation by the ITC of certain steel imports under the section 201 of the Trade Act of 1974. A later request from the Senate Finance Committee was consolidated under the same investigation. Investigations under this law may be requested when increased imports of a product from all countries are alleged to be a substantial cause of serious injury, or threat of serious injury, to a U.S. industry. The investigation does not require the finding of an unfair trade practice. The investigation is composed of two phases, the injury phase and, if an

affirmative injury determination is made, the remedy phase. In the remedy phase, the ITC recommends a remedy to the President, who decides what relief, if any, will be imposed. The remedy may consist of tariffs, quantitative restrictions, orderly marketing agreements, and trade adjustment assistance. In addition, the ITC may recommend that the President initiate international negotiations to address the underlying cause of the increase in imports or that he implement any other action authorized under the law that is likely to facilitate positive adjustment to import competition.

On October 22, 2001, the ITC affirmatively determined that 12 products (or product categories) are being imported into the U.S. in such increased quantities that they are a substantial cause of serious injury or threat of serious injury to the U.S. industry. On an additional four products (or product categories), the ITC was evenly divided, meaning these products will continue to be included in the investigation. The imported products covered by the investigation accounted in year 2000 for 27 million tons of steel valued at \$10.7 billion. The products include carbon steel slabs, plate, hot rolled sheet, cold rolled sheet, coated sheet, tin mill products, hot rolled bar and light structural shapes, cold finished bar, rebar, welded tube, stainless bar, stainless rod, tool steel, and stainless wire.

The next phase of the investigation is the remedy phase. The ITC voted on a remedy recommendation on December 7, 2001, and forwarded its findings and remedy recommendations to the President on December 20, 2001. The ITC recommended a four-year program of tariffs and tariff-rate quotas, with additional ad valorem duties of up to 20 percent in the first year and declining thereafter.

The President announced his decision on March 5, 2002, to impose temporary safeguards on key steel products to provide relief to those parts of the U.S. steel industry that have been most damaged by import surges. The level of relief varies by product with tariffs of 30 percent imposed on imports of plate, hot-rolled sheet, cold-rolled sheet, coated sheet, tin mill products, hot-rolled bar, and cold-finished bar and tariffs of 15 percent imposed on imports of rebar, stainless steel bar, and stainless steel rod. Imports of slab are subject to tariff rate quotas. Tariff rate quotas are two-part tariffs, with imports up to the quota subject to a lower duty and imports above the quota level subject to a higher duty. In the case of slab, the in-

quota volume is set at 5.4 million tons and the out-of-quota (i.e., above the quota level) tariff of 30 percent. The level of relief described reflects the initial safeguard measures, with periodic reductions throughout the three year duration of the measures. Canada and Mexico were excluded from the quota and tariff measures on all products. Developing countries that export only small quantities of steel to the U.S. were also excluded from the quota and tariff measures.

## V. Summary of Significant Decisions

### A. Decisions Regarding the Content of the Regulations

#### 1. New or Revised Effluent Limitations Guidelines and Standards

EPA has decided to revise effluent limitations guidelines and standards only for current Subpart A (cokemaking), Subpart B (sintering), Subpart C (ironmaking), and Subpart D (steelmaking), and to promulgate new effluent limitations guidelines and standards for new Subpart M (other operations). Also, as a result of EPA's technical and economic review, EPA is promulgating revised BAT limitations, NSPS and pretreatment standards for the cokemaking by-product recovery segment based on technologies that are different than those proposed. Specifically, EPA is promulgating effluent limits based primarily on ammonia still and biological treatment with nitrification for direct dischargers and pretreatment standards based primarily on ammonia still treatment for indirect dischargers. At proposal, EPA had designated the technology option as BAT-1, NSPS-1, PSES-1 and PSNS-1. Section VIII.A explains why the Agency is promulgating limitations and standards based on different model technologies than EPA proposed for the cokemaking subcategory.

For the sintering subcategory, EPA is revising the current regulation to add limitations and standards for one additional pollutant, 2,3,7,8-tetrachlorodibenzofuran (TCDF), while keeping the rest of the limits unchanged. The technology basis for new TCDF limitations and standards for the sintering subcategory remains unchanged from the proposal and is the same as the technology basis for the 1982 regulations except for the addition of mixed-media filtration. EPA is also establishing limitations of no discharge of process wastewater pollutants for new and existing direct dischargers and new and existing indirect dischargers for sintering operations with dry air pollution control systems.

As described in Section V.A.8, ammonia-N pretreatment standards do not apply to cokemaking, ironmaking, and sintering facilities discharging to POTWs with nitrification capability.

For the steelmaking subcategory, EPA is revising BPT, BCT, BAT, and PSES limitations for the semi-wet basic oxygen furnace (BOF) operations to allow discharge of process wastewater, when merited by safety considerations. As explained in the 2001 Notice of Data Availability (NODA) at 66 FR 10253, EPA is allowing discharge of process wastewater because certain safety concerns currently preclude some sites from balancing the water applied for BOF gas conditioning with evaporative losses to achieve zero discharge. Also in the steelmaking subcategory, for the semi-wet EAF operations, EPA is establishing limitations of no discharge of process wastewater pollutants for new direct dischargers and existing and new indirect dischargers, making these limitations equivalent to the previously promulgated BPT, BCT, and BAT limitations applicable to semi-wet electric arc furnace (EAF) operations. EPA received no comments on this proposed change, and identified none of the safety or production concerns discussed for semi-wet BOF operations.

The technology bases for the effluent limitations guidelines and standards for direct reduced iron segment and the briquetting segment of the new subpart M (other operations) are unchanged from proposal. In the case of the forging segment of the new subpart M, the technology basis at proposal was incorrectly described as high rate recycle and oil/water separation. The technology basis should have been described as high rate recycle, oil/water separation, and mixed-media filtration. Section VIII discusses the technology bases for each of these subcategories in more detail.

#### 2. Subcategorization Structure

In 2000, EPA proposed a subcategorization structure that was significantly different from the structure in the 1982 iron and steel rule (see 65 FR 81974-81975). Unlike the 1982 rule, EPA proposed to consolidate operations such as salt bath descaling, acid pickling, and other finishing operations into a single "Finishing Subcategory." Similarly, the Agency proposed to consolidate sintering and ironmaking into a single "Ironmaking Subcategory." The following table presents a comparison of the 1982 subcategorization scheme and the one EPA proposed in 2000:



TABLE V.A.1.—SUBCATEGORY COMPARISON OF 1982 AND THE PROPOSED REGULATIONS

Subcategories promulgated in 1982	Subcategories proposed in 2000	
A. Cokemaking ..... B. Sintering ..... C. Ironmaking ..... D. Steelmaking .....	A. Cokemaking. B. Ironmaking. C. Integrated Steelmaking .....	D. Non-Integrated Steelmaking and Hot Forming.
E. Vacuum Degassing F. Continuous Casting G. Hot Forming .....	E. Integrated and Stand Alone Hot Forming ...	D. Non-Integrated Steelmaking and Hot Forming.
H. Salt Bath Descaling ..... I. Acid Pickling ..... J. Cold Forming ..... K. Alkaline Cleaning ..... L. Hot Coating .....	F. Steel Finishing. G. Other Operations.	

The Agency proposed a new subcategorization scheme to reflect not only the modern state of the industry, in terms of both process and wastewater management, but also the experience that the Agency and other regulatory entities have gained from implementing the 1982 iron and steel effluent limitations guidelines and standards. EPA also expected that the revised subcategorization scheme would simplify the regulatory structure and reflect co-treatment of compatible wastewaters, which is currently practiced by the industry. As a result, many of the proposed subcategories would have included various operations that are regulated under different segments or subcategories in the 1982 rule. EPA also proposed a number of specialized definitions to support the subcategorization scheme.

In addition to the subcategory structure, EPA proposed segmentation changes in the proposed cokemaking, integrated and stand alone hot forming, non-integrated and stand alone hot forming, finishing, and the integrated steelmaking subcategories. First, EPA proposed to combine two 1982 segments in the cokemaking subcategory, “Iron and Steel” and “Merchant,” into a single “By-Product Recovery” segment because differences in wastewater flow rates observed in the 1982 rulemaking are no longer apparent within the current population of by-product coke plants. In addition to combining all by-product cokemaking operations into one segment, the Agency also proposed a new “Non-Recovery” segment to accommodate the two non-recovery coke plants. Second, for the proposed integrated steelmaking and hot forming subcategory, the non-integrated steelmaking and hot forming subcategory, and the steel finishing subcategory, EPA proposed segmenting based on whether facilities primarily

make stainless or carbon/alloy steels. Finally, EPA also proposed to eliminate from the rule references to the following obsolete operations: beehive cokemaking in the cokemaking subcategory, ferromanganese blast furnaces in the ironmaking subcategory, and open hearth furnace operations in the steelmaking subcategory.

While EPA did not receive any comments specific to the proposed subcategorization scheme, the Agency did receive a number of comments on the change in segmentation for the cokemaking subcategory. The commenters opposed EPA’s proposal to drop the segmentation on the basis of “iron and steel” and “merchant” coke plants; however, the commenters agreed with EPA’s assessment that production process and wastewaters from merchant coke plants are similar to those from the integrated “iron and steel” facilities. The Agency also evaluated potential economic differences between “merchant” and “iron and steel” facilities, but did not find substantial differences in profitability or other factors which might affect economic achievability, although some difference in facility size was observed. Some commenters also expressed confusion regarding the segmentation of stainless and carbon/alloy steels. No comments were received on eliminating provisions for beehive cokemaking, ferromanganese blast furnaces, or open hearth furnace operations.

As explained in Section V.B, based on comments, the Agency re-evaluated the economic conditions and technology bases of the proposed rule. The Agency decided to promulgate new or revised limits for only five subcategories: cokemaking, sintering, ironmaking, steelmaking, and other operations. Due to the small number of subcategories affected by today’s rule, the Agency has decided to retain the 1982 subcategory

structure with the addition of an “other operations” subcategory. As a result, the final rule covers the following 13 subcategories:

Subcategory A: Cokemaking (includes by-product and non-recovery operations)

Subcategory B: Sintering,  
 Subcategory C: Ironmaking,  
 Subcategory D: Steelmaking (includes basic oxygen furnace and electric arc furnace operations)

Subcategory E: Vacuum degassing,  
 Subcategory F: Continuous casting,  
 Subcategory G: Hot forming,  
 Subcategory H: Salt bath descaling,  
 Subcategory I: Acid pickling,  
 Subcategory J: Cold forming,  
 Subcategory K: Alkaline cleaning,  
 Subcategory L: Hot coating, and  
 Subcategory M: Other operations (includes forging, direct-reduced ironmaking, and briquetting).

For the cokemaking subcategory, today’s rule combines the “Iron and Steel” and “Merchant” segments into a newly-created “By-product” cokemaking segment for most regulatory purposes, although EPA is retaining the “Iron and Steel” and “Merchant” segments for purposes of reflecting the existing BPT limitations. EPA concluded that this was appropriate because the production processes, wastewater characteristics, and wastewater flow rates from all by-product recovery cokemaking operations, including merchant facilities, are similar.

EPA is also eliminating the segment in BAT for by-product coke plants with physical chemical treatment systems. EPA has determined that technology basis for BAT limitations promulgated in today’s rule are technically and economically achievable for all direct discharging by-product coke plants.

EPA is also creating a new cokemaking segment for non-recovery

operations and a new sintering segment for dry air pollution control systems for the reasons stated in the proposal. Because the promulgated rule makes no change to the hot forming, vacuum degassing, casting, or various finishing operations, the segmentation for these operations in the 1982 rule remains applicable. Finally, in today's rule, EPA is eliminating segments for the following obsolete operations: beehive cokemaking, ferromanganese blast furnaces, and open hearth furnaces.

### 3. Phenol Pass-Through Analysis for Cokemaking

Generally, EPA establishes pretreatment standards for pollutants regulated under BAT that pass through POTWs to waters of the U.S. or interfere with POTW operations or sludge disposal practices. In conducting its pass-through analysis, the Agency generally compares the median percentage of a pollutant removed by well-operated POTWs performing secondary treatment to the median percentage of a pollutant removed by BAT treatment. When the median percentage removed nationwide by well-operated POTWs is less than the median percentage removed by direct dischargers complying with the BAT effluent limits, EPA typically determines that the pollutant passes through.

The February 14, 2001 iron and steel notice explained that EPA planned to use an alternate procedure to determine whether or not the BAT pollutant phenol would pass through for wastewater from cokemaking operations. See 66 FR 10257. This notice explained that EPA planned to determine pass-through for phenol for the cokemaking subcategory using a methodology previously developed for phenol in the Organic Chemicals, Plastics, and Synthetic Fibers (OCPSF) guideline. Under this methodology, EPA determined in the OCPSF rule that phenol did not pass through because phenol is highly biodegradable and is treated by POTWs to the same non-detect levels (10 parts per billion (ppb) or 10 µg/L) that the OCPSF direct dischargers achieve. Additionally, like the OCPSF direct dischargers, the cokemaking direct dischargers receive significantly higher influent phenol concentrations than the POTWs, with the result that the direct dischargers showed higher removals than the performance at the POTWs. Therefore, EPA reasoned that application of the traditional approach to these facts would reflect the significant differences in influent concentrations rather than a real difference in the POTWs' ability to

treat phenols. As a result, EPA selected this alternate methodology because the traditional pass-through methodology failed to account for special circumstances presented by phenol in cokemaking wastewater.

The notice explained that, using this alternate methodology, phenol did not pass through in connection with cokemaking operations. The notice further explained that a supplemental analysis using more recent data from a well-operated POTW performing secondary treatment on process cokemaking wastewater supports this determination.

EPA did not receive any comments on the alternate methodology and continues to believe that this alternate methodology is appropriate for determining pass through for phenolic compounds for cokemaking operations. Consequently, for this final rule, EPA has determined, with respect to by-product cokemaking, that phenolic compounds do not pass through. Accordingly, EPA has not established any pretreatment standards for phenols (4AAP) for that segment.

### 4. Regulation of Phenols (4AAP)

EPA regulated the non-conventional bulk parameter phenol (measured as 4 amino-antipyrene (4AAP)) in 1982 for cokemaking, sintering, and blast furnace ironmaking. In 2000, EPA proposed regulation of the compound phenol (as measured with a gas chromatograph-mass spectrometer (GC-MS)) instead of the bulk parameter phenols (4AAP), because, in general, it believes that, in effluent limitations guidelines, targeting specific pollutants is often more appropriate than regulating a parameter that measures a variety of pollutants. For reasons presented in comments, EPA has decided to continue to regulate phenol (measured as 4AAP) and is not making the change as proposed.

EPA received one comment supporting the proposed approach on the grounds that it would give a much more reliable measure of the actual amount of phenol in the discharge. However, several other commenters disagreed with EPA's proposal. These comments raised three principal objections. First, they expressed concern that changing the regulated parameter from 4AAP to phenol would increase costs for both sampling and analyses, with no environmental benefit. Based on a survey of three labs and assuming two sample events per week, costs at one location would likely increase by over \$25,000 per year. Second, the comments asserted that the proposed changes could present unintended adverse environmental effects. One

commenter reported that its facility runs several operational samples for phenols (4AAP) as part of the daily routine, which allows it to identify and respond to potential upset conditions. The time required to run the GC-MS analytical method for phenol and the instrumentation required, the commenter said, would discourage onsite monitoring for wastewater treatment process control purposes. Finally, commenters noted that, because phenol is a priority pollutant, it is not eligible for CWA Section 301(g) waivers. These waivers allow facilities to request a variance from effluent limitations for nonconventional bulk pollutants such as phenols (4AAP) based upon cost and economic impact considerations, provided that the facilities comply with all local water quality-based effluent limitations. See Section XIII.C for more information regarding 301(g) waivers. Commenters stated that by regulating phenol instead of the bulk parameter phenols (4AAP), EPA would eliminate the option of obtaining such a waiver. Commenters further stated that because many iron and steel facilities are currently regulated under a 301(g) waiver for phenols (4AAP), this would substantially increase the costs of the proposed rule, and that EPA did not account for these costs at the time of its proposal.

EPA reviewed its record on this issue. The data show that there are two primary phenolic compounds present in iron and steel wastewater: phenol, and 2,4-dimethylphenol. Furthermore, the data show that by controlling the bulk parameter phenols (4AAP), both of these compounds are effectively controlled. Therefore, while EPA agrees with the comment that regulating phenol would provide a more reliable measure of the actual amount of phenol, EPA does not believe that this degree of precision is necessary in view of the other considerations identified in comments. EPA agrees that compliance monitoring costs are greater for phenol than for the bulk parameter phenols (4AAP), and EPA does not want to discourage routine monitoring that allows a mill to identify and respond quickly to potential upset conditions. Also, in light of the current financial conditions of the industry, EPA wants to ensure that iron and steel facilities continue to have the option of the 301(g) waiver. EPA has been unable to find anything in its database to suggest that regulating the bulk parameter phenols (4AAP) instead of the compound phenol would negatively impact the environment. Consequently, after careful review of comments received and its database,

EPA had concluded that it is appropriate to continue to regulate the bulk parameter phenols (4AAP) rather than phenol.

#### 5. Retention of the Central Treatment Provision

Under the applicability Section of the 1982 iron and steel regulation, 40 CFR 420.01(b), EPA identified 21 plants that were temporarily excluded from the provisions of Part 420 because of economic considerations. This exclusion would not be granted unless 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). At the time of the 2000 proposal, EPA believed that none of the facilities currently had permits based on the central treatment provision and proposed to remove it from Part 420.

The Agency did not receive any comments supporting the removal of the central treatment provision. Rather, commenters asked EPA to expand the provision. Commenters requested this expansion because they were concerned that the costs of the proposed rule would be too high if the limits and standards were made more stringent. Commenters stated that economic conditions were similar to those in 1982 and that the central treatment provision should remain a viable compliance option in Part 420.

EPA disagrees with commenters that it should expand the central treatment provision. Because of the prevailing economic situation in the iron and steel industry, technological reasons in some subcategories, and performance issues in others, EPA has decided to go forward with new or revised regulations for only five subcategories (cokemaking, sintering, ironmaking, steelmaking, and a subcategory for other operations). The five subcategories affected by the final rule have minimal impact on the 21 eligible mills. With the substantially reduced projected economic burden on the industry, the Agency does not believe that expanding § 420.01(b)(2) is necessary.

EPA also reviewed its database in determining whether it should remove the central treatment provision as proposed. EPA confirmed that very few of the twenty-one facilities applied for the central treatment waiver provision. However, contrary to its belief at the time of the proposal, EPA found that, of those that did apply, at least one mill currently has a permit based on the central treatment provision for one

parameter (zinc). Because EPA has decided to leave the ironmaking subcategory unchanged from the 1982 regulation, this facility is likely to continue to need the central waste treatment provision available in § 420.01(b). This particular company is projected to need to spend at least two times the model costs to come into compliance with the current Part 420 requirements for this one parameter, and would likely remain eligible for the central treatment waiver provision. One additional facility may also have a current permit based on the central treatment provision.

Based upon EPA's review, today's final rule leaves the central treatment provision (§ 420.01(b)(2)) unchanged from the 1982 regulation. This allows any mill whose permit is based on this provision to continue to use it, but does not extend the provision to any additional mills.

#### 6. Production Basis for Calculating Permit Limits

The limitations and standards promulgated today are expressed in terms of mass (e.g., lbs/day or kg/day). This means that NPDES permit limitations derived from today's rule similarly must be expressed in terms of mass. See 40 CFR 122.45(f). These requirements are for direct discharging facilities. Similar requirements exist for indirect discharging facilities and are found in 40 CFR 403.6(c)(3). In order to convert effluent limitations guidelines and standards expressed as pounds/thousand pounds to a monthly average or daily maximum permit limit, the permitting authority would use a production rate with units of thousand pounds/day. EPA's regulations at 40 CFR 420.04, 122.45(b)(2), and 403.6(c)(3) require that NPDES permit and pretreatment limits be based on a "reasonable measure of actual production," but do not define the term. In its 2000 proposal, EPA solicited comment on whether to codify a definition of that term in part 420 for the iron and steel category. After considering the comments and reviewing the rulemaking record, EPA has decided not to codify a definition of "reasonable measure of actual production."

##### a. Background

As explained above, the current iron and steel regulation does not define what constitutes a "reasonable measure of actual production," although it offers the following examples: "production during the high month of the previous year, or the monthly average for the

highest of the previous five years." See 40 CFR 420.04.

EPA believes that some NPDES permitting and pretreatment control authorities have identified production rates that do not reflect a "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.

In addition, industry stakeholders have also noted that permitting and pretreatment control authorities interpret the reasonable measure of actual production inconsistently. Accordingly, iron and steel industry stakeholders requested that EPA publish a consistent policy on how to implement this requirement. Industry stakeholders have indicated that (1) in order to promote consistency, EPA should codify the method used to determine appropriate production rates for calculating allowable mass loadings, 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.

##### b. 2000 Proposal

Because the "reasonable measure of actual production" concept is inconsistently applied, EPA proposed in 2000 to include in its final iron and steel rulemaking specific direction on making this determination. EPA solicited comment on four alternative approaches to implement the "reasonable measure of actual production." See 65 FR at 82029–82031. Each alternative excluded, from the calculation of operating rates, production from unit operations that do not generate or discharge process wastewater. EPA proposed the following four alternative definitions of reasonable measure of actual production: (a) include production only from units that can operate simultaneously; (b) apply multi-tiered permit limits with different limits for different rates of production as defined in Chapter 5 of U.S. EPA NPDES Permit Writers Manual, EPA 833-B-96-003; (c) use the average daily production from the highest production year during the previous five years; and

(d) use one of the methods for monthly average limits but use concentration limits for daily maximum limits.

Each alternative had its supporters and detractors in comments. Several commenters preferred alternative A, but incorrectly described the alternative as the high month of production over the past five years. No commenters provided data that showed they would be unable to meet the proposed limits and standards under any of the four alternatives.

#### c. Final Rule

At this time, EPA has decided not to revise section 420.04 in any respect. EPA has also decided not to codify a definition for the term "reasonable measure of actual production" applicable to part 420. The Agency has thoroughly evaluated all comments supporting other interpretations and is not convinced that departing from past practices is justified here. Consequently, EPA concludes that continuing to allow flexibility to permitting and pretreatment control authorities to apply site-specific factors in determining a reasonable measure of production is appropriate.

#### 7. Applicability of Part 420 to Electroplating and Certain Finishing Operations

At the time of the proposed rulemaking, the Agency determined that certain facilities subject to the 1982 iron and steel rule operated processes that more closely resemble those in facilities to be covered by the Metal Products and Machinery (MP&M) rule than those found in iron and steel facilities. So that these facilities might be addressed under a regulation that best fits them, EPA proposed to move these types of facilities into the MP&M category, which would be regulated under the part 438 effluent limitations guidelines and standards, when finalized. Specifically, EPA proposed to move the following operations from iron and steel to MP&M: surface finishing or cold forming of steel bar, rod, wire, pipe or tube; batch electroplating on steel; continuous electroplating or hot dip coating of long steel products (e.g. wire, rod, bar); batch hot dip coating of steel; and steel wire drawing. These operations produce finished products such as bars, wire, pipe and tubes, nails, chain link fencing, and steel rope.

EPA received several comments regarding the proposed transfer. The commenters did not support such transfer for two main reasons. First, the stand alone wire companies commented that they would be at a competitive disadvantage because they believe

certain non-integrated facilities that also produce and sell wire and wire products would continue to be regulated under part 420 alone. EPA disagrees with the commenters on this issue because, like stand alone wire facilities, the wire operations of the non-integrated steelmaking facilities would be subject to the MP&M category, as regulated under the part 438 effluent limitations guidelines and standards. EPA expects that the discharge permits for these non-integrated facilities would be based on a combined waste stream formula approach.

Additionally, the commenters also claimed that the transferred operations are similar to various operations in the proposed iron and steel finishing subcategory. Furthermore, the commenters also felt that EPA has not demonstrated any significant differences in the wastewater characteristics between the proposed to be transferred operations and the proposed iron and steel finishing operations. Since proposal, EPA revisited the record of the iron and steel finishing operations (all operations with available influent data) and compared the associated wastewater characteristics to those from the wire facilities that were sampled under the MP&M rulemaking effort. EPA confirmed that the wastewater characteristics from the operations EPA proposed to transfer indeed resemble more closely those from the MP&M operations than those from the iron and steel finishing operations. For instance, the average lead and zinc concentrations from the wire facilities are one to three orders of magnitude higher than those from the iron and steel finishing facilities. On the other hand, the concentrations for these pollutants are within the range of pollutant concentrations found in similar MP&M operations.

Furthermore, most of the unit operations present in the facilities EPA proposed to transfer are the same as those found in the MP&M facilities, while only around 30% of these operations are found in the iron and steel finishing facilities. Lastly, EPA performed a comparison of flow rates between the facilities EPA proposed to transfer and the proposed finishing subcategory. The average flow rate from the proposed finishing subcategory is approximately half billion gallons per year, while the average flow rate from the facilities EPA proposed to transfer is less than 30 million gallons per year. EPA also notes that the average flow rate from the general metals subcategory of the MP&M rule is of the same order of magnitude as that from the facilities EPA proposed to transfer. As a result of

the above evaluations, EPA preliminarily concluded that the operations EPA proposed to transfer are more appropriately regulated in part 438, the MP&M effluent limitations guidelines and standards.

EPA also proposed moving certain electroplating operations currently subject to the Metal Finishing Part 433 effluent limitations guidelines and standards into the revised part 420. Commenters strongly opposed the incorporation of the continuous electroplating of flat steel products (e.g., sheet, strip, plate) into part 420, indicating the preference for electroplating operations of all types to be considered as a whole (e.g., under the part 433 regulations or eventually the MP&M regulations). For the reasons stated in the comments, EPA agrees. Therefore, EPA is not including wastewater discharges from continuous electroplating of flat steel products in part 420.

For the reasons set forth above, EPA believes that the following operations would be most appropriately regulated as MP&M facilities: surface finishing or cold forming of steel bar, rod, wire, pipe or tube; batch electroplating on steel; continuous electroplating or hot dip coating of long steel products (e.g. wire, rod, bar); batch hot dip coating of steel; and steel wire drawing. However, EPA will not decide whether to establish an MP&M category in part 438 until December 2002. Therefore, it would be premature in today's final rule to change the applicability of the existing iron and steel rule to exclude the operations and EPA has not done so. If EPA finalizes limitations and standards for subcategories of the MP&M regulation (which would encompass these operations), EPA will also amend the applicability section of the iron and steel rulemaking to reflect this change. Until then, these operations continue to be regulated under part 420, respectively.

#### 8. Ammonia-N Standard Waiver for Indirect Discharging Cokemaking, Ironmaking, and Sintering Operations

In today's final rule, EPA is setting or retaining pretreatment standards for ammonia for the cokemaking and sintering subcategories because of the high loads of ammonia in wastewaters from those subcategories to POTWs that do not have nitrification capability. However, EPA is aware that some POTWs treating iron and steel wastewaters from these subcategories have nitrification capability. Consequently, in 2000, EPA proposed to waive the ammonia-N pretreatment standard for the ironmaking (including

sintering) subcategory if the receiving POTW's operations included effective operation of a nitrification system.

EPA received several compelling comments supporting this proposal, and encouraging EPA to extend this mechanism to the cokemaking subcategory also. No commenters opposed this mechanism.

Upon a final review of its record, EPA continues to believe this waiver is appropriate and agrees with commenters that it should apply to the cokemaking, sintering, and ironmaking subcategories. EPA concludes this waiver will be equally protective of the environment and lead to potential cost savings for some iron and steel facilities. Thus, ammonia-N pretreatment standards do not apply to cokemaking, ironmaking, and sintering facilities discharging to POTWs with nitrification capability. As a further point of clarification, EPA is defining nitrification capability as described in the following paragraph.

POTWs with nitrification capability oxidize ammonium salts to nitrites (via Nitrosomas bacteria) and then further oxidize nitrites to nitrates via Nitrobacter bacteria to achieve greater removals of ammonia than POTWs without nitrification. Nitrification can be accomplished in either a single or two-stage activated sludge system. In addition, POTWs that have wetlands which are developed and maintained for the express purpose of removing ammonia with a marsh/pond configuration are also examples of having nitrification capability.

Indicators of nitrification capability are: (1) biological monitoring for ammonia oxidizing bacteria (AOB) and nitrite oxidizing bacteria (NOB) to determine if the nitrification is occurring, and (2) analysis of the nitrogen balance to determine if nitrifying bacteria reduce the amount of ammonia and increase the amount of nitrite and nitrate.

#### 9. Nitrates in Acid Pickling Wastewater

In today's final rule, EPA is not establishing nitrate limits for acid pickling operations. 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. This technology comprises removal of dissolved metals (e.g., 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.

Commenters provided information to the Agency on the efficiency and performance of acid purification technology, which indicated EPA had substantially overestimated the capability of acid purification units in the proposed rule. No information on potential alternative pollution control equipment was provided in response to the solicitation for cost and performance data. The Agency was also unable to acquire sufficient information on alternative pollution control technologies to provide a best available technology basis for the effluent limitations guidelines and standards.

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. EPA expects this problem to be addressed through BAT limitations established on a site-specific best professional judgment basis or through water quality-based effluent limitations. For further discussion of the possible technological alternatives for nitrate control in site-specific circumstances, please see Chapter 8 of the TDD.

#### B. Decisions Regarding Methodology

##### 1. Economic Analysis Methodology

This section presents several important adjustments made to the methodology since proposal. A more detailed discussion of EPA's methodology for analyzing the economic achievability of the candidate BAT options is presented in Section X.C of this preamble and in the EA.

In response to the challenges represented by the significant industry downturn described in Section IV, EPA made two revisions to the economic analysis methodology it employed at proposal. In the case of forecasting future industry cash flows, the Agency added two additional forecast methods to the three used in the proposal. Two of the models used at proposal explicitly address the sharp downturn in the industry after 1997 but differ in reflecting the strength and duration of recovery and subsequent downturns. That is, both address the cyclicity seen in the iron and steel industry, but with differing magnitudes and timing. The third forecasting method used at proposal is a three-year average (1995 to

1997) to provide an upper-bound analysis. For this final rule, EPA employed two additional forecast methods to reflect to the maximum extent possible the effect of the industry downturn. The fourth forecasting method is a six-year average covering 1995 to 2000, with the years 1998 through 2000 scaled by industry level performance. The fifth forecasting method uses only the year 2000 as a lower-bound analysis.

The second revision to the economic methodology since proposal is modification of the scoring test to evaluate potential economic impacts. EPA calculates the baseline status of a site as the present value of forecasted earnings. With five forecasting methods, there are five ways to evaluate each site. If, using a particular forecast method, a site's baseline status is negative (negative present value of forecasted earnings), EPA assigned a score of "1" for that forecasting method. A single site, then, may have a score ranging from zero to five (with five indicating negative present value of forecasted earnings under all five forecasts). Similar to the methodology at proposal, EPA considers any sites with negative present value of forecasted earnings in the majority of cases (in this case, a score of "3" or higher) to be a baseline closure.

Then for all sites considered viable in the baseline, 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 five forecasting methods, there are five ways to evaluate each site. If, using a particular forecast method, a site's post-regulatory status is negative (after-tax present value of regulatory costs exceeds present value of forecasted earnings), EPA assigned a score of "1" for that forecasting method. A single site, then, may have a score ranging from zero to five (with five indicating that the after-tax present value of regulatory costs exceeds present value of forecasted earnings under all five forecasts). In an effort to reflect the significant industry downturn, the Agency has chosen to reflect any incremental change in the score from the baseline condition to the post-regulatory condition due to regulatory compliance costs as a potential closure.

One additional item of note was incorporated into the economic analysis of the rule since proposal. Two proposed rules being undertaken by the Agency's Office of Air Quality Planning and Standards may impact iron and steel facilities potentially subject to the current rule: Coke Ovens: Pushing,

Quenching & Battery Stacks (66 FR 35325) and Integrated Iron and Steel (66 FR 36835). As a result, the final economic analysis incorporates in the economic condition of each potentially affected facility and firm the potential regulatory costs projected for the aforementioned proposed rules. This approach is consistent with existing Agency and OMB guidance on conducting economic analysis. Further, the other potential rulemakings represent expenditures which are projected to occur during the analytical and compliance time horizon and the costs must be reflected to insure the Agency does not underestimate adverse economic impacts.

## 2. Selection of Facilities With Model Treatment and Evaluation of Available Data Sets in Establishing Long Term Averages

EPA uses long term averages (LTAs), which represent the pollutant concentrations achievable, and production normalized flows (PNFs), which reflect volumes of wastewater generated, by model facilities in order to calculate the effluent limitations guidelines and standards in today's rule. See the TDD for more details. EPA received a number of comments on the ability of existing facilities to achieve both the LTAs and the PNFs. This section explains the procedure EPA used to select the BAT facilities upon which it based its LTAs and its updated data editing procedures for LTA and variability calculations. For a discussion of PNFs, see Section V.B.3 and Chapter 13 of the TDD.

First, EPA evaluated each data set to determine what technology or series of technologies the data represented. In this manner, EPA eliminated many data sets because they did not represent a technology basis considered during development of this rule. In a few instances, EPA included data from facilities that employ technologies in addition to the technology bases being considered. In these cases, EPA had data from intermediate sampling points representing the model technologies; in other words, the data EPA employed reflect only the application of technologies under consideration. Next, EPA reviewed the remaining data sets to ensure that each facility was effectively operating its technologies. For example, EPA eliminated facilities that experienced repeated operating problems with their treatment systems or have discharge points located after addition of significant amounts (i.e., greater than 10 percent by volume) of non-process water.

For the data sets that remained, EPA performed a detailed review of the data and all supporting documentation accompanying the data. This includes both EPA sampling data and industry-supplied data (often referred to as industry self monitoring data (ISMD)). EPA performed this review to ensure that the data were obtained during a treatment system's normal operating conditions and to ensure that the data accurately reflect the performance expected by the BAT treatment systems. Thus, EPA excluded data that were collected while a facility was experiencing exceptional incidents or upsets.

After determining the data sets to be included to calculate LTAs and variability for each technology option under consideration for the final rule, EPA applied further data editing criteria on a pollutant-by-pollutant basis. For facilities where EPA possessed paired influent and effluent data, it performed a long-term average test. The test looks at the influent concentrations to ensure a pollutant is present at sufficient concentration to evaluate treatment effectiveness. If a pollutant failed the test (i.e., was not present at a treatable concentration), EPA excluded the data for that pollutant from its LTA and variability calculations. In this manner, EPA would ensure that its limitations resulted from treatment and not simply the absence of that pollutant in the wastestream. In many cases, however, industry supplied EPA with effluent data, but not the corresponding influent data. In these cases, EPA used the effluent data without performing a long-term average test. EPA decided to use these data for two reasons. First, EPA wanted to include as much data as possible in its calculations. Second, the vast majority of pollutants for which industry supplied self-monitoring data are pollutants regulated in the existing iron and steel regulation; EPA has already established the presence of the regulated pollutants in treatable levels in iron and steel wastestreams. Therefore, EPA is confident that these effluent data represent effective treatment and not the absence of the pollutant in the wastestream.

Lastly, in some cases, EPA also had information that the technology at a particular facility, while effective overall, was ineffective for individual pollutants. In these instances, EPA excluded the data from that facility for that particular pollutant only.

The Agency then used the remaining data from the facilities with the model technology basis to calculate the LTA, the associated daily and monthly variability factors, and the limitations.

Chapter 14 of the Technical Development Document provides more detailed information on EPA's data editing criteria and the long-term average test. In addition, the final rulemaking record contains supporting documentation on all data exclusions.

## 3. Reassessment of Production-Normalized Flows (PNFs)

EPA performed a comprehensive review of the data sets used and analyses performed to determine the model PNFs. EPA's revised analyses are described in Section 13 of the TDD, with additional documentation provided in the rulemaking record. The purpose of the review was to identify and correct any errors in the data sets and to ensure that the resulting model PNFs are technically achievable for all facilities in each subcategory and segment. EPA's revised PNF analyses considered age of equipment and facilities, type of process employed, products produced (incorporates product quality needs), geographic location, non-water quality impacts (including air pollution regulations and energy), compliance costs, storm water considerations, and seasonal variation. EPA also considered combinations of these factors and evaluated the pollutant control upgrades considered for each facility to ensure the model PNFs and LTAs are technically feasible for all facilities in each subcategory and segment. In addition, EPA considered whether any individual facilities achieve the model PNFs and LTAs simultaneously, but did not include this factor as a requirement in determining the model LTAs and PNFs.

For two subcategories, ironmaking and steel finishing, EPA's subsequent analyses concluded that the model PNFs were not technically achievable for all facilities, and this was one factor in EPA's decision to retain the existing effluent limitations guidelines and standards for these subcategories as discussed in Sections VIII.C and VIII.H. EPA also made minor adjustments to the model PNFs for some other subcategories and segments.

## 4. Changes in Methodology for Determining the Baseline Loadings and Average Baseline Concentrations

An important factor in calculating current or baseline pollutant loadings for a facility is the concentration of each pollutant in a facility's discharge. When possible, EPA determined these pollutant concentrations based on information reported by that facility. However, EPA does not have this information for every pollutant at every iron and steel facility. In these

instances, EPA needed to develop a methodology to estimate these concentrations. Consequently, for each subcategory under consideration, where site-specific data are available EPA calculated the site-specific baseline concentrations for each pollutant before averaging the site-specific values across the subcategory to obtain the subcategory-specific average baseline concentrations. These values were then applied to facilities and/or pollutants for which EPA lacked specific data. For some subcategories, EPA estimated baseline concentrations for different technologies, while for others it developed a single set of concentration estimates. At the time of the proposal, EPA eliminated data from facilities that were used in its LTA calculations (i.e., "BAT facilities"). After a review following the proposal, EPA realized that this procedure assumed that all facilities for which EPA did not have specific pollutant loading calculations were performing at a level less than BAT. EPA's database does not support this conclusion. Consequently, for the final rule, EPA has included all data, including that representing "BAT facilities," in its average pollutant baseline calculations.

In addition, for the proposal, EPA estimated baseline pollutant concentrations for indirect and direct dischargers separately. After a review of its record, EPA recognized that, except for conventional pollutants, effluent pollutant concentrations are largely dependent on the treatment technology used rather than a facility's discharge status. This is not the case for conventional pollutants, however, because most indirect dischargers are not required to control or optimize their treatment systems for the removal of conventional pollutants because they are treated by the receiving POTW. Consequently, for the final rule, except for conventional pollutants, EPA has not distinguished between direct and indirect discharging facilities in estimating baseline pollutant concentrations. Chapter 11 in the TDD contains additional information on EPA's pollutant loadings and average baseline concentration calculations.

#### 5. Determination of POTW Percent Removal Estimates

In its analyses at the time of the proposal, EPA used its traditional approach to determine POTW performance (percent removal). POTW performance is a critical component of the pass-through methodology EPA uses to identify pollutants to be regulated for PSES and PSNS. In addition, the proposal discussed that EPA was

considering revising its traditional methodology for determining POTW performance. Specifically, it discussed and requested comment on possible revisions to the methodology EPA uses to calculate POTW percent removals using data from 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." See 65 FR 82012-82013.

EPA received only one comment on the methodology changes. As these changes would affect a wide range of industries, EPA had hoped to engage a much broader audience. Consequently, for this final rule, EPA continues to use its traditional approach. EPA also performed its analyses using the revised methodology. EPA found that its conclusions would be the same using either methodology.

As a further point of clarification, EPA also noticed the possible revisions in its POTW performance methodology in its proposed Metal Products and Machinery (MP&M) effluent guidelines and standards (66 FR 424). EPA is currently re-visiting this issue for that rulemaking.

#### VI. Scope/Applicability of the Regulation

The universe of facilities that are subject to 40 CFR part 420 includes facilities engaged in iron and steel making operations using blast furnaces, basic oxygen furnaces (BOFs), or electric arc furnaces (EAFs). Part 420 also applies to metallurgical cokemaking facilities and stand-alone facilities engaged in hot forming and/or finishing of steel. In a change from the 1982 regulations, today's rule also applies to facilities engaged in other related operations such as direct iron reduction, forging, and iron briquetting. On the other hand, today's rule no longer applies to obsolete operations such as beehive cokemaking, ferromanganese blast furnaces and open hearth furnaces.

A detailed discussion of iron and steel wastewaters is provided in Chapter 7 of the TDD. In summary, all wastewater discharged to a receiving stream or introduced to a publicly owned treatment works from a facility that is within the scope of one of the subparts is subject to the provisions of part 420. See 40 CFR 420.01(a).

#### VII. Industry Description

EPA estimates there are 254 facilities owned by 115 companies in the iron and steel industry. The iron and steel facilities are located throughout the U.S. with a high concentration of integrated steelmaking and cokemaking facilities

in the midwest and northeast. The smaller stand-alone forming and finishing facilities are generally located near larger steel manufacturing sites.

EPA has identified general processes typically found at iron and steel facilities. The following is a brief description of these key manufacturing processes.

##### *Cokemaking*

This process turns carbon in raw coal into metallurgical coke, which is subsequently used in the ironmaking process. There are two types of cokemaking operations: By-product and non-recovery. In by-product coke plants, metallurgical coke is produced by distilling coal in refractory-lined, slot-type ovens at high temperatures in the absence of air. In non-recovery coke plants, coal is made into coke in negative pressure, higher temperature coke ovens.

In by-product coke operations, the moisture and volatile components generated from the coal distillation process are collected and processed to recover by-products, such as crude coal tars, light crude oil, etc. Another type of cokemaking process is performed in non-recovery plants. These facilities use higher temperature ovens which destroy volatile organics, and they do not recover any by-products. Furthermore, their negative pressure coke ovens also ensure no leakage of air and smoke to the atmosphere.

In by-product coke plants, wastewater such as waste ammonia liquor is generated from moisture contained in the coal charge to the coke ovens, and some wastewater is generated from the by-product recovery operations. The non-recovery coke plants, on the other hand, do not generate any process wastewater.

##### *Sintering*

Sinter plants upgrade the iron content of ores and recover iron from a mixture of wastewater treatment sludges, mill scale from integrated steel mills, and fine coke particles (also known as coke breeze) from cokemaking operations. In sinter plants, the iron source mixture is combined with limestone and charged to a furnace. 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 furnace. No process wastewater is generated from dry air pollution control systems.

##### *Ironmaking*

In 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, refined iron ores, and sinter. Preheated air is blown into the bottom of the furnace and exits the furnace top as blast furnace gas in enclosed piping. The off-gas 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 ironmaking blast furnace operations.

#### *Steelmaking*

Steelmaking in the United States 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, while 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. Off-gases from the furnace are controlled by one of three wet air pollution control methods: Semi-wet, wet-open, and wet-suppressed. Wastewaters are generated from the wet air pollution control devices. On the other hand, non-integrated mills use EAFs to melt and refine a metallic charge of scrap steel. In addition, most mills operate EAFs with dry air cleaning systems, which produce no process wastewater discharges. There are a small number of wet and semi-wet systems.

#### *Vacuum Degassing/Ladle Metallurgy*

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

Likewise, ladle metallurgy is also a batch process where 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 generate any process water.

#### *Casting*

This process continuously casts the molten steel into semi-finished shapes after the vacuum degassing and/or ladle metallurgy processes. The continuous casting machine includes a receiving vessel for molten steel, water-cooled molds, secondary cooling water sprays, containment rolls, oxygen-acetylene torches for cutoff, and a 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. The other main casting operation type is ingot casting, in which molten steel is poured into ingot molds.

#### *Hot Forming*

In this process, ingots, blooms, billets, slabs, or rounds are heated to rolling temperatures so that the products will form under mechanical pressure into semi-finished shapes for further hot or cold rolling or as finished shapes. Process water is used for scale breaking, flume flushing, and direct contact cooling.

#### *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 various 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 scrubber water.

#### *Cold Forming*

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

#### *Hot Coating*

This process immerses pre-cleaned steel into baths of molten metal. Hot coating is typically used to improve resistance to corrosion, and for some products, to improve appearance and

ability to hold paint. Wastewaters result principally from cleaning operations prior to the molten bath.

#### *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 non-integrated steelmaking process 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*

This process of agglomeration forms materials into discrete shapes of sufficient size, strength, and weight so that the material can serve as feed for subsequent processes. Briquetting does not generate process wastewater.

#### *Forging*

This is a hot forming operation in which a metal piece is shaped by hammering or by processing in a hydraulic press. Process wastewaters are generated from direct contact cooling water.

The data collected for this rulemaking indicate that, in the past 25 years, much of the steel manufacturing industry has shifted from generally larger, older integrated facilities to newer, smaller non-integrated facilities. In addition, there is a substantial trend toward the establishment of specialized, stand-alone finishing facilities that process semi-finished sheet, strip, bars, and rods obtained from integrated or non-integrated facilities.

Of the 254 iron and steel manufacturing facilities, approximately 133 discharge directly to surface waters of the U.S., 70 discharge indirectly to POTWs, and 56 facilities achieve zero discharge (either because they do not generate process wastewater or because they dispose of their process wastewater through underground injection or other methods not directly involving waters of the United States). Some facilities may discharge both directly to surface waters of the U.S. and to POTWs. In 1997, process wastewater discharges ranged from less than 200 gallons per day for a stand-alone finisher to more than 50 million gallons per day for a larger integrated facility.

### **VIII. The Final Regulation**

For a detailed discussion of all technology options considered in the development of today's final rule, see the proposal (65 FR at 81982-82096) and Chapter 9 of the TDD.



Based on the record before it, EPA has determined that each model technology EPA has chosen as a basis for today's revised BAT and PSES limitations is technically available. EPA has also determined that each is economically achievable for the segment to which it applies. Further, EPA has determined, for the reasons set forth in this section, that none of the chosen technologies has unacceptable adverse non-water quality environmental impacts. Finally, EPA has determined that each chosen technology 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 has selected as its model BAT and PSES technologies for today's rule.

In selecting its NSPS technologies for the segments and subcategories being revised today, EPA considered all of the factors specified in CWA Section 306, including the cost of achieving effluent reductions. The 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 NSPS options and concluded that these impacts are acceptable. EPA therefore concluded that the NSPS technology bases chosen for these segments constitute the best available demonstrated control technology for those segments. (These findings also apply to the PSNS for these segments.)

EPA is making no changes to the BPT and BCT limitations previously promulgated for part 420, except for revisions to BPT and BCT limitations for semi-wet BOF operations and the deletion of limitations for obsolete operations (beehive cokemaking in the cokemaking subcategory, ferromanganese blast furnaces in the ironmaking subcategory, and open hearth furnace operations in the steelmaking subcategory). Similarly, EPA is retaining, by cross reference to title 40 of the Code of Federal Regulations, revised as of July 1, 2001, the NSPS promulgated in 1982 in Subparts A and B for new sources that commenced discharge after November 19, 2012 but before November 18, 2002,

provided that the new source was constructed to meet those new standards. EPA is also retaining by cross reference, the pretreatment standards for new sources previously promulgated for Subparts A and B for facilities constructed between November 19, 2012 and November 18, 2002, except that EPA is rescinding the pretreatment standards for phenols for Subpart A because EPA has determined in this rulemaking that phenol (measured as 4AAP) does not pass through with respect to the cokemaking subcategory.

This implements the provisions of CWA Section 306(d), which provides that new sources may not be regulated to achieve more stringent technology-based limitations (e.g., revised BAT) for pollutants regulated by NSPS for approximately ten years following completion of construction. EPA's regulations at 40 CFR 122.29(d)(1) specify the precise duration of this grace period. Thereafter, the discharger is subject to any more stringent applicable BPT/BCT/BAT limitations. This means that facilities currently subject to the 1982 NSPS or PSNS remain subject to those standards during a ten-year period beginning on the date of completion of the new source or during the period of depreciation or amortization of such facility, whichever period ends first. After such time, the BAT and PSES limitations promulgated today apply to those dischargers for toxic and nonconventional pollutants. For direct dischargers, limitations on conventional pollutants will be based on the formerly promulgated BPT/BCT limitations corresponding to the BPT/BCT segment applicable to the discharger or on the 1982 NSPS for conventional pollutants, whichever is more stringent.

#### A. Cokemaking Subcategory

EPA is promulgating limits and standards for two segments within the cokemaking subcategory: by-products recovery cokemaking, and non-recovery cokemaking. EPA is also removing the beehive cokemaking segment from the cokemaking subcategory because the beehive process of cokemaking is obsolete and has not been used in the United States for over 25 years.

##### 1. Best Practicable Control Technology (BPT)

EPA is not revising any existing BPT limitations for the by-products recovery segment of this subcategory (which in the 1982 regulation was divided between "iron and steel" and "merchant" coke plants). EPA did not propose such revisions, but did solicit comment on the issue in the notice. EPA received no comment on the issue, so

EPA is not revising the existing BPT limitations.

EPA is establishing BPT limitations for the non-recovery segment of the cokemaking subcategory. These limitations are: no discharge of process wastewater pollutants. See Chapter 7.1.1 of the TDD for more information about what constitutes process wastewater for this segment. Because non-recovery cokemaking operations do not generate any process wastewater, the Agency concludes that non-recovery cokemaking operation itself represents the best practicable technology currently available and that no discharge of process wastewater pollutants is a reasonable BPT limitation. For the same reason, the Agency concludes that there are no costs associated with achieving this limitation, and expects that no additional pollutant removals attributable to this segment will occur.

##### 2. Best Conventional Pollutant Control Technology (BCT)

In deciding whether to adopt different BCT limits, EPA considered whether there are technologies that achieve greater removals of conventional pollutants than adopted for BPT, and whether those technologies are cost-reasonable under the standards established by the CWA, and implemented through regulation. EPA generally refers to the decision criteria as the "BCT cost test." EPA is not revising any existing BCT limitations for the by-products recovery segment of this subcategory (which in the 1982 regulation was divided between "iron and steel" and "merchant" coke plants) because there are no technologies that achieve greater removals of conventional pollutants than the technology basis for the current BPT and pass the BCT cost test.

For the non-recovery segment of this subcategory, EPA identified no technologies that can achieve greater removals of conventional pollutants than those that are the basis for BPT (i.e., the non-recovery cokemaking operations resulting in no discharge) and, therefore, it cannot perform the BCT cost test. Accordingly, EPA is adopting BCT effluent limitations equal to the BPT effluent limitations for the non-recovery segment of this subcategory.

##### 3. Best Available Technology Economically Achievable (BAT)

EPA is establishing BAT limits for both the by-products recovery and for the non-recovery segments of the cokemaking subcategory.

###### a. By-products recovery segment.

For this segment, EPA is today establishing BAT limits for five pollutants: ammonia-N, benzo(a)pyrene, cyanide, naphthalene, and phenols (4AAP). EPA is eliminating the 1982 BAT limitations for benzene because control of naphthalene and benzo(a)pyrene should ensure adequate removal of benzene. EPA is promulgating revised BAT limitations for phenols (4AAP), rather than establishing BAT limitations for phenol (GC/MS), as described in Section V.A.4. In addition, in a change from proposal, EPA is not promulgating BAT limitations for this segment for thiocyanate, mercury, or selenium because information in the record shows that the technology basis for this segment would not result in consistent removal of these pollutants, and EPA has identified no other available and economically achievable technology that will do so. Therefore, at this time, these pollutants are not amenable to categorical regulations. Also, EPA is not promulgating BAT limitations for this segment for total recoverable chlorine (TRC). EPA had proposed to regulate this parameter because TRC monitoring can ensure correct operation of alkaline chlorination systems. However, alkaline chlorination is not a component of the technology basis for the limits of this segment; therefore, limitations on TRC are no longer necessary to reflect the application of the model technology.

The technology basis for these BAT limits is cokemaking option BAT1: oil and tar removal, equalization, fixed and free ammonia stripping, heat exchanger, equalization tank, biological treatment with nitrification followed by secondary clarification, and sludge dewatering. (In the proposal, EPA described the heat exchanger component of this treatment train as temperature control. Similarly, EPA had described today's biological treatment component as single-stage biological treatment with nitrification followed by secondary clarification. In each instance, only the names are different; these technologies at proposal and final are substantially identical.)

The BAT technology chosen for this rule is a different technology from the technology for this segment proposed in 2000. In 2000, the proposed technology basis for the BAT limits was BAT3, and consisted of the BAT1 technology plus breakpoint chlorination (EPA erroneously referred to this technology component as alkaline chlorination in the proposal) prior to biological treatment with nitrification. (Prior to proposal, EPA had also considered two other technology options—BAT2 and BAT4—but rejected them for reasons set forth in the proposal preamble at 65 FR

at 82016–82017.) EPA has rejected BAT3 because it is not economically achievable. EPA projects that two closures and 500 job losses would result.

The Agency has now concluded that the BAT1 treatment system represents the best available technology economically achievable for this segment of this subcategory. There are several reasons supporting this conclusion. First, the BAT1 technology is readily available to all cokemaking facilities. Approximately 75% of the facilities in this segment currently use it. Second, the BAT1 technology will ensure a high level of removal of all cokemaking pollutants of concern. Well-operated free and fixed ammonia stills will remove gross amounts of ammonia-N, cyanide, and many organic pollutants while biological treatment with nitrification followed by secondary clarification will remove more ammonia-N, phenols (4AAP), and other organic constituents of the wastewater to low levels. Third, adoption of this level of control would represent a significant reduction in conventional, nonconventional, and toxic pollutants discharged into the environment by facilities in this subcategory. Even though 75% of the facilities currently employ this technology, EPA predicts significant removals attributable to this rule because today's limitations reflect substantial improvements in how these technology components are designed and operated. Finally, EPA has evaluated the economic impacts associated with this technology and found it to be economically achievable.

#### b. Non-recovery cokemaking.

EPA is adopting BAT limitations for the non-recovery segment of the cokemaking subcategory based on the same technologies selected as the basis for BPT for this segment. These limitations are: no discharge of process wastewater pollutants. See Chapter 7.1.1 of the TDD for more information about what constitutes process wastewater for this segment. EPA identified no technologies that can achieve greater removals of toxic and non-conventional pollutants than those that are the basis for BPT (*i.e.*, the non-recovery cokemaking operations resulting in no discharge.) EPA has also determined that this basis is economically achievable, because no facilities currently discharge process wastewater pollutants. Therefore, EPA is promulgating BAT limitations equal to BPT.

#### 4. New Source Performance Standards (NSPS)

##### a. By-products recovery segment.

For the by-products recovery segment of the cokemaking subcategory, EPA is promulgating NSPS that would control the same conventional, priority, and non-conventional pollutants controlled at the BPT, BCT, and BAT levels. The technology basis for NSPS for this segment is BAT1: oil and tar removal, equalization, fixed and free ammonia stripping, heat exchanger, equalization tank, biological treatment with nitrification followed by secondary clarification, and sludge dewatering. The technologies available to control pollutants at existing facilities are also available to new facilities. EPA rejected BAT3 as a basis for NSPS because it determined that the costs associated with this technology were not reasonable. EPA considers BAT1 as the “best” demonstrated technology for new sources in the by-product segment of the subcategory. EPA concluded that the chosen technology does not present a barrier to entry because 75% of existing facilities currently employ the technology. The Agency considered energy requirements and other non-water quality environmental impacts and found no basis for any different standards than the selected NSPS. Therefore, EPA is promulgating NSPS for the by-products recovery cokemaking segment that are identical to BAT for toxic and non-conventional pollutants, while also promulgating TSS, oil and grease (measured as HEM), and pH limitations, using the same technology basis.

##### b. Non-recovery segment.

EPA is promulgating NSPS limitations for the non-recovery segment of the cokemaking subcategory based on the same technologies selected as the basis for BPT for this segment. These limitations are: no discharge of process wastewater pollutants. See Chapter 7.1.1 of the TDD for more information about what constitutes process wastewater for this segment. Because non-recovery cokemaking operations do not generate any process wastewater, EPA has determined that the technology basis for today's NSPS does not present a barrier to entry, and that there will be no additional energy requirements or non-water quality environmental impacts.

#### 5. Pretreatment Standards for Existing Sources (PSES)

##### a. By-products recovery segment.

Based on EPA's evaluation of pass-through potential, EPA is promulgating PSES for three pollutants: ammonia-N, cyanide, and naphthalene. EPA has determined that each of these pollutants would pass through. EPA had proposed to establish PSES for this segment for thiocyanate, selenium, and phenol. The

Agency is not promulgating PSES limits for thiocyanate or selenium for the reasons discussed in connection with BAT. EPA is not establishing PSES for phenol in this segment because, upon re-evaluating the data, EPA concluded that phenolic compounds in cokemaking wastewaters do not pass through. For additional discussion on phenol, see 66 FR 10257 and Section V.A.3.

For naphthalene, EPA has selected 100 µg/L and 83.1 µg/L as the concentration-based values used for today's production-normalized daily maximum standard and monthly average standard, respectively. EPA has determined that well-operated facilities should be capable of operating well below these levels based on the data EPA obtained from mills employing the model technology. When naphthalene was detected, all samples were at or below 33 µg/L. However, naphthalene was not detected in all samples. This is because of analytical difficulties caused by interferences from high levels of phenol in the samples. Although the laboratory overcame the interferences in the five samples for one episode and succeeded in achieving values close to the minimum level of 10 µg/L specified in the analytical method, for the other EPA sampling episode, it could not do so for two samples. Rather, in order to overcome the interferences, the laboratory diluted two of the five samples for analysis; this resulted in a sample-specific minimum level of 100 µg/L for each diluted sample. While there was no evidence of any chromatographic peaks for naphthalene in the chromatograms associated with the two diluted samples, the best that EPA can say with a high degree of confidence is that the naphthalene concentrations were between zero (i.e., not present) and 100 µg/L for these two samples. In order to demonstrate compliance with the naphthalene standard, a sample would have to be analyzed with a sample-specific minimum level of at or below the standard. Because EPA could not overcome the phenol interferences without diluting the two samples, EPA cannot say with confidence that naphthalene samples can be analyzed with a sample-specific minimum level of less than 100 µg/L in every case. For this reason, EPA has determined that 100 µg/L should be the concentration-basis of today's daily maximum standard. EPA also has determined that the concentration-based monthly average standard could be less than 100 µg/L, because EPA assumes that the facilities will monitor for naphthalene

more than once a month. (In fact, EPA has assumed that facilities will monitor four times a month and has accounted for those costs in this rule.) EPA expects that laboratories will usually be able to measure at levels lower than 100 µg/L, because most of the data supporting the standards demonstrated that laboratories could overcome interferences in the samples. Thus, it has established a value at 83.1 µg/L as the concentration-basis for the monthly average standard. Section 14 of the TDD describes the derivation of the concentration-based monthly average standard from the daily maximum standard. See Section 4 of the TDD for a discussion of reducing interferences.

EPA recognizes that today's value of 100 µg/L for the daily maximum standard for naphthalene is considerably less than the concentration-basis for the proposed standard of 2030 µg/L. Upon review of the proposed standards, EPA determined that some data should be excluded for various reasons (see DCN IS10816 in section 14.10 of the record) including data that were in excess of the facility's permit and therefore would be inappropriate to use in developing national standards.

EPA is promulgating PSES for by-products recovery cokemaking based on option PSES1: tar/oil removal, equalization, free and fixed ammonia stripping. This is one of two options EPA co-proposed in 2000. The other co-proposed option, PSES3, consisted of PSES1 plus an equalization tank, biological treatment with nitrification followed by secondary clarification, and sludge dewatering. Option PSES3 is identical to option BAT1 that serves as the basis for the BAT limitations adopted today. While PSES3/BAT1 would achieve greater removals than PSES1, EPA has rejected it as the basis for PSES because it is not economically achievable. EPA estimated that costs associated with PSES3 would cause an adverse economic impact on two facilities, resulting in closures and/or job losses. Because there are only eight indirectly discharging by-products recovery cokemaking facilities in the nation, EPA determined that this predicted closure—representing 25% of the related universe—was significant in this case. See Section X for more detail on the economic analysis.

Today, the Agency concludes that PSES1 represents the most appropriate basis for pretreatment standards for the following reasons. First, option PSES1, in combination with treatment occurring at the receiving POTWs, will substantially reduce the levels of all cokemaking pollutants of concern. Well-

operated free and fixed ammonia stills will remove gross amounts of ammonia-N, cyanide, and some organic pollutants such as the volatile and semi-volatile organic compounds, while the activated sludge biological treatment at the POTWs will remove additional ammonia-N, cyanide, naphthalene, and the other organic constituents of the wastewater to low levels. Second, EPA has considered the compliance costs associated with this option and determined they are economically achievable.

In today's action, EPA is also establishing a mechanism by which by-product cokemaking facilities discharging to POTWs with nitrification capability would not be subject to the pretreatment standard for ammonia-N. This is because EPA has determined that ammonia-N does not pass through such POTWs. See Section V.A.8 for more details.

#### b. Non-recovery segment.

Based on EPA's evaluation of pass-through and EPA's recognition that no process wastewater is generated in connection with non-recovery cokemaking, EPA is today promulgating PSES limitations for the non-recovery segment of the cokemaking subcategory based on the same technologies selected as the basis for BPT/BAT for this segment. These standards are: No discharge of process wastewater pollutants. There are no incremental costs associated with compliance, and therefore, no economic impacts. Consequently, EPA has determined the technologies are economically achievable.

### 6. Pretreatment Standards for New Sources (PSNS)

#### a. By-products Recovery Segment.

EPA is today establishing pretreatment standards for new sources for four pollutants: Ammonia-N, cyanide, naphthalene, and benzo(a)pyrene. The technology basis for these standards is PSES3. EPA considered the cost of PSES3 technology for new facilities in this segment. EPA concluded that such costs are not so great as to constitute a barrier to entry, as demonstrated by the fact that three of the eight currently operating indirect discharging facilities are using these technologies. The Agency considered energy requirements and other non-water quality environmental impacts and found no basis for any different standards than the selected PSNS.

In today's action, EPA is also establishing a mechanism by which by-product cokemaking facilities discharging to POTWs with nitrification capability would not be subject to the

pretreatment standard for ammonia-N. This is because EPA has determined that ammonia-N does not pass through such POTWs. See Section V.A.8 for more details.

b. Non-recovery segment.

Based on EPA's evaluation of pass-through and EPA's recognition that no process wastewater is generated in connection with non-recovery cokemaking, EPA is today promulgating PSNS for the non-recovery segment of the cokemaking subcategory based on the same technologies selected as the basis for PSES for this segment. These standards are: No discharge of process wastewater pollutants. Because non-recovery cokemaking operations do not generate any process wastewater, EPA has determined that the technology basis for today's PSNS does not present a barrier to entry, and that there will be no additional energy requirements or non-water quality environmental impacts.

*B. Sintering Subcategory*

Today, EPA is promulgating an effluent limitations guideline and standard for one parameter, 2,3,7,8-TCDF, for sintering operations with wet air pollution control systems in this subcategory, establishing a mechanism by which sintering facilities discharging to POTWs with nitrification capability would not be subject to the pretreatment standard for ammonia-N, and otherwise leaving unchanged existing limits and standards for all other parameters. This is a change from what was proposed in October 2000.

In October 2000, EPA proposed combining the sintering and ironmaking subcategories from the 1982 regulation into a single subcategory to be known as ironmaking, with a single treatment technology basis. EPA proposed these changes because survey responses indicated that facilities with both operations on site tended to commingle their wastewaters before treatment. EPA also judged at that time that because wastewater characteristics of the two subcategories were similar, further subcategorization was unnecessary. The subcategory, however, was divided into "blast furnace" and "sinter" segments to take into account differences in the production-normalized flow rates used to develop the proposed effluent limitations guidelines and standards. With the exception of cooling towers, which apply to blast furnace operations only, EPA considered the same technologies for both segments. The basis for the proposed ironmaking limits and standards for the sintering segment with wet air pollution control system was: Solids removal with high-rate

recycle and metals precipitation, alkaline chlorination, and mixed-media filtration of blowdown wastewater. This was known as Ironmaking BAT1. At the time, EPA determined that the option was technically and economically achievable.

In addition, EPA had proposed to regulate phenol instead of the group parameter phenol (measured at 4AAP). EPA had also proposed to add 2,3,7,8-TCDF to the list of regulated parameters for sintering operations with wet air pollution control systems and for blast furnace segment where the wastewater is co-treated with sintering wastewater. Finally, EPA had proposed that sintering facilities would need to meet the proposed total residual chlorine (TRC) limitation only if they employ chlorination in their wastewater treatment.

EPA revisited its proposal for several reasons. First, commenters noted that, by regulating the compound phenol instead of the bulk parameter phenols (4AAP), facilities would not be able to qualify for the CWA Section 301(g) variances that are currently an important part of their compliance strategy. See Section V.A.4 for further details about this issue. Second, the increased rate of recycle is the principal difference between the proposed BAT1 technology basis and the 1982 technology basis, and commenters raised achievability concerns with the increased recycle rates. For these reasons, EPA has determined that BAT1 as proposed (with the increased rate of high rate recycle) is not the best achievable technology for sintering operations. Nor is it the best available demonstrated technology for these operations. EPA has also concluded that it is unnecessary to combine the two 1982 subcategories into a single subcategory as proposed, because today's rule is not changing the 1982 limits and standards except as noted below. EPA is therefore leaving unchanged all limitations and standards currently in effect for the sintering subcategory.

EPA is creating two new segments for the sintering subcategory. The segment, sintering operations with wet air pollution control, is a recodification of what were formerly subcategory-wide limitations. The second segment, sintering operations with dry air pollution control, is new. It applies to sinter operations that do not generate process wastewater. However, as proposed, EPA is promulgating a new limitation for 2,3,7,8-TCDF for sintering operations with wet air pollution control systems segment in the sintering subcategory. The technology basis for

this segment reflects the 1982 technology basis of the existing limitations with the addition of mixed-media filtration. 2,3,7,8-TCDF is one of a number of extremely toxic congeners of the dioxin/furan family of compounds. During four EPA sampling episodes, several of these congeners were found in both the raw and treated wastewater from sinter plants operating wet air pollution control technologies. EPA chose to use 2,3,7,8-TCDF as an indicator parameter for the whole family of dioxin/furan congeners for several reasons. First, 2,3,7,8-TCDF is the most toxic of the congeners found in treated sintering wastewater. Second, 2,3,7,8-TCDF was the most prevalent of the dioxin/furan congeners in these wastewaters. Finally, 2,3,7,8-TCDF is chemically similar to the other dioxin/furan congeners and its removal will similarly indicate removal of the other congeners.

The TCDF limit is expressed as "<ML," which means less than the minimum level. The "ML" is an abbreviation for the minimum level identified in § 420.21(c) of today's rule for the analytical methods that EPA used to determine the level of pollution reduction achievable through the use of BAT, NSPS, PSES, and PSNS model technologies for 2,3,7,8-TCDF.

EPA intends for facilities subject to the ML limitation to have 2,3,7,8-TCDF discharges with concentration less than the minimum level of the analytical method specified today in 40 CFR 420.21(c). Method 1613 provides precise definitions of the ML for 2,3,7,8-TCDF. EPA expects that future analytical method will be more sensitive than today's methods, and the minimum level will have a value that is less than identified today in § 420.21(c). However, the analytical method (and the minimum level) specified in § 420.21(c) was used to chemically analyze the wastewaters from facilities in subpart B. EPA used the data from the chemical analysis to determine that today's ML limitation was technically and economically achievable. EPA is unable to determine, based on the data from the chemical analysis, whether more stringent limitation (that is, limitation with value or associated with minimum level less than the minimum level published today in § 420.21) would be technically and economically achievable. To determine whether the technologies are capable of achieving more stringent limitations, EPA would need to evaluate data from chemical analysis using these future more sensitive methods. Those data obviously are not available today. Until further revision of today's limitations and

standards for subpart B, the limitation for 2,3,7,8-TCDF will continue to be associated with the minimum level specified today in Section § 420.21(c).

1. Best Practicable Control Technology (BPT)/Best Conventional Pollutant Control Technology (BCT)

a. Sintering operations with wet air pollution control.

EPA is leaving unchanged BPT limitations currently in effect for the sintering subcategory, now codified in the new segment for sintering operations with wet air pollution control systems.

b. Sintering operations with dry air pollution control.

EPA is establishing BPT/BCT limitations for the sintering operations with dry air pollution control segment of the sintering subcategory. These limitations are: no discharge of process wastewater pollutants. See Chapter 7.1.2 of the TDD for more information about what constitutes process wastewater for this segment. Because sintering operations with dry air pollution control do not generate any process wastewater, the Agency concludes that sintering operation with dry air pollution control itself represents the best practicable technology currently available and that no discharge of process wastewater pollutants is a reasonable BPT/BCT limitation. For the same reason, the Agency concludes that there are no costs associated with achieving this limitation, and expects that no additional pollutant removals attributable to this segment will occur.

2. Best Available Technology Economically Achievable (BAT)

a. Sintering operations with wet air pollution control.

The technology basis for the 2,3,7,8-TCDF limitation is mixed-media filtration in addition to the 1982 technology basis. Although none of the sampled facilities has this technology in place (at or prior to the compliance monitoring point), EPA concludes that this technology will result in the removal of this congener, and thus all the dioxin/furan congeners, below the method detection limit, because dioxins and furans are hydrophobic compounds, meaning they tend to adhere to solids present in a solution. Thus removal of the solids, which is accomplished by mixed-media filtration, will result in removal of the dioxins/furans adhering to them as well. Furthermore, EPA has data from two sampling episodes at sinter plants demonstrating that filtration of wastewater samples containing dioxins and furans at treatable levels will reduce their

concentrations to non-detectable levels. This is true even for raw wastewater that has undergone no other treatment.

EPA has determined that the costs of implementing mixed-media filtration, including the costs of compliance monitoring, are economically achievable because EPA predicts no adverse economic impacts. See Section X. Therefore, EPA has determined that mixed-media filtration in addition to the 1982 technology basis is the best available technology economically achievable for the removal of 2,3,7,8-TCDF.

Survey responses indicate that it is common practice for facilities to combine their sintering wastewater with other iron and steel wastewaters prior to discharge to the receiving waterbodies. This combination results in dilution of dioxin and furan concentrations to levels below the detection limit specified in the analytical method. Because EPA wants to ensure that dioxin and furan congeners have been removed from the wastewater and not simply diluted (to ensure that the limitations reflect the actual reductions that can be achieved using the BAT technology), EPA is requiring all facilities to monitor for 2,3,7,8-TCDF at a point prior to co-mingling with any non-sintering or non-blast furnace operations. See 40 CFR 420.29. The only exception to this rule is that facilities may co-mingle ancillary non-blast furnace wastewater (comprising 5% of total flow or less) with their sintering wastewater. See Chapter 16.8.3 of the TDD.

EPA analyzed requiring facilities to monitor for 2,3,7,8-TCDF prior to combination with any other waste streams including blast furnace wastewater. Three of the five sintering wastewater treatment systems have blast furnace wastewater recycle systems that are joined with them. EPA determined that facilities would more likely shut down their sintering operations rather than incur the cost of separating the two systems. EPA determined that this economic impact is not reasonable in light of the fact that removal efficiencies are not significantly improved by separating the two wastewater streams, and thus is specifying that facilities with combined blast furnace and sintering wastewater recycling systems may monitor for 2,3,7,8-TCDF after these two waste streams are combined, but before co-mingling with any non-sintering or non blast-furnace operations. See 40 CFR 420.29. The only exception to this rule is that facilities may co-mingle ancillary non-blast furnace wastewater (comprising 5% of total flow or less) with their sintering

wastewater. See Chapter 16.8.3 of the TDD.

EPA is also promulgating, as proposed, a provision that sintering facilities need not meet the current total residual chlorine (TRC) limitations if they do not employ chlorination in the wastewater treatment technology.

b. Sintering operations with dry air pollution control.

EPA is adopting BAT limitations for the sintering operations with dry air pollution control segment of the sintering subcategory based on the same technologies selected as the basis for BPT for this segment. These limitations are: no discharge of process wastewater pollutants. See Chapter 7.1.2 of the TDD for more information about what constitutes process wastewater for this segment. EPA identified no technologies that can achieve greater removals of toxic and non-conventional pollutants than those that are the basis for BPT (*i.e.*, the sintering operations with dry air pollution control resulting in no discharge.) EPA has also determined that this basis is economically achievable, because no facilities currently discharge process wastewater pollutants. Therefore, EPA is promulgating BAT limitations equal to BPT.

3. New Source Performance Standards (NSPS)

a. Sintering operations with wet air pollution control.

For sintering operation with wet air pollution control system in the sintering subcategory, EPA is promulgating a new source performance standard for 2,3,7,8-TCDF based on: clarification, high-rate recycle, metals precipitation, alkaline chlorination (if treated with blast furnace wastewaters) and mixed-media filtration. This technology basis is the same that exists for the 1982 regulation, with the addition of mixed-media filtration. EPA is leaving unchanged all other NSPS for the sintering subcategory. The mixed-media filtration technology used to control 2,3,7,8-TCDF at existing facilities is fully applicable to new facilities. Furthermore, EPA did not identify any technically feasible options that provide greater environmental protection. In addition, EPA determines the technology basis does not constitute a barrier to entry because the technology basis was economically achievable for existing sources, and new sources would face lower costs due to absence of retrofit costs. See Chapter 10 for the discussion in the TDD. The Agency considered energy requirements and other non-water quality environmental impacts and found no basis for any different standards than the selected

NSPS. Therefore, EPA is promulgating NSPS for TCDF for the sintering subcategory that is identical to the TCDF limitation being promulgated as BAT. In addition, for the reasons set forth in Section VIII.B.2.a, EPA is requiring facilities to monitor for compliance with the TCDF standard at a point prior to co-mingling with any non-sintering or non-blast furnace operations. See 40 CFR 420.29. The only exception to this rule is that facilities may co-mingle ancillary non-blast furnace wastewater (comprising 5% of total flow or less) with their sintering wastewater. See Chapter 16.8.3 of the TDD.

b. Sintering operations with dry air pollution control.

EPA is promulgating NSPS limitations for the sintering operations with dry air pollution control segment of the sintering subcategory based on the same technologies selected as the basis for BPT for this segment. These limitations are: no discharge of process wastewater pollutants. See Chapter 7.1.2 of the TDD for more information about what constitutes process wastewater for this segment. Because sintering operations with dry air pollution control do not generate any process wastewater, EPA has determined that the technology basis for today's NSPS does not present a barrier to entry, and that there will be no additional energy requirements or non-water quality environmental impacts.

#### 4. Pretreatment Standards for Existing Sources (PSES)

a. Sintering operations with wet air pollution control.

Based on EPA's evaluation of pass-through potential, 2,3,7,8-TCDF will pass through, and thus EPA is a promulgating PSES standard for 2,3,7,8-TCDF equal to the BAT effluent limitation for the sintering operation with wet air pollution control system in the sintering subcategory. Similar to direct dischargers, EPA concludes that indirect discharging sintering operations must monitor at a point prior to co-mingling with any non-sintering or non-blast furnace operations. See 40 CFR 420.29. The only exception to this rule is that facilities may co-mingle ancillary non-blast furnace wastewater (comprising 5% of total flow or less) with their sintering wastewater. See Chapter 16.8.3 of the TDD. To EPA's knowledge, there are no existing indirect dischargers of sintering wastewater.

In today's action, EPA is also establishing a mechanism by which sintering facilities discharging to POTWs with nitrification capability

would not be subject to the pretreatment standard for ammonia-N. This is because EPA has determined that ammonia-N does not pass through such POTWs. See Section V.A.8 for more details.

b. Sintering operations with dry air pollution control.

Based on EPA's evaluation of pass-through and EPA's recognition that no process wastewater is generated in connection with sintering operations with dry air pollution control, EPA is today promulgating PSES limitations for the sintering operations with dry air pollution control segment of the sintering subcategory based on the same technologies selected as the basis for BPT for this segment. These standards are: no discharge of process wastewater pollutants. There are no incremental costs associated with compliance, and therefore, no economic impacts. Consequently, EPA has determined the technologies are economically achievable.

#### 5. Pretreatment Standards for New Sources (PSNS)

a. Sintering operations with wet air pollution control.

Based on EPA's evaluation of pass-through potential, 2,3,7,8-TCDF will pass through, and thus EPA is promulgating a PSNS standard for 2,3,7,8-TCDF equal to PSES for the sintering subcategory. EPA considered the cost of the PSES technology for new facilities in this segment. In addition, EPA determines the technology basis does not constitute a barrier to entry because the technology basis was economically achievable for existing sources, and new sources would face lower costs due to absence of retrofit costs. The Agency considered energy requirements and other non-water quality environmental impacts and found no basis for any different standard than the selected PSNS. In addition, for the reasons set forth, EPA is requiring facilities to monitor for compliance with the TCDF standard at a point prior to co-mingling with any non-sintering or non-blast furnace operations. See 40 CFR 420.29. The only exception to this rule is that facilities may co-mingle ancillary non-blast furnace wastewater (comprising 5% of total flow or less) with their sintering wastewater. See Chapter 16.8.3 of the TDD.

In today's action, EPA is also establishing a mechanism by which sintering facilities discharging to POTWs with nitrification capability would not be subject to the pretreatment standard for ammonia-N. This is because EPA has determined that

ammonia-N does not pass through such POTWs. See Section V.A.8 for more details.

b. Sintering operations with dry air pollution control.

Based on EPA's evaluation of pass-through and EPA's recognition that no process wastewater is generated in connection with sintering operations with dry air pollution control, EPA is today promulgating PSNS for the sintering operations with dry air pollution control segment of the sintering subcategory based on the same technologies selected as the basis for PSES for this segment. These standards are: no discharge of process wastewater pollutants. Because sintering operations with dry air pollution control do not generate any process wastewater, EPA has determined that the technology basis for today's PSNS does not present a barrier to entry, and that there will be no additional energy requirements or non-water quality environmental impacts.

#### C. Ironmaking Subcategory

EPA is leaving unchanged all limitations currently in effect for this subcategory, except to delete the limitations for the obsolete ferromanganese blast furnaces and to establish a mechanism by which ironmaking facilities discharging to POTWs with nitrification capability would not be subject to the pretreatment standard for ammonia-N. EPA had proposed revised effluent limitations guidelines and standards for this subcategory, which included both sintering and blast furnace ironmaking operations, under BAT, NSPS, PSES, and PSNS. The proposed technology basis for the BAT and NSPS limits was solids removal, high-rate recycle, metals precipitation, alkaline chlorination, and mixed-media filtration of blowdown wastewater. This was known as Ironmaking option BAT1. The proposed technology basis for the PSES and PSNS standards was the same as BAT1, but without alkaline chlorination and mixed-media filtration. This was known as Ironmaking option PSES1.

EPA revisited these decisions for two reasons. First, commenters noted that, by regulating the compound phenol instead of the bulk parameter phenols (4AAP), facilities would not be able to qualify for the CWA Section 301(g) variances that are currently an important part of their compliance strategy, and that EPA had not taken this into account when performing its cost analysis. Accordingly, EPA has decided to continue to regulate the bulk parameter phenols (4AAP). See Section V.A.4 for further details about this issue.

Second, increased performance of high-rate recycle system is the major difference between the proposed BAT1 technology basis and the 1982 technology basis. Commenters using pulverized coal injection in their blast furnaces pointed out that they had learned through experience that recycle of ironmaking wastewater at the high rate described in the proposal leads to a buildup of chlorides in the recycle system and the wet scrubber, which can cause extensive corrosion damage in the piping, premature equipment failure, and lengthy production interruptions. Other commenters not using pulverized coal injection also provided information on operational problems associated with elevated dissolved solids levels in the recycle system at recycle rates higher than described in the proposal. Therefore, EPA has determined that BAT1 and PSES1 are not the best available technologies for existing blast furnace ironmaking operations or the best available demonstrated technologies for new blast furnace ironmaking operations. EPA has also concluded that, because the proposed limits and standards for the ironmaking subcategory are not being promulgated, it is not necessary to combine the two 1982 subcategories (sintering and ironmaking) into a single subcategory as proposed.

EPA had proposed limits and standards for 2,3,7,8-TCDF for the ironmaking subcategory, but it was to apply only to facilities that combined their blast furnace and sintering wastewater. 2,3,7,8-TCDF was not found in the blast furnace wastewater. By preserving the 1982 subcategorization scheme and promulgating limits and standards for the compound in the sintering subcategory, EPA has addressed this issue, and is therefore not promulgating limits and standards for 2,3,7,8-TCDF for the ironmaking subcategory.

In today's action, EPA is also establishing a mechanism by which ironmaking facilities discharging to POTWs with nitrification capability would not be subject to the pretreatment standard for ammonia-N. This is because EPA has determined that ammonia-N does not pass through such POTWs. See Section V.A.8 for more details.

#### *D. Steelmaking Subcategory*

EPA proposed a revised subcategorization scheme (see Section III.C) which recognized the differences between integrated and non-integrated steelmaking facilities. Under the proposed scheme, wastewaters from basic oxygen furnace operations were

included with wastewaters from vacuum degassing operations and continuous casting operations to make up the "Integrated Steelmaking" subcategory. Hot forming operations that took place either at integrated mills or were not associated directly with steelmaking operations were to be covered by the "Integrated and Stand Alone Hot Forming" subcategory. Wastewaters from electric arc furnaces were included with wastewaters from vacuum degassing operations, continuous casting operations and hot forming operations to make up the "Non-integrated and Stand Alone Hot Forming" subcategory. The purpose of this revised subcategorization scheme was to recognize typical wastewater combination and treatment practices at existing steel mills.

The proposed revised subcategorization scheme also distinguished between those facilities making primarily carbon and alloy steels from those making primarily stainless steels. This differentiation was proposed for "Non-integrated and Stand Alone Hot Forming," "Integrated and Stand Alone Hot Forming," and "Finishing" subcategories.

For reasons discussed below, however, EPA is not promulgating new effluent limitations guidelines and standards for any of the proposed revised subcategories. Therefore, EPA is not adopting the proposed subcategorization scheme. Changing the subcategorization scheme only made sense when EPA believed it would promulgate new limits and standards for the new subcategories.

The proposed effluent limitations guidelines and standards for the "Integrated Steelmaking" subcategory had as its technology basis: Solids removal, cooling tower, high-rate recycle, and metals precipitation. This technology option applied to all new and existing direct and indirect discharging facilities (BAT/NSPS/PSES/PSNS) and was known as integrated steelmaking Option BAT1. EPA is not promulgating effluent limitations and standards based on this technology because it determined that it was not economically achievable. The proposed option when considered together with options for other subcategories resulted in a significant economic impact that EPA determined is unreasonable. See Section X.E for more details.

The proposed effluent limitations guidelines and standards for the "Non-integrated Steelmaking and Hot Forming" subcategory had as its technology basis: Solids removal, sludge dewatering, cooling tower, high-rate recycle, and mixed-media filtration.

This technology option would have applied to all existing direct and indirect discharging facilities (BAT/PSES) and was known as non-integrated steelmaking and hot forming Option BAT1. After considering comments objecting to EPA's methodology at proposal of estimating costs and loadings, EPA performed a new costing and loadings analyses. See TDD Chapters 10 and 11. Judging from the installation costs and the pollutant reductions associated with these treatment technologies, EPA concluded that the technology simply was not the best available to achieve pollutant removals (EPA estimated that the technology could remove approximately 230 pound-equivalents per year at an estimated cost of \$2,069 per lb-eq for direct discharging stainless segment, and 3,891 pound-equivalents per year at an estimated cost of \$941 per lb-eq in the direct discharging carbon and alloy segment, and 78 pound-equivalents per year at an estimated cost of \$1,970 per lb-eq for the indirect discharging stainless segment).

The proposed effluent limitations guidelines and standards for new sources in the "Non-integrated Steelmaking and Hot Forming" subcategory (NSPS/PSNS) were: No discharge of process wastewater pollutants. EPA has not adopted these limits and standards because, after further reviewing the rulemaking record, EPA determined that these guidelines and standards were not appropriate because it is not always possible, or even desirable, for non-integrated steelmaking facilities to design and operate their manufacturing processes to achieve zero discharge. The Agency has identified technical barriers to achieving zero discharge via evaporative uses such as electrode spray cooling and slag quenching, particularly for hot forming wastewater.

EPA is promulgating revised BPT, BAT, BCT, and PSES limitations and standards for one segment of the steelmaking subcategory—basic oxygen furnaces with semi-wet air pollution control, and is establishing NSPS, PSES, and PSNS limitations and standards for another segment of the steelmaking subcategory—electric arc furnaces with semi-wet air pollution control. This is consistent with what was appeared in the proposal (65 FR 81980) and the February 14, 2001 document (66 FR 10253–10254), although rather than establishing a specific limitation, EPA has allowed the permit authority or pretreatment control authority to determine limitations based on best professional judgment, when safety considerations warrant. The Agency

believes best professional judgment will allow the permit authority or pretreatment control authority to reflect the site-specific nature of the discharge. EPA is doing this because, although the 1982 regulation requires basic oxygen furnace semi-wet air pollution control to achieve zero discharge of process wastewater pollutants, currently not all of the sites are able to achieve this discharge status because of safety and operational considerations. The Agency recognizes the benefit of using excess water in basic oxygen furnaces with semi-wet air pollution control systems in cases where safety considerations are present. The Agency justifies the increased allowance in this case because of the employee safety and manufacturing considerations (reduced production equipment damage and lost production). EPA estimates that the industry will incur no costs due to this change. EPA could identify no potential adverse environmental impacts associated with the potential discharge.

In the case of electric arc furnaces with semi-wet air pollution control, the Agency is promulgating NSPS, PSES, and PSNS limitations and standards of zero discharge of process wastewater pollutants. The 1982 regulation previously established BPT, BCT, and BAT limitations of zero discharge of process wastewater pollutants for electric arc furnaces with semi-wet air pollution control. (EPA is modifying the BPT, BAT, and BCT portions of this segment only to eliminate references in the title to basic oxygen furnace steelmaking-semi-wet). EPA identified no discharges from electric arc furnaces with semi-wet air pollution control and received no comments regarding the establishment of zero discharge of process wastewater pollutants for this segment. EPA estimates that the industry will incur no costs due to this change since all known facilities are currently achieving compliance with zero discharge of process wastewater pollutants.

#### *E. Vacuum Degassing Subcategory*

EPA is leaving unchanged all limitations currently in effect for this subcategory. See discussion in Section VII.D.

#### *F. Continuous Casting Subcategory*

EPA is leaving unchanged all limitations currently in effect for this subcategory. See discussion in Section VIII.D.

#### *G. Hot Forming Subcategory*

EPA is leaving unchanged all limitations currently in effect for this subcategory. The proposed effluent

limitations guidelines and standards for the "Integrated and Stand Alone Hot Forming" subcategory had as its technical basis: Scale pit with oil skimming, roughing clarifier, cooling tower with high-rate recycle, and mixed-media filtration of blowdown. This applied to all new and existing direct discharging facilities (BAT/NSPS) and was known as integrated and stand alone hot forming Option BAT1A.

EPA has not adopted limits and standards based on this technology because it determined that it was not economically achievable, based on the results presented in Section X.E. EPA has determined that the impact is unacceptable in view of the precarious financial situation of the proposed subcategory as a whole. Moreover, many facilities are already at or below discharge levels of the proposed effluent limitations guidelines and standards, and EPA has no reason to believe that facilities will reverse this trend and increase pollutant discharges above the 1997 levels in EPA's record database.

EPA had proposed a second BAT option, known as BAT1B, for the Integrated and Stand Alone Hot Forming subcategory in order to attempt to ameliorate the predicted economic impacts of BAT1A. Under this option, the proposed BAT limits would not apply until 2007. EPA explained at the time of proposal that EPA would select this option only if it concluded that five years would be sufficient time to allow the subcategory as a whole to raise the capital necessary to implement the model BAT in a way to ensure its economic achievability. However, EPA cannot reach that conclusion on this record, especially in view of the current financial condition of the industry. Therefore, EPA has not selected option BAT1B.

EPA did not propose standards for indirect discharging facilities because EPA's analysis of the effect of the technology option projected pollutant removals per facility that were too small to justify the projected costs.

#### *H. Salt Bath Descaling Subcategory*

EPA is leaving unchanged all limitations currently in effect for this subcategory. EPA proposed a revised subcategorization scheme in which salt bath descaling, acid pickling, cold forming, alkaline cleaning, and hot coating operations would be combined into a new subcategory called "Finishing." The purpose of this proposed subcategorization scheme was to recognize the tendency of facilities to combine and co-treat wastewaters from these operations. As mentioned in Section VIII.D, another feature of the

proposed subcategorization scheme was to consider separately finishing facilities making primarily carbon and alloy steels and those making primarily stainless steels. For reasons discussed below, however, EPA is not promulgating new effluent limitations guidelines and standards for any of the proposed revised subcategories. Therefore EPA is not adopting the proposed subcategorization scheme. Changing the subcategorization scheme only made sense when EPA believed it would promulgate new limits and standards for the new subcategories.

The proposed effluent limitations guidelines and standards for the carbon and alloy segment of the finishing subcategory had the following technology basis: Recycle of fume scrubber water, diversion tank, oil removal, equalization, hexavalent chromium reduction (where applicable), metals precipitation, sedimentation, sludge dewatering, and counter-current rinses. This technology option applied to all new and existing direct discharging facilities, as well as new indirect discharging facilities (BAT/NSPS/PSNS) and was known as carbon & alloy finishing Option BAT-1. EPA did not propose standards for existing indirect discharging facilities because the projected pollutant removals per facility associated with the technology option were too small to justify the projected costs.

EPA is not revising effluent limitations guidelines and standards for the finishing subcategory because the flow reductions that were an integral part of the technology interfered with product quality, thus indicating that the technology was not the best technology available for these finishing operations. Moreover, after considering comments objecting to EPA's methodology at proposal of estimating costs, EPA performed a new cost analysis. See TDD Chapter 10. Judging from the retrofit costs and the costs associated with necessary production shutdown during installation of new treatment technologies, EPA concluded that the technology simply was not the best available to achieve pollutant removals.

The proposed effluent limitations guidelines and standards for the stainless segment of the finishing subcategory had the following technology basis: Counter-current rinses, recycle of fume scrubber water, acid purification units, diversion tank, oil removal, equalization, hexavalent chromium reduction (where applicable), multiple-stage pH control for metals precipitation, sedimentation, and sludge dewatering. This technology option would have applied to all new and



existing direct discharging facilities, as well as new indirect discharging facilities (BAT/NSPS/PSNS) and was known as stainless finishing Option BAT-1. EPA did not propose standards for existing stainless indirect discharging facilities because projected pollutant removals per facility associated with the technology option were simply too small per facility. See 65 FR 82025. EPA did not promulgate limitations for the stainless finishing subcategory for the same reasons listed for the carbon and alloy finishing segment, with one addition.

Commenters with experience operating acid purification units stated that they experienced neither the level of pollutant removal nor the cost savings EPA had envisioned in the analysis supporting the proposal. The recognition of this fact had an adverse impact both on the effluent reduction benefit and the projected cost of this technology option. For further discussion, see Section V.A.9 and Chapter 10 of the TDD.

#### *I. Acid Pickling Subcategory*

EPA is leaving unchanged all limitations and standards currently in effect for this subcategory. See discussion under Section VIII.H.

#### *J. Cold Forming Subcategory*

EPA is leaving unchanged all limitations and standards currently in effect for this subcategory. See discussion under Section VIII.H.

#### *K. Alkaline Cleaning Subcategory*

EPA is leaving unchanged all limitations and standards currently in effect for this subcategory. See discussion under Section VIII.H.

#### *L. Hot Coating Subcategory*

EPA is leaving unchanged all limitations and standards currently in effect for this subcategory. See discussion under Section VIII.H.

#### *M. Other Operations Subcategory*

The other operations subcategory is comprised of three segments: Direct reduced ironmaking (DRI), forging, and briquetting. The options described in this section for the direct reduced ironmaking and briquetting segments are exactly as they appeared in the October 2000 proposal. In the case of the forging segment, the technology basis at proposal was incorrectly described as high rate recycle and oil/water separation. The technology basis should have been described as high rate recycle, oil/water separation, and mixed-media filtration. EPA received no

significant comments on its regulatory approach for this subcategory.

For the briquetting segment, EPA is establishing BPT, BCT, BAT, PSES, PSNS, and NSPS. These limitations and standards are: no discharge of process wastewater pollutants. EPA established these limitations because briquetting operations do not generate any process wastewater. For this reason, the Agency concludes that there are no costs associated with these limitations and standards. Furthermore, EPA projects no additional pollutant removals attributable to this segment.

#### 1. Best Practicable Control Technology (BPT)

##### a. DRI segment.

EPA is promulgating BPT limitations for TSS and pH for the DRI segment of the Other Operations subcategory. The technology basis for this limitation is: solids removal, clarifier, high-rate recycle, and filtration of blowdown wastewater. This technology option was known as DRI Option BPT1 in the proposal. The Agency has determined that this treatment system represents the best practicable technology currently available and should be the basis for the BPT limitations for the following reasons. First, this technology option is one that is readily applicable to all facilities in this segment. Second, the adoption of this level of control would represent a significant reduction in pollutants discharged into the environment by facilities in this subcategory. (EPA is not able to disclose the estimated amount of pollutant reduction because data aggregation and other masking techniques are insufficient to protect information claimed as confidential business information.) Third, the Agency assessed the total cost of water pollution controls likely to be incurred for this option in relation to the effluent reduction benefits and has determined these costs were reasonable.

##### b. Forging segment.

EPA is promulgating BPT limitations for oil & grease, TSS, and pH for the forging segment of the other operations subcategory. The technology basis for these limitations are: high-rate recycling, oil/water separation, and mixed-media filtration. The Agency has concluded that this treatment system represents the best practicable technology currently available and should be the basis for the BPT limitation for the following reasons. First, this technology option is one that is readily applicable to all facilities in this segment. Second, the Agency assessed the total cost of water pollution controls likely to be incurred for this

option in relation to the effluent reduction benefits (pollutant removals of approximately 400 lbs.) and determined these costs were reasonable.

#### 2. Best Conventional Pollutant Control Technology (BCT)

##### DRI and Forging segments.

EPA is adopting BCT limitations for TSS for the DRI segment and oil and grease and TSS for forging segment of the other operations subcategory based on the same technologies selected as the basis for BPT for these segments. EPA identified no technologies that can achieve greater removals of conventional pollutants than those that are the basis for BPT that are also cost-reasonable under the BCT Cost Test. Accordingly, EPA is adopting BCT effluent limitations equal to BPT for the DRI and forging segments of the other operations subcategory.

#### 3. Best Available Technology Economically Achievable (BAT)

##### DRI and Forging segments.

EPA did not identify significant levels of priority or non-conventional pollutants in wastewater from DRI or forging operations. Therefore, EPA is not promulgating BAT for these segments.

#### 4. New Source Performance Standards (NSPS)

##### DRI and Forging segments.

The technology basis for NSPS for the DRI segment is: solids removal, clarifier, high-rate recycle, and filtration of blowdown wastewater, and the technology basis for NSPS for the forging segment is high-rate recycle, oil/water separation and mixed-media filtration. In both cases, these are the same as the BPT technology basis. EPA did not identify any technically feasible options that provide greater environmental protection. In addition, EPA concluded these technology options do not present a barrier to entry because all facilities currently employ the technologies (although minor adjustment of flow control may be necessary for some DRI operations). The Agency considered energy requirements and other non-water quality environmental impacts and found no basis for any different standards than the selected NSPS. Therefore, EPA is adopting NSPS limitations for the DRI and forging segments of the Other Operations subcategory based on the same technologies selected as the basis for BPT for these segments.

#### 5. Pretreatment Standards for Existing and New Sources (PSES/PSNS)

##### DRI and Forging segments.

EPA identified only conventional pollutants in DRI and forging wastewaters at treatable levels. These pollutants do not pass through when discharged to POTWs from facilities within this subcategory. Therefore, EPA is not promulgating pretreatment standards for these segments.

**IX. Pollutant Reduction and Compliance Cost Estimates**

**A. Pollutant Reductions**

Presented below for the Cokemaking, Sintering, and Other Operations subcategories are the pollutant reductions obtainable through the application of the model technologies that form the basis of the effluent

limitations guidelines and standards promulgated today. This section summarizes these estimated reductions. Chapter 11 of the TDD includes the estimated pollutant reductions for options considered but not promulgated, and discusses the methodology in detail.

**1. Conventional Pollutant Reductions**

The Agency estimates that this regulation will reduce discharges of BOD5, TSS and oil and grease by approximately 351,000 pounds per year.

**2. Priority and Non-conventional Pollutant Reductions**

**a. Direct Discharge Facilities (BPT/BAT).**

The estimated reductions in priority and non-conventional pollutants directly discharged in treated final effluent resulting from implementation of the model BPT/BCT/BAT technologies are listed in Table IX.A.1. The Agency estimates that today's BPT/BCT/BAT standards will reduce direct discharges of priority and non-conventional pollutants by approximately 754,000 pounds per year. The Agency only estimated the reduction in 2,3,7,8-TCDF discharge in the Sintering subcategory, thus the removal when measured in pounds per year is negligible.

**TABLE IX.A.1.—REDUCTION IN DIRECT DISCHARGE OF PRIORITY AND NON-CONVENTIONAL POLLUTANTS AFTER IMPLEMENTATION OF BPT/BAT REGULATIONS PROMULGATED TODAY**

Subcategory	Priority metal and organics compounds lbs/year	Non-priority metal and organic compounds lbs/year	Total metal and organic compounds lbs/year
Cokemaking .....	30,164	718,136	748,300
Sintering .....	0	0	0
Other Operations .....	0	5,684	5,684
<b>Total Removals for all Subcategories .....</b>	<b>30,164</b>	<b>723,820</b>	<b>753,984</b>

**b. PSES Effluent Discharges from POTWs.**

Table IX.A.2 lists, by subcategory, the estimated reductions in priority and non-conventional pollutants discharged from POTWs following implementation of the model PSES technologies. The Agency estimates that today's PSES

regulations will reduce indirect facility discharge to POTWs by 264,000 pounds per year. These figures are adjusted for pollutant removals expected from POTWs, and thus reflect reductions in discharges to the receiving waters. Estimated reductions in pollutants discharged indirectly to surface waters

are provided on a subcategory basis in Chapter 11 of the Technical Development Document. The Agency did not identify any priority or non-conventional pollutants at treatable concentrations in the wastewater of the Other Operations subcategory.

**TABLE IX.A.2.—REDUCTION IN DISCHARGES FROM POTWS OF PRIORITY AND NON-CONVENTIONAL POLLUTANTS AFTER IMPLEMENTATION OF PSES REGULATIONS PROMULGATED TODAY**

Subcategory	Priority metal and organics compounds lbs/year	Non-priority metal and organic compounds lbs/year	Total metal and organic compounds lbs/year
Cokemaking .....	4,388	259,776	264,164
Sintering .....	0	0	0
Other Operations .....	0	0	0
<b>Total Removals for All Subcategories .....</b>	<b>4,388</b>	<b>259,776</b>	<b>264,164</b>

**B. Regulatory Costs**

The Agency estimated the cost for iron and steel facilities to achieve each of the effluent limitations guidelines and standards promulgated today, as well as the costs for facilities to achieve the effluent limitations guidelines and standards considered but not promulgated. Chapter 10 of the Final TDD provides detailed information on

the methodologies, including cost curves and basis, used to estimate these costs. In addition, the TDD contains cost estimates for each option, segment and subcategory considered for today's final rule, including those which EPA has decided not to promulgate. All cost estimates in this section are expressed in terms of 1997 dollars, which corresponds with the base year of the

engineering analysis. The cost components reported in this section represent estimates of the investment cost of purchasing and installing equipment, the annual operating and maintenance costs associated with that equipment, land costs associated with equipment, and additional costs for discharge monitoring. The capital costs, pre-tax total annualized costs, and post-

tax total annualized costs for these subcategories are presented in Section X in terms of 2001 dollars.

1. Cokemaking Subcategory  
 a. By-products Recovery Segment.  
 Table IX.B.1 shows the costs EPA estimated for existing direct and

indirect discharging by-products recovery cokemaking facilities to comply with the BAT limitations or PSES standards promulgated today.

TABLE IX.B.1.—ESTIMATED COSTS FOR BY-PRODUCT RECOVERY COKEMAKING FACILITIES

Discharge status	Number of facilities	Total capital and land costs	Annual O&M costs
Direct .....	12	\$26,039,400	\$4,593,800
Indirect .....	8	6,138,600	1,462,600
Total .....	20	32,178,000	6,056,400

b. Non-recovery Segment.  
 EPA is promulgating limitations and standards for this segment expressed as no discharge of process wastewater pollutants. The Agency has determined that implementation of BPT, BCT, BAT, or PSES limitations and standards by facilities in this segment will not result

in any incremental compliance costs because all facilities are currently achieving them.  
 2. Sintering Subcategory  
 Table IX.B.2 shows the costs EPA estimated for direct discharging sintering facilities to comply with the

BAT limitation for 2,3,7,8-TCDF promulgated today. Note that even though EPA has promulgated PSES for this subcategory EPA is not aware of any sintering facilities currently discharging to a POTW and has therefore not included any compliance costs.

TABLE IX.B.2.—ESTIMATED COSTS FOR SINTERING FACILITIES

Discharge status	Number of facilities	Total capital and land costs	Annual O&M costs
Direct .....	5	\$11,046,100	\$1,304,300

3. Steelmaking Subcategory

EPA has determined that the industry will incur no costs due to the alternate limitations and standards based on best professional judgment applicable to basic oxygen furnaces with semi-wet air pollution control. Likewise, EPA has determined that there will not be any compliance costs incurred by facilities with electric arc furnaces with semi-wet air pollution control to comply with today's rule.

4. Other Operations Subcategory

Table IX.B.3 shows the costs estimated for direct discharging forging facilities to comply with the BPT limitations promulgated today. The estimated costs for direct discharging DRI facilities are not presented because there are only two direct dischargers in this segment and data aggregation or other masking techniques are insufficient to avoid disclosure of information claimed as confidential business information. Also, because

EPA is not promulgating PSES or PSNS limits for the DRI and forging segments, indirect dischargers in this subcategory will not incur costs as a result of this regulation. For the briquetting segment, because all facilities in this segment are currently meeting the promulgated limitations and standards for BPT, BCT, BAT, PSES, PSNS, and NSPS of no discharge of process wastewater pollutants, there are no incremental compliance costs associated with this limit.

TABLE IX.B.3.—EPA ESTIMATED COSTS FOR FORGING FACILITIES

Segment	Number of facilities	Total capital and land costs	Annual O&M costs
Forging .....	8	\$120,200	\$20,400

**X. Economic Analysis**

*A. Introduction and Overview*

This section describes the estimated capital investment and annualized costs of compliance with the final effluent limitations guidelines and standards promulgated today for the iron and steel industry and the potential impacts of these compliance costs on the industry. This section also presents the estimated costs and projected impacts for technology options EPA considered but rejected for all of the subcategories.

EPA's economic assessment is presented in detail in the report titled "Economic Analysis of Final Effluent Limitations and Standards for the Iron and Steel Manufacturing Point Source Category" (hereafter, "EA") and in the rulemaking record. The EA estimates the economic effect of compliance costs on subcategory operations at a site where feasible, 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 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*

The United States is the third largest steel producer in the world with 12 percent of the market, an annual output of between 100 and 115 million tons per year, and around 150,000 employees.

Major markets for steel are service centers and the automotive and construction industries. Together these three markets account for 61 percent of steel shipments. The remaining 40 percent is dispersed over a wide range of products and activities, such as agricultural, industrial and electrical machinery, oil and gas, containers, and appliances.

The iron and steel rulemaking includes sites within the North American Industry Classification System (NAICS) codes 324199 (coke ovens, 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 proposed metal products and machinery effluent guideline rulemakings both may have sites in the last two NAICS codes.

The iron and steel effluent guideline as proposed would have applied to approximately 254 iron and steel sites. Of these sites, EPA was able to analyze approximately 211 for post-regulatory compliance impacts at the site level. For the remaining 43 sites, thirteen did not report data at the site level, fourteen could not be analyzed because they were jointly owned sites, foreign owned sites, or newly constructed sites, and sixteen were in poor financial condition prior to the regulation and are treated as closures under the prevailing baseline conditions. Of the 254 iron and steel sites, 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 eighteen 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 database 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 marked a high point in the business cycle. The 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 the 115 companies in the EPA survey indicated that 27 of them would be considered "financially

distressed" either because they are start-up companies and joint ventures or because they are established firms which still showed losses. For discussion of the changes in industry financial conditions in the period between 1997 and 2001, see Section IV.

### *C. Economic Impact Methodology*

#### 1. Introduction

This section (and, in more detail, the EA and the accompanying administrative record) evaluates several measures of economic impacts that result from the estimated compliance costs associated with each technically feasible BAT and PSES option. The analysis in the EA consists of eight major components: (1) An assessment of the number of facilities that could be affected by this rule; (2) an estimate of the annualized aggregate costs 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 impact of compliance costs for operations in individual subcategories (where possible) 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 that the companies in the industry would be likely to incur as a result of combined compliance costs for all sites owned by the company; (6) an evaluation of secondary impacts such as those on employment and economic output; (7) an analysis of the effects of compliance costs on small entities; and (8) a cost-benefit analysis pursuant to Executive Order 12866.

All costs are reported in this section of the preamble in 2001 dollars, with the exception of cost-effectiveness results, which, by convention, are reported in 1981 dollars. The primary sources of data for the economic analysis are the Collection of 1997 Iron and Steel Industry Data (Section 308 Survey) and data provided by industry during the public comment period. Other sources include government data from the Bureau of Census and industry trade journals.

#### 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 pollution control. This model uses these costs along with the company-specific real cost of capital (discount rate) and the corporate tax rate over a 16-year

analytical 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 (IRS) rules, with an estimated actual life of 25 years—plus a mid-year convention for putting the new equipment in operation (for example, 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, described below. The Agency adopts an assumption of zero "cost pass-through" of compliance costs for this industry, which is consistent with the facts of significant import competition and declining product prices.

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 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.

EPA developed five forecasting models for the iron and steel industry. None of these methods assumes any growth in real terms and all are calculated in terms of constant 1997 dollars. This conservative assumption precludes sites from growing their way out of financial difficulties imposed by the regulation. Site-specific data are only available for 1995–1997. The period from 1998 to 2001 is the rulemaking period and when the forecasting methods begin. Because promulgation occurs in 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 methods explicitly address the sharp downturn in the industry after 1997 but differ in predicting the strength and duration of recovery and subsequent downturns. That is, both address the cyclicity seen in the iron and steel industry, but reflect differing magnitudes and timing. The third forecasting method is a three-year average (1995 to 1997) to provide an

upper-bound analysis. The fourth forecasting method is a six year average covering 1995 to 2000, with the years 1998 through 2000 scaled by industry level performance. The fifth forecasting method uses only the year 2000 as a lower-bound analysis. The fourth and fifth forecasting methods were added after proposal to reflect to the maximum extent possible the effect of the industry downturn.

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 five forecasting methods, there are five ways to evaluate each site. If a site's post-regulatory status is negative (after-tax present value of regulatory costs exceed present value of forecasted earnings), EPA assigned a score of "1" for that forecasting method. EPA then tallied, for each site, the score it received for each forecasting method. A site, then, may have a score ranging from zero to five (with five indicating after-tax present value of regulatory costs exceed present value of forecasted earnings under all five forecasts). In an effort to reflect the significant industry downturn, the Agency has chosen to reflect any incremental change in the score from the baseline condition to the post-regulatory condition due to regulatory compliance costs as a closure.

EPA could not perform an economic analysis of a number of sites at the subcategory and site levels, even though annualized costs were calculated: where the site is a cost center; where it is a captive site that exists primarily to produce products transferred to other sites under the same corporate ownership; where components for the analysis are not recorded on the site's books, only those of the company; or where the site's cash flow is negative and therefore sufficient by itself to project a negative present value for earnings. For these sites, the analysis defaults to the company level. Consistent with OMB guidance, EPA estimated post-compliance closures due solely to the effect of the 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 of interpreting multiple ratios with differing implications for financial health. The single index, Z', is compared against ranges developed by Altman to indicate "good," "indeterminate," and "distressed" financial conditions. EPA examined 1997 financial data (the most recent collected in the survey) to estimate the pre-regulatory conditions. EPA then aggregated costs for all sites belonging to that company. EPA recalculated Z' after incorporating the effects of the pollution control compliance costs into the income statement and balance sheet for the company. EPA classified as impacted all companies whose "Altman's Z'" score changes such that the company goes from a "good" or "indeterminate" baseline category to a "distressed" post-compliance category. Such companies may have significant difficulties raising the capital needed to comply with the options under consideration, 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. 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.

#### *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 technically achievable option EPA considered in each subcategory. As discussed in Section X.C.2, the cost annualization model derives total post-tax annualized costs from site-specific capital costs, one-time non-capital costs, and operating and maintenance costs; however, only capital costs are reported here to simplify the presentation. For a detailed presentation of all costing information, see Chapter 10 of the TDD. As noted in Section X.B, sixteen

facilities are projected to close under baseline conditions and are not included further in the economic analysis. For this reason, the costs and removals presented in Section X will differ from the results reported in the engineering analysis in Chapter 10 of the TDD.

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. For example, a site may have cokemaking, sintering, and other operations, but the post-compliance 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 only in a single subcategory such as a stand alone coke plant, this stage represents the complete facility level analysis. Unfortunately, for a number of subcategories related to integrated steelmaking operations, the first stage of the analysis could not be constructed due to interdependent cost estimates. For integrated steel facilities with operations in ironmaking, integrated steelmaking, integrated and standalone hot forming, and steel finishing, particularly those which make extensive use of co-treatment of compatible wastewaters and central treatment, the cost estimates for one subcategory depend upon the selected technology option for related subcategories. As a result, the subcategory impact results for ironmaking, integrated steelmaking, and integrated and standalone hot forming will not be presented below, but rather will be presented on an aggregated basis in the facility analysis in Section X.E. In the case of steel finishing, a large number of facilities, in addition to the integrated steel facilities discussed previously, are in the scope of the subcategory and the subcategory impact results are presented, but the results do understate the potential economic impact to the integrated steel facilities.

#### 1. Cokemaking

##### a. By-product Cokemaking

##### i. BAT

The regulatory compliance costs associated with BAT 1 are not projected to result in any postcompliance closures, while the regulatory compliance costs associated with BAT 3 are projected to result in two postcompliance closures, with potential job losses of 500 FTEs. Because there are

a total of only twelve directly discharging by-product cokemaking facilities, the projected closures represent seventeen percent of the potentially regulated population. Given the significant additional pollutant

removals attainable through application of BAT1 and the general economic state of the industry, EPA does not believe that it is reasonable to impose the economic impacts associated with BAT 3. For this reason, the Agency has

determined that option BAT 3 is not economically achievable for existing sources, but that option BAT 1 is economically achievable.

TABLE X.D.1.—BAT COSTS AND IMPACTS FOR BY-PRODUCT COKEMAKING

Option	Capital cost (\$2001M)	Post-tax total annualized cost (\$2001M)	Impacts Closures/Job Losses
BAT 1 .....	26.3	6.6	0/0
BAT 3 .....	59.2	10.5	2/500

ii. PSES

The regulatory compliance costs associated with PSES option 1 are not projected to result in any postcompliance closures. The regulatory compliance costs associated with PSES option 3 are projected to result in two postcompliance closures, with potential job losses of between 500 and 750 FTEs.

Because there are a total of only eight indirectly discharging by-product cokemaking facilities, the projected closures represent 25 percent of the potentially regulated population. In view of the fact that these facilities are presently subject to pretreatment standards in Part 420, the significant additional pollutant removals attainable

through application of PSES1, and the general state of the industry, EPA does not believe that it is reasonable to impose the economic impacts associated with PSES3. For these reasons, the Agency has determined that option PSES3 is not economically achievable for existing sources, but that option PSES1 is economically achievable.

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

Option	Capital cost (\$2001M)	Post-tax total annualized cost (\$2001M)	Impacts Closures/Job Losses
PSES 1 .....	6.7	2.0	0/0
PSES 3 .....	25.5	6.6	2/ 500–750

iii. NSPS and PSNS

The technology options EPA considered for NSPS 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 compliance costs for new sources are less than existing sources and because limited or no impacts are projected for existing sources, then no impacts are expected for new sources and no barrier to entry is anticipated.

The technology option EPA considered for PSNS is equivalent to PSES 3, which is more stringent rather the promulgated option PSES 1. PSES 3 was rejected for existing sources as not economically achievable due to projected facility closures. However, engineering analysis indicates that the

cost of installing pollution control systems during new construction is less than the cost of retrofitting existing facilities, so EPA projects the compliance costs for new sources are less than existing sources and no impacts are projected and no barrier to entry can result.

b. Non-recovery Cokemaking

i. BPT, BAT and PSES

The technology option for BPT, BAT and PSES is no discharge of process wastewater pollutants. No incremental compliance costs are associated with these options as all existing sources are currently meeting the no discharge requirement. Because there are no incremental compliance costs, there are no impacts resulting from the BPT, BAT and PSES options.

ii. NSPS and PSNS

The technology option EPA considered for new sources are identical

to those it considered for existing dischargers. No incremental compliance costs are associated with the no discharge option, just as in the case of existing sources, because the non-recovery method of producing coke generates no process wastewater. As no compliance costs are expected, no barrier to entry can result.

2. Sintering

a. Sintering Operations with Wet Air Pollution Control

i. BAT and PSES

The regulatory compliance costs associated with the regulation of 2,3,7,8-TCDF under the BAT option and the PSES option are not projected to result in any postcompliance closures. To the Agency's knowledge, there are no current indirect dischargers of sintering wastewater.

TABLE X.D.3.—BAT COSTS AND IMPACTS FOR SINTERING SUBCATEGORY

	Capital cost (\$2001M)	Post-tax total annualized cost (\$2001M)	Impacts Closures/Job Losses
BAT .....	12.0	1.9	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 projected the costs for new sources are less than existing sources and because limited or no impacts are projected for existing sources, then no impacts are expected for new sources and no barrier to entry can result.

b. Sintering Operations With Dry Air Pollution Control

i. BPT, BAT and PSES

The technology option for BPT, BAT and PSES is no discharge of process wastewater pollutants. No incremental compliance costs are associated with these options as all existing sources are currently meeting the no discharge requirement. Because there are no incremental compliance costs, there are no impacts resulting from the BPT, BAT and PSES options.

ii. NSPS and PSNS

The technology option EPA considered for new sources are identical to those it considered for existing dischargers. No incremental compliance costs are associated with the no discharge option, just as in the case of existing sources, because the non-recovery method of producing coke generates no process wastewater. As no compliance costs are expected, no barrier to entry can result.

3. Ironmaking

a. BAT and PSES

The regulatory compliance costs associated with the proposed BAT option and the PSES option are presented below. The Agency does not present costs for indirect dischargers separately, because there is only one indirect discharger in this subcategory and data aggregation or other masking techniques are insufficient to avoid

disclosure of information claimed as confidential business information.

Unfortunately, for a number of subcategories related to integrated steelmaking operations, this stage of the analysis could not be constructed due to interdependent cost estimates. For integrated steel facilities with operations in ironmaking, integrated steelmaking, integrated and stand alone hot forming, and steel finishing, particularly those which make extensive use of co-treatment of compatible wastewaters and central treatment, the cost estimates for one subcategory depend upon the selected technology option for related subcategories. As a result, the subcategory impact results for ironmaking, integrated steelmaking, and integrated and stand alone hot forming will not be presented, but rather will be presented on an aggregated basis in the facility analysis in Section X.E.

TABLE X.D.4.—BAT AND PSES COST FOR IRONMAKING

	Capital cost (\$2001M)	Post-tax total annualized cost (\$2001M)
BAT AND PSES .....	54.4	10.5

4. Integrated Steelmaking

a. BAT and PSES

The regulatory compliance costs associated with the BAT option and the PSES option are presented below. The Agency does not present costs for indirect dischargers, because there is only one indirect discharger in this subcategory and data aggregation or other masking techniques are insufficient to avoid disclosure of information claimed as confidential business information.

Unfortunately, for a number of subcategories related to integrated steelmaking operations, this stage of the analysis could not be constructed due to interdependent cost estimates. For integrated steel facilities with operations in ironmaking, integrated steelmaking, integrated and stand alone

hot forming, and steel finishing, particularly those which make extensive use of co-treatment of compatible wastewaters and central treatment, the cost estimates for one subcategory depend upon the selected technology option for related subcategories. As a result, the subcategory impact results for ironmaking, integrated steelmaking, and integrated and stand alone hot forming will not be presented, but rather will be presented on an aggregated basis in the facility analysis in Section X.E.

TABLE X.D.5.—BAT AND PSES COST FOR INTEGRATED STEELMAKING

	Capital cost (\$2001M)	Post-tax total annualized cost (\$2001M)
BAT .....	46.8	10.4
PSES .....	.....	.....

5. Integrated and Stand Alone Hot Forming

a. Carbon and Alloy

i. BAT

The regulatory compliance costs associated with the BAT option are presented below. Unfortunately, for a number of subcategories related to integrated steelmaking operations, this stage of the analysis could not be constructed due to interdependent cost estimates. For integrated steel facilities with operations in ironmaking, integrated steelmaking, integrated and stand alone hot forming, and steel finishing, particularly those which make extensive use of co-treatment of compatible wastewaters and central treatment, the cost estimates for one subcategory depend upon the selected technology option for related subcategories. As a result, the subcategory impact results for ironmaking, integrated steelmaking, and integrated and stand alone hot forming will not be presented, but rather will be presented on an aggregated basis in the facility analysis in Section X.E.

TABLE X.D.6.—BAT COSTS FOR INTEGRATED AND STAND ALONE HOT FORMING, CARBON AND ALLOY

	Capital cost (\$2001M)	Post-tax total annualized cost (\$2001M)
BAT .....	149.4	27.5

## 6. Non-Integrated Steelmaking and Hot Forming

## a. Carbon and Alloy

## i. BAT

The regulatory compliance costs associated with the BAT option are not projected to result in any postcompliance closures.

TABLE X.D.7.—BAT COSTS AND IMPACTS FOR NON-INTEGRATED STEELMAKING AND HOT FORMING

	Capital cost (\$2001M)	Post-tax total annualized cost (\$2001M)	Impacts Closures/Job Losses
BAT .....	30.6	5.1	0/0

## ii. NSPS

EPA proposed new source limitations of no discharge of process wastewater pollutants, but has determined that technological barriers prevent promulgation of the proposed limitations. See Section VIII.D.

## 7. Steel Finishing

## a. Carbon and Alloy

## i. BAT

The regulatory compliance costs associated with the BAT option are not projected to result in any postcompliance closures.

TABLE X.D.8.—BAT COSTS AND IMPACTS FOR STEEL FINISHING

	Capital Cost (\$2001M)	Post-tax total annualized cost (\$2001M)	Impacts Closures/Job Losses
BAT .....	23.1	8.6	0/0

## 8. 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 two 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 X.D.9.—BPT COSTS AND IMPACTS DIRECTED REDUCED IRON

	Capital cost (\$2001M)	Post-tax total annualized cost (\$2001M)	Impacts Closures/Job Losses
BPT .....			0/0

## b. Forging

## i. BPT

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



TABLE X.D.10.—BPT COSTS AND IMPACTS FORGING

	Capital cost (\$2001M)	Post-tax total annualized cost (\$2001M)	Impacts Closures/Job Losses
BPT .....	0.13	0.04	0/0

c. Briquetting

i. BPT/BCT/BAT/PSES

For the briquetting segment, EPA is establishing BPT of no discharge of process wastewater pollutants. EPA established these limitations because briquetting operations do not generate any process wastewater. For this reason, the Agency concludes that there are no costs associated with these limitations.

E. Facility Level Economic Impacts of the Regulatory Options

In this section, EPA presents the impacts of capital costs and post-tax total annualized costs for combinations of technology options across all subcategories. 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). For 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 affected in multiple subcategories. The analysis in this section reflects both those integrated facilities for which subcategory cost estimates are interdependent (as discussed in Section X.D) and other facilities which may incur costs in multiple subcategories, but whose cost estimates are not interdependent.

The incorporation of the aggregate regulatory costs based upon the technology options in the proposed rule (except for By-product Cokemaking where BAT 1 is evaluated rather than BAT 3; see Section XIII.A.3) across all subcategories into the postcompliance cash flow analysis generates a total of either 2 or 4 facility closures, depending on whether the By-Product Cokemaking PSES 1 or 3 options are used (see Section X.D.1 and the EA). The facility closures have potential job losses of 3750 to 4000 FTEs. The aggregated effect of those impacts is not economically achievable. Therefore,

EPA is not promulgating revised effluent limitations guidelines and standards for each subcategory as proposed. Rather, EPA is revising effluent limitations guidelines and standards where the limits are technically and economically achievable.

For this purpose, the Agency has also analyzed a reduced set of regulatory options consisting of By-Product Cokemaking BAT 1 and PSES 1 and Sintering BAT (see description in Section VIII.B), in addition to BPT for Direct Reduced Iron and Forging. Additional limitations and standards for basic oxygen furnaces with semi-wet air pollution control, electric arc furnaces with semi-wet air pollution control, sintering with dry air pollution control, non-recovery cokemaking, and briquetting are projected to incur no compliance costs. No facilities are projected to close as a result of the compliance costs of the reduced set of regulatory options. The Agency determines that the chosen set of model technologies are economically achievable for the affected subcategories.

F. Firm Level Impacts

In this section, the Agency evaluates the economic impacts of the regulatory options to the firms that own the affected facilities. 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. For example, if a company owns an integrated facility, a stand alone coke facility, and a stand alone finishing facility, the aggregate regulatory costs 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 considered to be impacts.

The Agency evaluated the set of options identified in Section X.E (By-Product Cokemaking BAT 1 and PSES 1 and Sintering BAT (see description in Section VIII.B), in addition to BPT for

Direct Reduced Iron and Forging) and found them to be economically achievable at the facility level. Additional limitations and standards for basic oxygen furnaces with semi-wet air pollution control, electric arc furnaces with semi-wet air pollution control, sintering with dry air pollution control, non-recovery cokemaking, and briquetting are projected to incur no compliance costs. This set of options does not cause any firm level impacts as measured by the postcompliance Altman Z' score. Accordingly, the Agency determines that each selected model technology in itself and when considered collectively with the technologies across the relevant subcategories is economically achievable.

G. Community Impacts

The Agency evaluates community impacts by examining the potential increase in county 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. As no facility closures are projected as a result of the estimated compliance costs, no measurable impacts on county unemployment are expected.

H. Foreign 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 on foreign trade. The analysis indicates less than 0.1 percent increase in imports and less than 0.1 percent decrease in exports.

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 NAICS classification for each firm. EPA applied the relevant Small Business Administration (SBA) size standard for each NAICS to determine whether each firm was to be considered a small entity. The NAICS classifications observed were predominantly NAICS 324199

(coke ovens, part of "all other petroleum and coal product manufacturing") and NAICS 331111 (iron and steel mills). The relevant size standards varied from 500 to 1500 employees; they also included a few revenue-based standards. EPA identified an estimated 35 small entities that may be affected by the proposed rule among the estimated 115 total companies potentially affected by the proposed set of options. Given the chosen set of final options, EPA identified an estimated five small entities that may be affected by the final rule among the estimated 22 total companies. EPA has fully evaluated the economic achievability of the final rule to affected small entities. The economic achievability analysis was conducted using a discounted cash flow approach for facility analysis and the Altman Z' test for the firm analysis (for a full discussion, see Section X.C.). EPA projects that no small entities will incur an impact such as facility closure/firm failure. Further, for small entities, EPA examined the cost to revenue ratio to identify any other potential impacts of the rule upon small entities. EPA has determined that none of the five small entities will experience an impact of 1% or greater ratio of costs to revenue.

#### J. Cost-Benefit Analysis

The Agency estimates the total monetized social costs of the final rule to be \$12.0 million (\$2001) and the total monetized social benefits to range between \$1.4 million and \$7.3 million (\$2001). The total annualized costs for each subcategory (\$2001, pre-tax) are presented in Table X.L.1. The final rule as promulgated includes costs for By-Product Cokemaking BAT 1 and PSES 1 and Sintering BAT 1, in addition to BPT for Direct Reduced Iron and Forging. Additional limitations and standards for basic oxygen furnaces with semi-wet air pollution control, electric arc furnaces with semi-wet air pollution control, sintering with dry air pollution control, non-recovery cokemaking, and briquetting are projected to incur no compliance costs. The total monetized benefits are presented in Table XI.F.1

#### K. Cost-Reasonableness Analysis

The Agency is promulgating BPT limitations for the Non-recovery Cokemaking segment of the Cokemaking Subcategory and the Direct Reduced Iron, Briquetting, and Forging segments

of the Other Operations Subcategory. 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 (\$2001). In this case, the pollutants removed are conventional pollutants. The Agency evaluated a technology option for the Non-recovery Cokemaking segment which is based on no discharge of process wastewater pollutants and is estimated to have no associated incremental regulatory compliance costs. For the Direct Reduced Iron segment, the evaluated BPT option 1 has a cost-reasonableness ratio of \$3. For the Forging segment, the evaluated BPT option 1 removes approximately 3500 pounds of conventional pollutants with a cost-reasonableness ratio of \$9. The Agency evaluated a technology option for the Briquetting Segment which is based on no discharge of process wastewater pollutants and is estimated to have no associated incremental regulatory compliance costs. EPA considers the cost-reasonableness ratio to be acceptable and the selected option to be cost-reasonable in all four segments.

#### L. 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 analysis, 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).

For 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 analyses 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. Cost Effectiveness Analysis

The table below presents the pre-tax total annualized costs, removals (in lb.-equivalents), and the incremental cost effectiveness for each technically feasible regulatory option. In cases where the technology has been found not to be feasible, the term "NA" appears in Table X.L.1 for removals and incremental cost-effectiveness.

TABLE X.L.1.—BAT AND PSES REMOVALS AND COST-EFFECTIVENESS

Subcategory and segment	Option	Pretax total annualized cost (\$2001M)	Removals (lb-eq)	Incremental cost effectiveness (1981\$/lb-eq)
By-Product Cokemaking .....	BAT 1	7.1	185,441	\$21
By-Product Cokemaking .....	PSES 1	2.1	26,251	45
By-Product Cokemaking .....	PSES 3	7.7	77,783	61
Ironmaking .....	BAT1 and PSES1	13.7	NA	NA
Sintering .....	BAT 1	2.8	14,515	107
Integrated Steelmaking .....	BAT 1	14.0	94,494	83
Integrated and Stand Alone Hot Forming, Carbon & Alloy .....	BAT 1	36.7	247,280	83
Nonintegrated Steelmaking and Hot Forming, Carbon & Alloy .....	BAT 1	6.6	3,891	941
Nonintegrated Steelmaking and Hot Forming, Stainless .....	BAT 1	0.9	230	2,069
Nonintegrated Steelmaking and Hot Forming, Stainless .....	PSES 1	0.3	78	1,970
Steel Finishing, Carbon & Alloy .....	BAT 1	11.1	NA	NA
Steel Finishing, Stainless .....	BAT 1	5.4	NA	NA

2. Non-recovery Cokemaking

The Agency has selected a technology option for the Non-recovery Cokemaking Segment which is based on no discharge of process wastewater pollutants for BPT, BAT and PSES and is estimated to have no associated regulatory compliance costs. This is because all existing non-recovery cokemaking facilities achieve the no discharge of process wastewater pollutants limitation. As a result, a cost-effectiveness analysis cannot be constructed for this segment.

3. Other Operations

The Agency evaluated technology options for Direct Reduced Ironmaking and Forging segments only for the control of conventional pollutants at BPT (see Section X.K). The Agency evaluated a technology option for the Briquetting Segment which is based on no discharge of process wastewater pollutants and is estimated to have no associated incremental regulatory compliance costs. As a result, a cost-effectiveness analysis cannot be constructed for these segments.

**XI. Water Quality Analysis and Environmental Benefits**

EPA evaluated the environmental benefits of controlling the discharges of 50 priority and nonconventional pollutants from iron and steel facilities to surface waters and POTWs in national analyses of direct and indirect discharges. EPA identified more than 50 pollutants of concern in iron and steel effluents at treatable levels, but EPA presently has only published recommended ambient water quality criteria (AWQC) or toxicity profiles for 50 of those pollutants. 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 numeric AWQC for those parameters. 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. For 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 may have 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 oil and grease, particularly the water-soluble compounds, at concentrations ranging from 0.1 ppm to 25 ppm and 1 ppm to 6,100 ppm, respectively. However, because 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. For this reason, EPA does not model the effects of oil and grease on the environment.

Of a total of 254 iron and steel facilities potentially affected by the rule, EPA presents here the analysis results for 22 of the facilities affected by this final rule. The facilities modelled are the discharging facilities in the cokemaking and sintering subcategories. In the case of the other operations subcategory, no pollutants other than conventional pollutants were identified as pollutants of concern and the Agency did not undertake environmental modelling. Of the 22 facilities, fifteen are direct wastewater dischargers that discharge up to 50 pollutants to thirteen receiving streams and eight are indirect wastewater dischargers discharging up to 26 pollutants through POTWs to seven receiving streams. One facility discharges both directly and indirectly.

To estimate some of the benefits from the improvements in water quality expected to result from this rule, EPA modeled in-stream concentrations for the pollutants and then compared these concentrations to aquatic life and human health 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 seven POTWs which receive discharges from the eight iron and steel indirect discharging facilities.

Because the affected iron and steel facilities may discharge in multiple waste subcategories, and some 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 3 waterbodies, identified with industrial point sources as a potential source of impairment, receive direct discharges from iron and steel facilities as well as other sources. Eight additional waterbodies that receive direct discharges are also identified as impaired. However, the States did not identify the potential sources of impairment. EPA also identified 10 waterbodies with fishing advisories that receive direct discharges from iron and steel facilities as well as other sources.

EPA expects a variety of human health, environmental, and economic benefits to result from reductions in effluent loadings (see the 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 noncarcinogenic hazard (systemic); (c) ecological and recreational benefits due to improved water quality with respect to toxic pollutants; and (d) 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 final rule would reduce excess cancer cases by approximately 0.50 per year with estimated monetized benefits of \$1.3 to \$6.9 million (\$2001). 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 \$2.6 million to \$13.7 million (\$2001). EPA's Science Advisory Board recently recommended that the values of a statistical life 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 needs more information to estimate latency periods associated with cancers caused by iron and steel pollutants. For example, EPA based the risk assessments for several pollutants on data from animal bioassays; these data are not sufficiently reliable to estimate a latency period for humans.

#### B. 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 final rule is expected to decrease human exposure (through consumption of contaminated fish tissues) to such pollutants. However, EPA does not claim a reduction in noncarcinogenic human health risk since the instream concentrations at both baseline and treatment option are below the threshold of noncarcinogenic human health risk.

#### C. Improved Ecological Conditions and Recreational Activity

EPA expects this final 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. For 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 final 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 of the 22 facilities are estimated to decline by approximately

22 percent. The analysis comparing modeled instream pollutant concentration to AWQC estimates that current discharge loadings result in excursions at fifteen streams receiving the discharge from iron and steel facilities. The final rule would reduce the number of receiving streams with excursions to fourteen.

EPA estimates that the annual monetized recreational benefits to anglers associated with the expected changes in water quality range from \$82,000 to \$290,000 (\$2001). 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 one of the fifteen receiving streams. EPA estimated the monetized value of impaired recreational fishing opportunity 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. EPA then calculated the value of improving water quality in this fishery, based on the increase in value to anglers of achieving contaminant-free fishing.

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 \$41,000 to \$145,000 (\$2001). These intrinsic benefits are estimated as half of the recreational benefits and may be under or overestimated.

#### D. Effect on POTW Operations

EPA considers two potential sources of benefits to POTWs from this final 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 operations (interference) and biosolid quality are not significantly affected by discharges from any of the eight modeled iron and steel mills. EPA, therefore, projects no potential economic benefits from reduced biosolid disposal costs. This will also be true once facilities come into compliance with today's regulation.

#### E. Other Benefits Not Quantified

The benefit analyses focus mainly on identified compounds with quantifiable toxic or carcinogenic effects. This

potentially leads to an underestimation of benefits, because some pollutant characterizations are not considered. Foreexample, the analyses do not include the benefits associated with incidental removal of the particulate load (measured as TSS), or the oxygen demand (measured as BOD<sub>5</sub> 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. BOD<sub>5</sub> and COD loads can deplete oxygen levels, which can produce mortality or other adverse effects in fish, as well as reduce biological diversity.

*F. Summary of Benefits*

EPA estimates that the annual monetized benefits, at the national level, resulting from this final rule range from \$1.4 million to \$7.3 million (\$2001). Table XI.F.1 summarizes these benefits, by category. The range reflects the uncertainty in evaluating the effects of

this final rule and in placing a dollar value on these effects. As indicated in Table XI.F.1, these monetized benefits ranges do not reflect some benefit categories, including improved ecological conditions from improvements in water quality, improvements to recreational activities (other than fishing), and reduced discharges of conventional pollutants. Therefore, the reported benefit estimate may understate the total benefits of this final rule.

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

Benefit category	Millions of 2001 dollars per year
Reduced Cancer Risk .....	1.3–6.9
Reduced Noncarcinogenic Hazard .....	Unquantified
Improved Ecological Conditions .....	Unquantified
Improved Recreational Value .....	0.08–0.29
Improved Intrinsic Value .....	0.04–0.15
Total Monetized Benefits .....	1.4–7.3

**XII. 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 final 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).

For the cokemaking subcategory, maximum achievable control technology (MACT) standards were proposed by EPA on July 3, 2001 (66 FR 35326) for pushing, quenching, and battery stacks at cokemaking plants. These regulations are currently scheduled for promulgation in December 2002. 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 annual air emissions from biological treatment, EPA multiplied the individual concentrations of all VOCs in cokemaking wastewater entering the

biological treatment system by the maximum design flow and the operational period reported in the U.S. EPA Collection of 1997 Iron and Steel Industry Data. EPA determined the concentrations of the individual VOCs entering the biological treatment systems from the sampling episode data. Assuming all the VOCs entering the biological treatment systems are emitted to the atmosphere (no biological degradation), the maximum VOC emission rate would be approximately 1,800 pounds per year for all facilities. EPA believes that this is an overestimate, because VOCs can be degraded through biological treatment. EPA concludes that, even if this likely overestimate of VOC emission rate were accurate, this would be an acceptable rate of emissions that would not have a significant impact on the environment. See TDD, Chapter 15.

For the subcategories for which EPA is not revising effluent limitations guidelines and standards today, EPA does not project any change in air emissions. For the mills without cokemaking operations that are affected by revisions to part 420 (sintering, steelmaking, forging, direct reduced iron (DRI) manufacturing, and briquetting), EPA anticipates that facilities that employ the model technologies will experience no increase in air emissions. As such, no adverse air impacts are expected to occur as a result of the revised regulations.

**B. Solid Waste**

Solid waste, including hazardous and nonhazardous sludge and waste oil, will be generated from a number of the model treatment technologies used to develop today's effluent limitations guidelines and standards. These solids will need to be disposed of and may be subject to RCRA Land Disposal Restrictions if they are characteristically hazardous. Solid wastes include sludge from biological treatment systems, clarification systems, gravity separation, mixed-media filtration, and oil/water separation 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 part 420 regulation.

Biological nitrification included in the technology basis for cokemaking by-product segment will produce a biological treatment sludge that facilities would need to dispose. EPA estimates that approximately 190 tons (dry wt.) per year of additional biological treatment sludge will be generated by the cokemaking subcategory as a result of today's rule. These non-hazardous biological treatment sludge 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 or mixed-media filters for sintering and forging operations will account for less than an additional 0.08 percent of the solids currently being collected.

Data provided in the industry surveys indicate the total annual sludge and scale production from all iron and steel facilities to be 3,522,500 tons/year (dry weight). Solids removal equipment associated with the promulgated options for this rule is expected to generate less than 277 tons per year of additional dry wastewater treatment sludge. Consequently, EPA has concluded no adverse solid waste impacts are expected to occur as a result of today's regulation.

**C. Energy Requirements**

EPA estimates that compliance with this regulation will result in a net increase in energy consumption at iron and steel facilities. The maximum estimated increased energy use by listed subcategories is presented in Table XII.1. The costs associated with these energy requirements are included in EPA's estimated operating costs for compliance with today's rule. The projected increase in energy

consumption is primarily due to the incorporation of components such as pumps, mixers, blowers, and fans.

**TABLE XII.1—ADDITIONAL ENERGY REQUIREMENTS BY SUBCATEGORY**

Subcategory	Energy required (million kilowatt hours/year)
Cokemaking <sup>1</sup> .....	17
Sintering <sup>2</sup> .....	4
Other Operations <sup>3</sup> .....	0.01
<b>Total</b> .....	<b>21.01</b>

<sup>1</sup>BAT-1 and PSES-1  
<sup>2</sup>BAT-1 and PSES-1  
<sup>3</sup>Other operations include DRI, briquetting, and forging

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 cokemaking, sintering, DRI, briquetting, and forging facilities to comply with this rule correspond to less than 0.001 percent of the national energy demand. The increase in energy demand due to the implementation of this 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. Consequently, EPA has concluded no adverse energy impacts are expected to occur as a result of today's regulation.

**XIII. Regulatory Implementation**

**A. Implementation of the Limitations and Standards**

**1. Introduction**

Effluent limitations and pretreatment standards act as a primary mechanism to control the discharges of pollutants to waters of the United States. These limitations and standards are applied to individual facilities through NPDES permits issued by the EPA or authorized States under Section 402 of the Act and through local pretreatment programs under Section 307 of the Act.

In specific cases, the NPDES permitting authority or local POTW may elect to establish technology-based permit limits or local limits for pollutants not covered by this regulation. In addition, if State water quality standards or other provisions of State or Federal law require limits on pollutants not covered by this regulation (or require more stringent limits or standards on covered pollutants to achieve compliance), the permitting

authority must apply those limitations or standards. See CWA Section 301(b)(1)(C).

**2. Compliance Dates**

New and reissued Federal and State NPDES permits to direct dischargers must include the effluent limitations promulgated today. The permits must require immediate compliance with such limitations. If the permitting authority wishes to provide a compliance schedule, it must do so through an enforcement mechanism. Existing indirect dischargers must comply with today's pretreatment standards no later than October 17, 2005. New direct and indirect discharging sources must comply with applicable limitations and standards on the date the new sources begin operations. New direct and indirect sources are those that began construction of iron and steel operations affected by today's rule after November 18, 2002. See 65 FR at 82027.

**3. Applicability**

In Section VI, EPA provided detailed information on the applicability of this rule to various operations. Permit writers and pretreatment authorities should closely examine all iron and steel operations to determine if they are subject to the provisions of this rule. Also see 40 CFR 420.01.

**4. Production Basis for Calculation of Permit Limitations**

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 final effluent limitations expressed as pounds/thousand pounds to a monthly average or daily maximum permit limit, the permitting authority would use a production rate with units of thousand pounds/day. The current part 420 and § 122.45(b)(2) NPDES permit regulations require that pretreatment requirements and NPDES permit limits, respectively, be based on a " \* \* \* reasonable measure of actual production."

The 1982 iron and steel regulation at 40 CFR 420.04 sets out the basis for calculating mass-based pretreatment requirements and requires that they 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. Similar provisions exist in the

national pretreatment regulations at 40 CFR 403.6(c)(3) for deriving mass-based pretreatment requirements. Specifically, 40 CFR 403.6(c)(3) states that the same production of flow figure shall be used in calculating limitations based on pretreatment standards. These values are converted to a daily basis (e.g., tons/day) for purposes of calculating mass-based pretreatment requirements. EPA is making no revision to 420.04.

#### 5. 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 to facilitate compliance. The restrictions on use of the water bubble are described in the proposal preamble. See 65 FR at 82031–32.

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 today's rule. EPA proposed some changes to the water bubble, but invited comment on all aspects of the provision. These changes EPA proposed and EPA's rationale are discussed at 65 FR at 82031–32. EPA received some comments opposing some of the proposed revisions (generally industry commenters were supportive of expansions of the water bubble and environmental group commenters were supportive of restrictions on the water bubble). EPA also received comments urging the elimination of the provision codified in the 1984 amendment to part 420 that required a minimum net reduction of the amount of the pollutant otherwise authorized by the regulation. Under this provision, the amount of the pollutant discharges authorized by the bubble must be 10% to 15% less than the discharges otherwise authorized by the rule without the bubble. These comments argued that the water bubble should be used, first and foremost, as a tool to achieve the pollutant reductions required by the guideline at the least cost.

After considering the public comments, EPA makes the following changes to the water bubble:

- Allow trades for cokemaking operations but only if the cokemaking alternative limitations are more stringent than the limitations in Subpart A. See 40 CFR 420.03(f)(1).
- Allow trades for new Subpart M operations. See 40 CFR 420.03(a) and (e).

- Allow trades involving cold rolling operations. See 40 CFR 420.03(a).
- Allow trades for new, as well as existing, sources. See 40 CFR 420.03(a).
- Eliminate the minimum net reduction provision (formerly codified at 40 CFR 420.03(b)).
- Prohibit trades of oil and grease. See 40 CFR 420.03(c).
- Prohibit trades of 2,3,7,8-TCDF in sintering operations. See 40 CFR 420.03(f)(2).

The first change reflects EPA's concern about co-occurring contaminants in cokemaking wastewater (e.g., benzo(a)anthracene, chrysene, fluoranthene for cokemaking). 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. As was the case in the 1982 regulation, EPA is promulgating effluent limitations for certain "indicator" pollutants, including phenols (4AAP), naphthalene, and benzo(a)pyrene for cokemaking. The data available to EPA generally show that control of the selected "indicator" pollutants will result in comparable control of other toxic pollutants found in cokemaking wastewaters but not specifically limited. A trade of phenols (4AAP) enacted between cokemaking and ironmaking wastewaters would not be environmentally protective if the increased limitation for phenols (4AAP) occurred in the cokemaking wastewater, due to the co-occurring contaminants. EPA also notes that trades involving cokemaking operations were previously precluded, so this change is an expansion in the water bubble.

EPA is allowing trades involving cold rolling operations which were previously precluded. In the 1982 rulemaking, tetrachloroethylene was a pollutant of concern in cold rolling wastewaters, thus leading to the preclusion of trades. However, this is not the case today, based on information in the Agency's rulemaking record and Chapter 7 of the TDD. EPA likewise is allowing trades involving Subcategory M operations, since no toxic pollutants were identified as pollutants of concern.

EPA is eliminating the requirement that all alternative effluent limitations based on the water bubble must achieve a minimum net reduction (depending on the pollutant) of at least 10–15% of the discharges that would otherwise have been allowable under the regulation. EPA is eliminating the requirement in order to allow the water

bubble provision to be used as a tool to achieve the pollutant reductions required by Part 420 at the least cost. This new flexibility is especially important in view of the economic condition of the industry at this time. EPA notes that nothing in the regulation prevents the permitting authority from imposing minimum net reductions on a case-by-case basis when appropriate. EPA also notes that the water bubble still retains the provision that 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.

EPA is prohibiting trades involving oil and grease because of differences in the types of oil and grease used among the I&S operations. 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. EPA is similarly prohibiting trades involving 2,3,7,8-TCDF due to the internal monitoring requirements and the associated ML limitation.

EPA concludes that these changes will give added compliance flexibility to facilities that choose to take advantage of the water bubble provision, while still providing for a high level of environmental protection.

#### 6. Compliance With Limitations and Standards

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, PSES, PSNS, or NSPS. For simplicity, the following discussion refers only to effluent limitations guidelines; however, the discussion also applies to pretreatment and new source standards.

##### a. Definitions

The limitations for pollutants for each option, as presented in today's notice, are provided as maximum daily discharge limitations and maximum monthly average discharge limitations. Definitions provided in 40 CFR 122.2 state that the "maximum daily discharge limitation" is the "highest allowable "daily discharge" " and the "maximum average for monthly discharge 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 discharge is defined as 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."

#### b. Percentile Basis for Limits, Not Compliance

EPA promulgates limitations that facilities are capable of complying with at all times by properly operating and maintaining their processes and treatment technologies. EPA established these limitations on the basis of percentiles estimated using data from facilities with well-operated and controlled processes and treatment systems. However, because EPA uses a percentile basis, the issue of exceedances (i.e., values that exceed the limitations) or excursions is often raised in public comments on limitations. For example, comments often suggest that EPA include a provision that allows a facility to be considered in compliance with permit limitations if its discharge exceeds the specified monthly average limitations one month out of 20 and the daily average limitations one day out of 100. As explained in Section 14.6 of the TDD, these limitations were never intended to have the rigid probabilistic interpretation implied by such comments. The following discussion provides a brief overview of EPA's position on this issue.

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. Facilities that are designed and operated to achieve the long-term average effluent levels used in developing the limitations should be capable of compliance with the limitations at all times, because the limitations incorporate an allowance for variability in effluent levels about the long-term average. The allowance for variability is based on control of treatment variability demonstrated in normal operations.

EPA recognizes that, as a result of modifications to 40 CFR part 420, some dischargers 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.

#### c. Requirements of Laboratory Analysis

The permittee is responsible for communicating the requirements of the analysis to the laboratory, including the sensitivity required to meet the regulatory limits associated with each analyte of interest. In turn, the laboratory is responsible for employing the appropriate set of method options and a calibration range in which the concentration of the lowest non-zero standard represents a sample concentration lower than the regulatory limit for each analyte. For example, EPA Methods 420.1 and 420.2 provide several options for sample preparation and analysis, including a preliminary distillation designed to remove interferences and a chloroform extraction procedure (Method 420.1) designed to improve the sensitivity of the method. Both methods also provide information on the concentrations of the calibration standards that may be prepared for a given set of procedural options. Each of these methods contains at least one set of options that will provide sufficient sensitivity to meet the effluent guideline limitations for phenols (4AAP). Thus, it is the responsibility of the permittee to convey to the laboratory the required sensitivity to comply with the limitations. (See *Sierra Club v. Union Oil*, 813 F.2d 1480, page 1492 (9th Cir. 1987).) For organic compounds, such as 2,3,7,8-TCDF, naphthalene, and benzo(a)pyrene, it may be necessary for laboratories to overcome interferences using procedures such as those suggested in Guidance on the Evaluation, Resolution, and Documentation of Analytical Problems Associated with Compliance Monitoring (EPA 821-B-93-001).

#### 7. Internal Monitoring Requirements and Compliance With ML Limitations for Sintering Subcategory

Working in conjunction with the effluent guidelines and pretreatment standards are the monitoring conditions set out in the NPDES or POTW discharge permit. An integral part of monitoring conditions is the point at which a facility must demonstrate compliance. The point at which a sample is collected can have a dramatic effect on the monitoring results for that facility. In some cases, EPA determines that internal monitoring points are necessary to afford the environmental protection projected from a rule, and to reflect the reductions achievable by application of the best available technology. Authority to address

internal waste streams is provided in 40 CFR 122.44(i)(1)(iii), 122.45(h), and 40 CFR 403.6(e)(2) and (4). Permit writers or local pretreatment control authorities may establish additional internal monitoring points to the extent consistent with EPA's regulations.

As explained in Section VIII.B, iron and steel dischargers subject to the sintering subcategory 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 process wastewaters from processes other than sintering and ironmaking, non-process wastewaters and non-contact cooling water in an amount greater than 5 percent by volume of the sintering process wastewaters. See 40 CFR 420.29.

In today's rulemaking for the sintering subcategory, EPA is establishing limitation and standard for 2,3,7,8-TCDF that is expressed as less than the Minimum Level (" $<ML$ "). See 40 CFR 420.23, 420.24, 420.25, 420.26. Henceforth, this discussion refers to the " $ML$ " limitation. The " $ML$ " is an abbreviation for the Minimum Level identified today in § 420.21(c) for the analytical method that EPA used to determine the level of pollution reduction achievable for 2,3,7,8-TCDF through the use of BAT, NSPS, PSES, and PSNS technologies for subpart B. EPA intends for mills subject to  $ML$  limitations to have pollutant discharges with concentrations less than the Minimum Level of the analytical method specified today in § 420.21(c).

Often, laboratories report values less than minimum levels to be "not detected" or " $<ML$ ." In some cases, however, the laboratories report these values as if the values were quantified. For example, a laboratory might report a measurement that is 4 parts per quadrillion (ppq). Such reported values might occur in two situations. In the first situation, the laboratory could have used EPA Method 1613B (which is the method specified in § 420.21(c)), but referred to the measurement as "detected" although it was less than the Minimum Level. The second situation could occur in the future as the analytical methods become more sensitive than the method specified in § 420.21(c). Using such future methods could conceivably allow laboratories to reliably measure values less than today's minimum level of 10 ppq. Such measurements resulting from either situation would be considered to demonstrate compliance with the  $ML$  limitations, because these



measurements are less than the method ML of 10 ppq specified in § 420.21(c).  
 When monitoring for compliance with this final rule, a sample-specific Minimum Level greater than the method Minimum Level of 10 ppq will not demonstrate compliance with the ML

limitation for 2,3,7,8-TCDF. Such sample-specific Minimum Levels may result from sample volume shortages, breakage or other problems in the laboratory, or from failure to properly remove analytical interferences from the sample. EPA believes that all of these

situations can be avoided by careful adherence to sample collection and laboratory analysis procedures.  
 Table XIII.A.1 provides some examples demonstrating compliance with the ML limitation for 2,3,7,8-TCDF.

TABLE XIII.A.1.—EXAMPLES DEMONSTRATING COMPLIANCE

Is concentration reported as “detected” or “non-detected” in the sample?	2,3,7,8-TCDF value reported by laboratory (ML is 10 ppq)	Does the sample demonstrate compliance?	Explanation for compliance determination:
Detected	4 ppq	Yes	4 ppq is less than the ML of 10 ppq specified in § 420.21(c).
Detected	10 ppq	No	Compliance is demonstrated only with measurements less than the ML of 10 ppq specified in § 420.21(c).
Non-detected	<5 ppq	Yes	<5 ppq is less than the ML of 10 ppq specified in § 420.21(c).
Non-detected	<10 ppq	Yes	Compliance is demonstrated for all values less than the ML specified in § 420.21(c).
Non-detected	<11 ppq	No	The sample-specific ML must be less than the ML of 10 ppq specified in § 420.21(c).

EPA did not establish monthly average limitations and standards for 2,3,7,8-TCDF because the daily maximum limitations and standards for these pollutants are expressed as less than the Minimum Level (<ML). The purpose of a monthly average limitations is to require continuous dischargers to provide better control, on a monthly basis, than required by the daily maximum limitation. However, for these pollutants, today’s analytical methods cannot measure below the minimum level of 10 ppq associated with the daily maximum limitation. Thus, even if a permitting or pretreatment authority requires more frequent monitoring for these pollutants than once a month, monthly average limitations would still be expressed as <ML.

8. Implementation for Iron and Steel Facilities Subject to Multiple Effluent Limitations Guidelines or Pretreatment Standards

For determination of permit limits where multiple categories apply, the effluent guidelines are applied using a flow-weighted combination of the appropriate limitation for each category (i.e., “the building block approach”). Where a facility treats an iron and steel wastestream together with process wastewater from other non-iron and steel industrial operations, the effluent guidelines would be applied by using a flow-weighted combination of the BPT/BAT limitations for the iron and steel facility and the other non-iron and steel industrial operation to derive the appropriate limitations. Similarly, for indirect dischargers, under these circumstances, the pretreatment

standards would be applied using the “combined wastestream formula” as defined in 40 CFR 403.6(e).

9. Revisions Affecting Certain Steelmaking Operations

Until today’s rule, the BPT, BCT, and BAT limitations for the “basic oxygen furnace steelmaking “ semi-wet” segment of the steelmaking subcategory (Subpart D) specified no discharge of process wastewater pollutants to navigable waters. For reasons discussed in Section VIII.D, EPA is revising those limitations to provide an alternate limitation to the “no discharge” requirement, based on best professional judgment of the permitting authority or the pretreatment control authority. The new limitations are less stringent than the limitations they replace.

EPA’s NPDES permitting regulations at 40 CFR 122.44(l) require that, when an NPDES permit is renewed or reissued, the new limitations must be at least as stringent as the limitations in the previous permit unless the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued and would constitute cause for permit modification or revocation and reissuance under 40 CFR 122.62. The regulations at 40 CFR 122.62 authorize the permitting authority to modify an NPDES permit during its term when (a) the permit condition requested to be modified is based on a promulgated effluent limitation guideline; (b) EPA has revised the effluent limitation guideline upon which the permit condition was based; and (c) the permittee requests the modification in accordance with 40 CFR

124.5 within 90 days after the **Federal Register** notice of the action on which the modification request is based. See 40 CFR 122.62(a)(3).

In today’s rule, EPA is revising effluent limitations guidelines that provide the legal basis for certain limitations in permits issued to facilities in the steelmaking subcategory. These revisions would constitute cause for modification of the corresponding permit conditions under 40 CFR 122.62(a)(3). Therefore, direct dischargers to which these revisions apply are not subject to the requirement in 40 CFR 122.44(l) that limitations in reissued permit for those parameters or operations be as stringent as the limitations in the previous permit. This means that when an NPDES permit is reissued for an operation affected by the revisions discussed above, the permitting authority may impose new limitations that reflect the new less stringent requirements of today’s rule.

EPA is also eliminating limitations and standards for benzene for the by-product cokemaking segment of the cokemaking subcategory. That change is not subject to the provisions of 40 CFR 122.44(l) because the revision is based on EPA’s judgment that limitations on other parameters should ensure removal of benzene at levels specified by the original benzene limitations. See Section VIII.A.3.a.

10. Non-Process Wastewater and Storm Water in the Immediate Process Area

EPA has provided a definition of non-process wastewaters at § 420.02(r). When developing NPDES and pretreatment limitations, permit writers and pretreatment control authorities are

authorized to use their best professional judgment to include increased mass discharge allowances to account for certain non-process wastewaters when they are appropriately cotreated with process wastewaters using best professional judgement. Non-process wastewaters may include utility wastewaters (for example, water treatment residuals, boiler blowdown, and air pollution control wastewaters from heat recovery equipment); treated or untreated wastewaters from groundwater remediation systems; dewatering water for building foundations; and other wastewater streams not associated with a production process. When considering such non-process wastewaters, permit writers and pretreatment control authorities should determine whether they contain process wastewater pollutants, or whether they would simply be dilution flows. For example, wastewater from coke plant groundwater remediation systems would be expected to contain coke plant wastewater pollutants, whereas building foundation dewatering water would be expected to be relatively clean. In the former case, the permit writer or pretreatment control authority may include additional mass discharges based on the average groundwater remediation flow and the concentrations used by EPA to develop the effluent limitations guidelines and standards in developing the mass limits. In the latter case, no increase in mass discharges may be appropriate.

EPA has provided a definition of storm water in the immediate process area at § 420.02(t). EPA has included provisions in the regulation for permit writers and pretreatment control authorities to provide for additional mass discharge allowances for process area storm water, when they deem appropriate. With advances in storm water pollution prevention and spill prevention and control, collecting and treating limited amounts of process area storm water with process wastewaters is the most practicable and effective means of limiting discharges of contaminated storm water. This is particularly the case for by-product recovery coke plants, where contaminated storm water is typically collected from the following operations: tar decanters, ammonia liquor storage, crude tar storage, crude light oil recovery (benzol plant), crude light oil storage, ammonia recovery, ammonium sulfate recovery, and others. Storm water collected from these areas often contains oil & grease and some of the nonconventional and toxic pollutants associated with the by-

product recovery processes (e.g., ammonia, cyanide, phenolic compounds, and polynuclear aromatic hydrocarbons). As a result, many coke plants commonly collect storm water from these areas and pump it to the process wastewater equalization tank for treatment with process wastewaters. Because the levels of contaminants and dissolved salts in the collected storm water are relatively low compared to those found in process wastewaters, facilities can also temporarily use storm water in lieu of uncontaminated water to optimize of biological treatment systems. EPA has provided guidance on process area storm water at by-product recovery coke plants in Section 17 of the Final TDD and will provide additional guidance in a separate guidance document.

For other iron and steel processes, EPA believes it is prudent to collect storm water from the area within outdoor wastewater treatment facilities, particularly where wastewater treatment sludges are dewatered and handled at blast furnaces, sinter plants, steelmaking operations, hot forming mills (scale and oil removal as well as wastewater treatment), and steel finishing wastewater treatment plants.

EPA does not advocate unrestricted collection and treatment of process area storm water with process waters, either at by-product recovery coke plants or at facilities in other subcategories. For example, by-product recovery and non-recovery coke plants should use conventional storm water control measures to handle coal and coke pile runoff, storm water from the battery areas, and storm water collected away from the by-products recovery areas. Other examples of storm water that would be either impracticable or uneconomic to treat in process wastewater treatment facilities include building roof storm drainage from hot forming and steel finishing mills and storm drainage from raw material storage areas and plant roadways.

#### *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 Modifications*

Upon the promulgation of these regulations, all new and reissued Federal and State NPDES permits issued to direct dischargers in the iron and steel industry must include the effluent limitations. In addition, the indirect dischargers must comply with pretreatment standards for existing sources codified today by November 18, 2002.

##### 1. Fundamentally Different Factors (FDF) Variances

The CWA requires application of the effluent limitations established pursuant to Section 301 or the pretreatment standards of Section 307 to all direct and indirect dischargers. However, the statute provides for the modification of these national requirements in a limited number of circumstances. Moreover, the Agency has established administrative mechanisms to provide an opportunity for relief from the application of national effluent limitations guidelines and pretreatment standards for categories of existing sources for priority, conventional, and non-conventional pollutants.

EPA will develop effluent limitations or standards different from the otherwise applicable requirements if an individual existing discharging facility is fundamentally different with respect to factors considered in establishing the limitations or standards applicable to the individual facility. Such a modification is known as a "fundamentally different factors" (FDF) variance.

Early on, EPA, by regulation, provided for FDF modifications from BPT effluent limitations, BAT limitations for priority and non-conventional pollutants, and BCT limitations for conventional pollutants for direct dischargers. For indirect dischargers, EPA provided for FDF modifications from pretreatment standards for existing facilities. FDF variances for priority pollutants were challenged judicially and ultimately sustained by the Supreme Court (*Chemical Manufacturers Ass'n v. NRDC*, 479 U.S. 116 (1985)).

Subsequently, in the Water Quality Act of 1987, Congress added new Section 301(n) of the Act explicitly to authorize modification of the otherwise applicable BAT effluent limitations or national effluent pretreatment standards for existing sources if a facility is fundamentally different with respect to the factors specified in Section 304 (other than costs) from those considered by EPA in establishing the effluent limitations or pretreatment standards.

Section 301(n) also defined the conditions under which EPA may establish alternative requirements. Under Section 301(n), an application for approval of FDF variance must be based solely on (1) information submitted during the rulemaking raising the factors that are fundamentally different, or (2) information the applicant did not have an opportunity to submit. The alternate limitation or standard must be no less stringent than justified by the difference, and not result in markedly more adverse non-water quality environmental impacts than the national limitation or standard.

EPA regulations at 40 CFR part 125 subpart D, authorizing the EPA Regional Administrators to establish alternative limitations and standards, further detail the substantive criteria used to evaluate FDF variance requests for existing direct dischargers. Thus, 40 CFR 125.31(d) identifies six factors (for example, volume of process wastewater, age, and size of a discharger's facility) that may be considered in determining if a facility is fundamentally different. The Agency must determine whether, on the basis of one or more of these factors, the facility in question is fundamentally different from the facilities and factors considered by the EPA in developing the nationally applicable effluent guidelines. The regulation also lists four other factors (for example, infeasibility of installation within the time allowed or a discharger's ability to pay) that may not provide a basis for an FDF variance. In addition, under 40 CFR 125.31(b)(3), a request for limitations less stringent than the national limitation may be approved only if compliance with the national limitations would result in either (a) a removal cost wholly out of proportion to the removal cost considered during development of the national limitations, or (b) a non-water quality environmental impact (including energy requirements) fundamentally more adverse than the impact considered during development of the national limits. EPA regulations provide for an FDF variance for existing indirect dischargers at 40 CFR 403.13. The conditions for approval of a request to modify applicable pretreatment standards and factors considered are the same as those for direct dischargers.

The legislative history of Section 301(n) underscores the necessity for the FDF variance applicant to establish eligibility for the variance. EPA's regulations at 40 CFR 125.32(b)(1) are explicit in imposing this burden upon the applicant. The applicant must show that the factors relating to the discharge controlled by the applicant's permit which are claimed to be fundamentally

different are, in fact, fundamentally different from those factors considered by the EPA in establishing the applicable guidelines. The pretreatment regulations incorporate a similar requirement at 40 CFR 403.13(h)(9).

An FDF variance is not available to a new source subject to NSPS or PSNS.

## 2. Water Quality Variances

Section 301(g) of the CWA authorizes a variance from BAT effluent guidelines for certain non-conventional pollutants due to localized environmental factors so long as the discharge does not violate any water quality-based effluent limitations. These pollutants include ammonia, chlorine, color, iron, and phenols (4AAP). Dischargers subject to new or revised BAT limitations promulgated today for those pollutants may be eligible for a section 301(g) variance. Please note that section 301(g)(4)(c) requires the filing of section 301(g) variance applications pertaining to the new or revised limits not later than July 14, 2003. Existing section 301(g) variances for limitations not being revised today are not affected by today's action.

## 3. Permit Modifications

Even after EPA (or an authorized State) has issued a final permit to a direct discharger, the permit may still be modified under certain conditions. (When a permit modification is under consideration, however, all other permit conditions remain in effect.) A permit modification may be triggered in several circumstances. These could include a regulatory inspection or information submitted by the permittee that reveals the need for modification. There are two classifications of modifications: major and minor. From a procedural standpoint, they differ primarily with respect to the public notice requirements. Major modifications require public notice while minor modifications do not. Virtually any modification that results in less stringent conditions is treated as a major modification, with provisions for public notice and comment. Conditions that would necessitate a major modification of a permit are described in 40 CFR 122.62. Minor modifications are generally non-substantive changes. The conditions for minor modification are described in 40 CFR 122.63.

## XIV. 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 (RFA), as Amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), 5 U.S.C. 601 et seq.

The RFA 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.

For purposes of assessing the impacts of today's rule on small entities, small entity is defined as: (1) A small business based on full time employees (FTEs) or annual revenues established by SBA; (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 impacts of today's final rule on small entities, I certify that this action will not have a significant economic impact on a substantial number of small entities. No small governments are regulated by this action. EPA identified an estimated five small companies (owning five facilities) out of the 22 companies that may be affected by the final rule. For small entities, EPA examined the cost to revenue ratio to identify the impacts of the today's rule on small entities. EPA has determined that none of the five small entities will experience an impact of 1% or greater ratio of costs to revenue. Further, EPA has fully evaluated the economic impact of the final rule to affected small entities. The economic achievability analysis was conducted using a discounted cash flow approach for facility analysis and the Altman Z' test for the firm analysis (for a full discussion, see Section X.C.). EPA projects that no small entities will incur a significant impact such as facility closure or firm failure.

#### 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 of 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 final rule as \$12.0 million (\$2001). Thus, today's rule is not subject to the requirements of Sections 202 and 205 of the UMRA.

EPA has determined that this rule contains no regulatory requirements that might significantly or uniquely affect small governments. No small governments are subject to this rule. The final rule, at most, imposes only minimal administrative requirements on small local governments that are administering approved pretreatment programs. The final rule does not uniquely affect small governments because small and large governments are affected in the same way. Thus, today's rule is not subject to the requirements of Section 203 of the UMRA.

#### D. Paperwork Reduction Act

This action does not impose any new information collection burden. There are no new information collection reporting requirements for facilities that comply with the limits in any of the subcategories. However, the Office of Management and Budget (OMB) has previously approved the information collection requirements and burden contained in the regulation under "National Pollutant Discharge Elimination System (NPDES)/ Compliance Assessment/Certification Information" ICR (EPA ICR No.1427.05; OMB Control No. 2040-0110) and in the "National Pretreatment Program (40 CFR part 403)" ICR (EPA ICR No. 0002.081; OMB Control No. 2040-0009) under the provisions of the *Paperwork Reduction Act* (PRA), 44 U.S.C. 3501 *et seq.*

Copies of the ICR documents may be obtained from Sandy Farmer, by mail at the Office of Environmental Information, Collection Strategies Division; U.S. Environmental Protection Agency (2822); 1200 Pennsylvania Ave., NW, Washington, DC 20460, or by email

at [farmer.sandy@epa.gov](mailto:farmer.sandy@epa.gov). A copy may also be downloaded off the internet at <http://www.epa.gov/icr>. Include the ICR and/or OMB number in any correspondence.

Burden means the total time, effort or financial resources expended by persons to generate, maintain, retain or disclose or provide information to or for a Federal Agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information.

An Agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a current valid OMB control number. The OMB control numbers for EPA's regulations are listed in 40 CFR part 9 and 48 CFR Chapter 15.

#### E. National Technology Transfer and Advancement Act

As noted in the proposed rule, Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (NTTAA), (Public Law 104-113, section 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 standards 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.

Today's rule does not establish any technical standards. Thus, NTTAA does not apply to this rule. It should be noted, however, that dischargers complying with this rule may need to use previously approved technical standards to analyze for some or all of the following pollutants: benzo(a)pyrene, naphthalene, phenols (4AAP), TSS, Oil and Grease (HEM), total cyanide, ammonia as Nitrogen, 2,3,7,8-TCDF, and pH. Consensus

standards have already been promulgated in tables at 40 CFR 136.3 for measurement of all of the analytes.

*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 rule is not subject to Executive Order 13045 because it is neither "economically significant" as defined under Executive Order 12866. Further, it does not concern an environmental health or safety risk that EPA has reason to believe may have a disproportionate effect on children.

*G. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments*

Executive Order 13175, entitled "Consultation and Coordination with Indian Tribal Governments" (65 FR 67249, November 9, 2000), requires EPA to develop an accountable process to ensure "meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications." "Policies that have tribal implications" is defined in the Executive Order to include regulations that have "substantial direct effects on one or more Indian tribes, on the relationship between the Federal government and the Indian tribes, or on the distribution of power and responsibilities between the Federal government and Indian tribes."

This final rule does not have tribal implications. It will not have substantial direct effects on tribal governments, on the relationship between the Federal government and Indian tribes, as specified in Executive Order 13175. EPA determined no facilities in the scope of the final rule are owned by Indian tribes nor are any facilities located in tribal lands. Thus, Executive Order 13175 does not apply to this rule.

*H. 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 final 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. This rule only directly affects the private sector. It establishes effluent limitations for iron and steel facilities. The rule does not apply directly to States and localities and will only affect State and local governments when they are administering CWA permitting programs. The rule, at most, imposes minimal administrative costs on States that have an authorized NPDES program. (These States must incorporate the new limitations and standards in new and reissued NPDES permits.) Thus, Executive Order 13132 does not apply to this rule.

*I. Executive Order 13211: Energy Effects*

This rule is not a "significant energy action" as defined in Executive Order 13211, "Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use" (66 FR 28355, May 22, 2001) because it is not likely to have a significant adverse effect on the supply, distribution, or use of energy. The maximum estimated additional energy needs associated with today's rule represents less than 0.001 percent of national energy demand, which is not considered significant.

*J. Congressional Review Act*

The Congressional Review Act, 5 U.S.C. 801 *et seq.*, as added by the Small Business Regulatory Enforcement Fairness Act of 1996, generally provides that before a rule may take effect, the agency promulgating the rule must submit a rule report, which includes a copy of the rule, to each House of the Congress and to the Comptroller General of the United States.

EPA will submit a report containing this rule and other required information to the U.S. Senate, the U.S. House of Representatives, and the Comptroller General of the United States prior to publication of the rule in the **Federal Register**. A major rule cannot take effect until 60 days after it is published in the **Federal Register**. This action is not a "major rule" as defined by 5 U.S.C. 804(2). This rule will be effective November 18, 2002.

**List of Subjects in 40 CFR Part 420**

Environmental protection, Iron, Steel, Waste treatment and disposal, Water pollution control.

Dated: April 30, 2002.

**Christine Todd Whitman,**  
*Administrator.*

For the reasons set out in the preamble, title 40, chapter I of the Code of Federal Regulations is amended as follows:

**PART 420—IRON AND STEEL MANUFACTURING POINT SOURCE CATEGORY**

1. The authority citation for part 420 continues to read as follows:

**Authority:** Secs. 301; 304(b), (c), (e), and (g); 306(b) and (c); 307; 308 and 501 of the Clean Water Act (the Federal Water Pollution Control Act Amendments of 1972., as amended by the Clean Water Act of 1977) (the "Act"); 33 U.S.C. 1311; 1314(b), (c), (e), and (g); 1316(b) and (c); 1317; 1318, 1361; 86 Stat. 816, Pub. L. 92-500; 91 Stat. 1567; Pub. L. 95-217.

**General Provisions**

2. Section 420.02 is amended by adding paragraphs (r), (s), (t) and (u) to read as follows:

**§ 420.02 General definitions.**

\* \* \* \* \*

(r) The term *Non-process wastewaters* means utility wastewaters (for example, water treatment residuals, boiler blowdown, and air pollution control wastewaters from heat recovery equipment); treated or untreated wastewaters from groundwater remediation systems; dewatering water for building foundations; and other wastewater streams not associated with a production process.

(s) The term *Nitrification* means oxidation of ammonium salts to nitrites (via Nitrosomas bacteria) and the further oxidation of nitrite to nitrate via Nitrobacter bacteria. Nitrification can be accomplished in either:

(1) A single or two-stage activated sludge wastewater treatment system; or

(2) Wetlands specifically developed with a marsh/pond configuration and maintained for the express purpose of removing ammonia-N.

Indicators of nitrification capability are:

(1) Biological monitoring for ammonia oxidizing bacteria (AOB) and nitrite oxidizing bacteria (NOB) to determine if the nitrification is occurring; and

(2) Analysis of the nitrogen balance to determine if nitrifying bacteria reduce the amount of ammonia and increase the amount of nitrite and nitrate.

(t) The term *storm water from the immediate process area* means storm water that comes into contact with process equipment located outdoors, storm water collected in process area and bulk storage tank secondary containment structures, and storm water from wastewater treatment systems located outdoors, provided that it has the potential to become contaminated with process wastewater pollutants for the particular subcategory. Storm water from building roofs, plant roadways, and other storm waters that do not have the potential to become contaminated with process wastewater pollutants are not storm water from the immediate process area.

(u) The term *2,3,7,8-TCDF* means 2,3,7,8-tetrachlorodibenzofuran.

3. Revise § 420.03 to read as follows:

**§ 420.03 Alternative effluent limitations representing the degree of effluent reduction attainable by the application of best practicable control technology currently available, best available technology economically achievable, best available demonstrated control technology, and best conventional pollutant control technology (the "water bubble").**

(a) Except as provided in paragraphs (c) through (f) of this section, any existing or new direct discharging point source subject to this part may qualify for alternative effluent limitations to those specified in subparts A through M of this part, representing the degree of effluent reduction attainable by the application of best practicable control technology currently available (BPT), best available technology economically achievable (BAT), best conventional pollutant control technology (BCT), and best available demonstrated control technology (NSPS). The alternative effluent limitations for each pollutant are determined for a combination of outfalls by totaling the mass limitations allowed under subparts A through M of this part for each pollutant.

(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) Use of the water bubble to develop alternate effluent limitations for oil & grease is prohibited.

(d) 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.

(e) Each outfall from which process wastewaters are discharged must have specific, fixed effluent limitations for each pollutant limited by the applicable subparts A through M of this part.

(f) 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; and

(2) There shall be no alternate effluent limitations for 2,3,7,8-TCDF in sintering process wastewater.

4. Add § 420.07 to General Provision to read as follows:

**§ 420.07 Effluent limitations guidelines and standards for pH.**

(a) The pH level in process wastewaters subject to a subpart within this part shall be within the range of 6.0 to 9.0.

(b) The pH level 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 treat effluent subject to that subpart.

5. Add § 420.08 to General Provisions to read as follows:

**§ 420.08 Non-process wastewater and storm water.**

Permit and pretreatment control authorities may provide for increased loadings for non-process wastewaters defined at § 420.02 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.

**Subpart A—Cokemaking Subcategory**

6. Section 420.10 is revised to read as follows:

**§ 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.

7. Section 420.11 is revised to read as follows:

**§ 420.11 Specialized definitions.**

(a) For the cokemaking subcategory, the term *product* means the production of coke plus coke breeze.

(b) The term *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 the recovery of by-products derived from the gases and liquids that are driven from the coal during cokemaking.

(c) The term *cokemaking—non-recovery* means cokemaking operations for production of metallurgical coke (furnace coke and foundry coke) without recovery of by-products. Does not include co-generation facilities located at non-recovery coke facilities.

(d) The term *coke* means a processed form of coal that serves as the basic fuel for the smelting of iron ore.

(1) The term *foundry coke* means coke produced for foundry operations.

(2) The term *furnace coke* means coke produced for blast furnace operations

(e) The term *merchant coke plant* means by-product cokemaking operations that provide more than fifty percent of the coke produced to operations, industries, or processes other than ironmaking blast furnaces associated with steel production.

(f) The term *iron and steel coke plant* means by-product cokemaking operations other than those at merchant coke plants.

(g) The term *coke oven gas wet desulfurization system* means those systems that remove sulfur and sulfur compounds from coke oven gas and generate process wastewater.

(h) The term *coke breeze* means fine coke particles.

(i) The term *indirect ammonia recovery system* means those systems that recover ammonium hydroxide as a by-product from coke oven gases and waste ammonia liquors.

(j) The term *iron and steel* means those by-product cokemaking operations other than merchant cokemaking operations.

(k) The term *merchant* means those by-product cokemaking operations that provide more than fifty percent of the coke produced to operations, industries, or processes other than ironmaking blast furnaces associated with steel production.

(l) The term *O&G (as HEM)* means total recoverable oil and grease measured as n-hexane extractable material.

(m) The term *wet desulfurization system* means those systems that remove sulfur compounds from coke oven gases and produce a contaminated process wastewater.

8. Section 420.12 is amended by revising paragraph (c) to read as follows:

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

\* \* \* \* \*

(c) *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.

9. Section 420.13 is revised to read as follows:

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

Except as provided in 40 CFR 125.30 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 technology economically achievable (BAT):

(a) *By-product cokemaking.*

**SUBPART A.—EFFLUENT LIMITATIONS (BAT)**

Regulated parameter	Maximum daily <sup>1</sup>	Maximum monthly avg. <sup>1</sup>
Ammonia-N .....	0.00293	0.00202
Benzo(a)pyrene .....	0.0000110	0.00000612
Cyanide .....	0.00297	0.00208
Naphthalene .....	0.0000111	0.00000616
Phenols (4AAP) .....	0.0000381	0.0000238

<sup>1</sup> Pounds per thousand lb of product.

(1) Increased loadings, not to exceed 13.3 per cent of the above limitations, shall be provided for process wastewaters from coke oven gas wet desulfurization systems, but only to the extent such systems generate process wastewaters.

(2) 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.

(3) Increased loadings, not to exceed 44.2 percent of the above limitations, shall be provided for water used for the optimization of coke plant biological treatment systems.

(b) *Cokemaking—non-recovery.* There shall be no discharge of process wastewater pollutants to waters of the U.S.

10. Section 420.14 is revised to read as follows:

**§ 420.14 New source performance standards (NSPS).**

New sources subject to this subpart must achieve the following new source performance standards (NSPS), as applicable.

(a) *By-product cokemaking.*

(1) Any new source subject to the provisions of this section that commenced discharging after November 19, 2012, and before November 18, 2002, must continue to achieve the standards specified in § 420.14 of title 40 of the Code of Federal Regulations, revised as of July 1, 2001, except as provided below. For toxic and nonconventional pollutants, those standards shall apply until the expiration of the applicable time period specified in 40 CFR 122.29(d)(1); thereafter, the source must achieve the effluent limitations specified in § 420.13(a).

(2) The following standards apply with respect to each new source that commences construction after November 18, 2002:

**SUBPART A.—NEW SOURCE PERFORMANCE STANDARDS (NSPS)**

Regulated parameter	Maximum daily <sup>1</sup>	Maximum monthly avg. <sup>1</sup>
Ammonia-N .....	0.00293	0.00202
Benzo(a)pyrene .....	0.0000110	0.00000612
Cyanide .....	0.00297	0.00208
Naphthalene .....	0.0000111	0.00000616
O&G (as HEM) .....	0.00676	0.0037
pH <sup>2</sup> .....	( <sup>2</sup> )	( <sup>2</sup> )
Phenols (4AAP) .....	0.0000381	0.0000238
TSS .....	0.0343	0.0140

<sup>1</sup> Pounds per thousand lb of product.

<sup>2</sup> Within the range of 6.0 to 9.0.

(A) Increased loadings, not to exceed 13.3 per cent of the above limitations, shall be provided for process wastewaters from coke oven gas wet

desulfurization systems, but only to the extent such systems generate process wastewaters.

(B) 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) Increased loadings, not to exceed 44.2 percent of the above limitations, shall be provided for water used for the

optimization of coke plant biological treatment systems.

(b) *Cokemaking—non-recovery*. There shall be no discharge of process wastewater pollutants to waters of the U.S.

11. Section 420.15 is revised to read as follows:

**§ 420.15 Pretreatment standards for existing sources (PSES).**

Except as provided in 40 CFR 403.7 and 403.13, any existing source subject to this subpart 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) *By-product cokemaking*.

**SUBPART A.—PRETREATMENT STANDARDS FOR EXISTING SOURCES (PSES)**

Regulated parameter	Maximum daily <sup>1</sup>	Maximum monthly avg. <sup>1</sup>
Ammonia-N <sup>2</sup> .....	0.0333	0.0200
Cyanide .....	0.00724	0.00506
Naphthalene .....	0.0000472	0.0000392

<sup>1</sup> Pounds per thousand lb of product.

<sup>2</sup> The pretreatment standards for ammonia are not applicable to sources that discharge to a POTW with nitrification capability (defined at § 420.02(s)).

(1) Increased loadings, not to exceed 13.3 per cent of the above limitations, shall be provided for process wastewaters from wet coke oven gas desulfurization systems, but only to the extent such systems generate process wastewaters.

(2) 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.

(3) Increased loadings, not to exceed 44.2 percent of the above limitations,

shall be provided for water used for the optimization of coke plant biological treatment systems.

(b) *Cokemaking—non-recovery*. There shall be no discharge of process wastewater pollutants to POTWs.

12. Section 420.16 is revised to read as follows:

**§ 420.16 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), as applicable.

(a) *By-product cokemaking*.

(1) Any new source subject to the provisions of this section that commenced discharging after November 19, 2012 and before November 18, 2002 must continue to achieve the standards specified in § 420.16 of title 40 of the Code of Federal Regulations, revised as of July 1, 2001, (except for the standards for phenols 4AAP) 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 § 420.15(a).

(2) Except as provided in 40 CFR 403.7, the following standards apply with respect to each new source that commences construction after November 18, 2002:

**SUBPART A.—PRETREATMENT STANDARDS FOR NEW SOURCES (PSNS)**

Regulated parameter	Maximum daily <sup>1</sup>	Maximum monthly avg. <sup>1</sup>
Ammonia-N <sup>2</sup> .....	0.00293	0.00202
Benzo(a)pyrene .....	0.0000110	0.00000612
Cyanide .....	0.00297	0.00208
Naphthalene .....	0.0000111	0.00000616

<sup>1</sup> Pounds per thousand lb of product.

<sup>2</sup> The pretreatment standards for ammonia are not applicable to sources that discharge to a POTW with nitrification capability (defined at § 420.02(s)).

(A) Increased loadings, not to exceed 13.3 percent of the above limitations, shall be provided for process wastewaters from coke oven gas wet desulfurization systems, but only to the extent such systems generate process wastewaters.

(B) 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) Increased loadings, not to exceed 44.2 percent of the above limitations, shall be provided for water used for the optimization of coke plant biological treatment systems.

(b) *Cokemaking—non-recovery*. Except as provided in 40 CFR 403.7, the following standards apply with respect to each new source that commences construction after November 18, 2002:



There shall be no discharge of process wastewater pollutants to POTWs.

13. Section 420.17 is amended by revising paragraph (c) to read as follows:

**§ 420.17 Effluent limitations representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology (BCT).**

\* \* \* \* \*

(c) *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 conventional pollutant control technology (BCT): There shall be no discharge of process wastewater pollutants to waters of the U.S.

14. Section 420.18 is added to Subpart A to read as follows:

**§ 420.18 Pretreatment standards compliance dates.**

Compliance with the pretreatment standards for existing sources set forth in § 420.15 of this subpart is required not later than October 17, 2005 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 Subpart A of title 40 of the Code of Federal Regulations, revised as of July 1, 2001, shall continue to apply.

**Subpart B—Sintering Subcategory**

15. Section 420.21 is added to read as follows:

**§ 420.21 Specialized definitions.**

- As used in this subpart:
  - (a) For the sintering subcategory, the term *product* means sinter agglomerated from iron-bearing materials.
  - (b) The term *dry air pollution control system* means an emission control system that utilizes filters to remove iron-bearing particles (fines) from blast furnace or sintering off-gases.
  - (c) The term *minimum level (ML)* means the level at which the analytical system gives recognizable signals and an acceptable calibration point. For 2,3,7,8-tetrachlorodibenzofuran, the minimum level is 10 pg/L per EPA Method 1613B for water and wastewater samples.
  - (d) The term *pg/L* means picograms per liter (ppt = 1.0×10<sup>-12</sup> gm/L).

(e) The term *sintering* means a process for agglomerating iron-bearing materials into small pellets (sinter) that can be charged to a blast furnace.

(f) The term *wet air pollution control system* means an emission control system that utilizes water to clean process or furnace off-gases.

16. Section 420.22 is revised to read as follows:

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

(a) *Sintering operations with wet air pollution control system.* The following table presents BPT limitations for sintering operations with wet air pollution control systems:

**SUBPART B.—EFFLUENT LIMITATIONS (BPT)**

Pollutants or pollutant property	BPT effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days
	Kg/kkg (pounds per 1000 lb) of product	
TSS .....	0.0751	0.0250
O&G .....	0.0150	0.00501
pH .....	( <sup>1</sup> )	( <sup>1</sup> )

<sup>1</sup> Within the range of 6.0 to 9.0.

(b) *Sintering operations with dry air pollution control system.* There shall be no discharge of process wastewater pollutants to waters of the U.S.

17. Section 420.23 is revised to read as follows:

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

Except as provided in 40 CFR 125.30 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 presents BAT limitations for sintering operations with wet air pollution control systems:

**SUBPART B.—EFFLUENT LIMITATIONS (BAT)**

Regulated parameter	Maximum daily <sup>1</sup>	Maximum monthly avg. <sup>1</sup>
Ammonia-N <sup>2</sup> .....	0.0150	0.00501
Cyanide <sup>2</sup> .....	0.00300	0.00150
Lead .....	0.000451	0.000150
Phenols (4AAP) <sup>2</sup> .....	0.000100	0.0000501
2,3,7,8-TCDF .....	<ML	
TRC <sup>3</sup> .....	0.000250	

SUBPART B.—EFFLUENT LIMITATIONS (BAT)—Continued

Regulated parameter	Maximum daily <sup>1</sup>	Maximum monthly avg. <sup>1</sup>
Zinc .....	0.000676	0.000225

<sup>1</sup> Pounds per thousand lb of product.  
<sup>2</sup> Limits for these parameters apply only when sintering waste water is co-treated with ironmaking wastewater.  
<sup>3</sup> Applicable only when sintering process wastewater is chlorinated.

(b) *Sintering operations with dry air pollution control system.* There shall be no discharge of process wastewater pollutants to waters of the U.S.

18. Section 420.24 is revised to read as follows:

**§ 420.24 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 November 19, 2012 and before November 18, 2002 must continue to achieve the applicable standards specified in § 420.24 of title 40 of the Code of Federal Regulations, revised as of July 1, 2001, except that after the expiration of the applicable time period specified in 40 CFR

122.29(d)(1), the source must also achieve the effluent limitations specified in § 420.23 for 2,3,7,8-TCDF.

(b) The following standards apply with respect to each new source that commences construction after November 18, 2002.

(1) *Sintering operations with wet air pollution control system.* The following table presents NSPS for sintering operations with wet air pollution control systems:

SUBPART B.—NEW SOURCE PERFORMANCE STANDARDS (NSPS)

Regulated parameter	Maximum daily <sup>1</sup>	Maximum monthly avg. <sup>1</sup>
TSS .....	0.0200	0.00751
O&G .....	0.00501	
Ammonia-N <sup>2</sup> .....	0.0150	0.00501
Cyanide <sup>2</sup> .....	0.00100	0.000501
Phenols (4AAP) <sup>2</sup> .....	0.000100	0.0000501
TRC <sup>3</sup> .....	0.000250	
Lead .....	0.000451	0.000150
Zinc .....	0.000676	0.000225
pH .....	( <sup>4</sup> )	( <sup>4</sup> )
2,3,7,8-TCDF .....	<ML	

<sup>1</sup> Pounds per thousand lb of product.  
<sup>2</sup> Limits for these parameters apply only when sintering wastewater is co-treated with ironmaking wastewater.  
<sup>3</sup> Applicable only when sintering process wastewater is chlorinated.  
<sup>4</sup> Within the range of 6.0 to 9.0.

(2) *Sintering operations with dry air pollution control system.* There shall be no discharge of process wastewater pollutants to waters of the U.S.

19. Section 420.25 is revised to read as follows:

**§ 420.25 Pretreatment standards for existing sources (PSES).**

Except as provided in 40 CFR 403.7 and 403.13, any existing source subject to this subpart 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) Sintering operations with wet air pollution control system. The following table presents PSES for sintering operations with wet air pollution control systems:

SUBPART B.—PRETREATMENT STANDARDS FOR EXISTING SOURCES (PSES)

Regulated parameter	Maximum daily <sup>1</sup>	Maximum monthly avg. <sup>1</sup>
Ammonia-N <sup>2,3</sup> .....	0.0150	0.00501
Cyanide <sup>2</sup> .....	0.00300	0.00150
Phenols (4AAP) <sup>2</sup> .....	0.000100	0.0000501
Lead .....	0.000451	0.000150
Zinc .....	0.000676	0.000225
2,3,7,8-TCDF .....	<ML	

<sup>1</sup> Pounds per thousand lb of product.  
<sup>2</sup> The pretreatment standards for these parameters apply only when sintering wastewater is co-treated with ironmaking wastewater.  
<sup>3</sup> The pretreatment standards for ammonia are not applicable to sources that discharge to a POTW with nitrification capability (defined at § 420.02(s)).

(b) *Sintering operations with dry air pollution control system.* There shall be no discharge of process wastewater pollutants to POTWs.

20. Section 420.26 is revised to read as follows:

**§ 420.26 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), as applicable.

(a) *Sintering operations with wet air pollution control system.*

(1) Any new source subject to the provisions of this section that commenced discharging after November 19, 2012 and before November 18, 2002 must continue to achieve the standards specified in § 420.26 of title 40 of the Code of Federal Regulations, revised as of July 1, 2001, 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 also achieve the pretreatment standard for 2,3,7,8-TCDF specified in § 420.25.

(2) Except as provided in 40 CFR 403.7, the following standards apply with respect to each new source that commences construction after November 18, 2002: The following table presents PSNS for sintering operations with wet air pollution control systems:

**SUBPART B.—PRETREATMENT STANDARDS FOR NEW SOURCES (PSNS)**

Regulated parameter	Maximum daily <sup>1</sup>	Maximum monthly avg. <sup>1</sup>
Ammonia-N <sup>2,3</sup> .....	0.0150	0.00501
Cyanide <sup>2</sup> .....	0.00100	0.000501
Phenols (4AAP) <sup>2</sup> .....	0.000100	0.0000501
Lead .....	0.000451	0.000150
Zinc .....	0.000676	0.000225
2,3,7,8-TCDF .....	<ML	

<sup>1</sup> Pounds per thousand pound of product.

<sup>2</sup> The pretreatment standards for these parameters apply only when sintering wastewater is co-treated with ironmaking wastewater.

<sup>3</sup> The pretreatment standards for ammonia are not applicable to sources that discharge to a POTW with nitrification capability (defined at § 420.02(s)).

(b) *Sintering operations with dry air pollution control system.* There shall be no discharge of process wastewater pollutants to POTWs.

21. Section 420.28 is added to Subpart B to read as follows:

**§ 420.28 Pretreatment standards compliance dates.**

Compliance with the pretreatment standards for 2,3,7,8-TCDF for existing sources set forth in § 420.25(a) is required not later than October 17, 2005 whether or not the pretreatment authority issues or amends a pretreatment permit requiring such compliance.

22. Section 420.29 is added to Subpart B to read as follows:

**§ 420.29 Point of compliance monitoring.**

(a) *Sintering 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 process wastewaters from processes other than sintering and ironmaking, non-process wastewaters or

non-contact cooling water, if such water(s) are in an amount greater than 5 percent by volume of the sintering process wastewaters.

(b) *Sintering 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 process wastewaters from processes other than sintering and ironmaking, non-process wastewaters and non-contact cooling water in an amount greater than 5 percent by volume of the sintering process wastewaters.

**Subpart C—Ironmaking Subcategory**

23. Section 420.31 is revised to read as follows:

**§ 420.31 Specialized definitions.**

(a) For ironmaking blast furnaces, the term *product* means the amount of molten iron produced.

(b) The term *molten iron* means iron produced in a blast furnace as measured at the blast furnace, and may include relatively minor amounts of blast furnace slag that may be skimmed from the molten iron at the steelmaking shop

or other location remote from the blast furnace.

(c) The term *iron blast furnace* means all blast furnaces except ferromanganese blast furnaces.

(d) The term *existing indirect dischargers* means only those two iron blast furnace operations with discharges to publicly owned treatment works prior to May 27, 1982.

**§ 420.32 [Amended]**

24. Section 420.32 is amended by removing and reserving paragraph (b).

**§ 420.33 [Amended]**

25. Section 420.33 is amended by removing and reserving paragraph (b).

**§ 420.34 [Amended]**

26. Section 420.34 is amended by removing and reserving paragraph (b).

27. Section 420.35 is amended by adding a footnote in the table to paragraph (a) for the entry Ammonia-N and by removing and reserving paragraph (b) to read as follows:

**§ 420.35 Pretreatment standards for existing sources (PSES).**

\* \* \* \* \*

(a) *Iron blast furnace.*

SUBPART C.—PRETREATMENT STANDARDS FOR EXISTING SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 30 con- secutive days
Kg/kgg (pounds per 1000 lb) of product		
Ammonia-N <sup>1</sup> .....	0.00876	0.00292
* * * * *	*	*

<sup>1</sup> The pretreatment standards for ammonia are not applicable to sources that discharge to a POTW with nitrification capability (defined at 420.02(s)).

\* \* \* \* \*  
28. Section 420.36 is amended by adding a footnote in the table to paragraph (a) for the entry Ammonia-N

and by removing and reserving paragraph (b) to read as follows:

**§ 420.36 Pretreatment standards for new sources (PSNS).**  
\* \* \* \* \*  
(a) *Iron blast furnace.*

SUBPART C.—PRETREATMENT STANDARDS FOR NEW SOURCES

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 30 con- secutive days
Kg/kgg (pounds per 1000 lb) of product		
Ammonia-N <sup>1</sup> .....	0.00876	0.00292
* * * * *	*	*

<sup>1</sup> The pretreatment standards for ammonia are not applicable to sources that discharge to a POTW with nitrification capability (defined at § 420.02 (s)).

**Subpart D—Steelmaking Subcategory**

29. Section 420.40 is revised to read as follows.

**§ 420.40 Applicability; description of the steelmaking subcategory.**

The provisions of this subpart are applicable to discharges and to the introduction of pollutants into publicly owned treatment works resulting from steelmaking operations conducted in basic oxygen and electric arc furnaces.

**§ 420.41 [Amended]**

30. Section 420.41 is amended by removing and reserving paragraph (b).

31. Section 420.42 is amended by revising paragraph (a), the heading of paragraph (c) (the table is unchanged), and adding paragraph (d) to read as follows.

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

\* \* \* \* \*

(a) *Electric arc furnace steelmaking—semi-wet.* No discharge of process wastewater pollutants to navigable waters.

\* \* \* \* \*

(c) *Basic oxygen furnace steelmaking—wet open combustion; and electric arc furnace steelmaking—wet.*

\* \* \* \* \*

(d) *Basic oxygen furnace steelmaking—semi-wet.*

(1) No discharge of process wastewater pollutants to navigable waters.

(2) If the permittee demonstrates to the satisfaction of the permitting authority that safety considerations prevent attainment of these limitations, the permitting authority may establish alternative limitations on a best professional judgment basis.

32. Section 420.43 is amended by revising paragraph (a), the heading of paragraph (c) (the table is unchanged), and adding paragraph (d) to read as follows.

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

\* \* \* \* \*

(a) *Electric arc furnace steelmaking—semi-wet.* No discharge of process wastewater pollutants to navigable waters.

\* \* \* \* \*

(c) *Basic oxygen furnace steelmaking—wet open combustion; and electric arc furnace steelmaking—wet.*

\* \* \* \* \*

(d) *Basic oxygen furnace steelmaking—semi-wet.*

(1) No discharge of process wastewater pollutants to navigable waters.

(2) If the permittee demonstrates to the satisfaction of the permitting authority that safety considerations prevent attainment of these limitations, the permitting authority may establish alternative limitations on a best professional judgment basis.

33. Section 420.44 is amended by revising paragraph (a) and removing paragraph (d) to read as follows.

**§ 420.44 New source performance standards (NSPS).**

\* \* \* \* \*

(a) *Basic oxygen furnace steelmaking—semi-wet; and electric arc furnace steelmaking—semi-wet.* No discharge of process wastewater pollutants to navigable waters.

\* \* \* \* \*

34. Section 420.45 is amended by revising paragraph (a), the heading to paragraph (c) (the table is unchanged), and adding paragraph (d) to read as follows.

**§ 420.45 Pretreatment standards for existing sources (PSES).**

\* \* \* \* \*

(a) *Electric arc furnace steelmaking—semi-wet.* No discharge of process wastewater pollutants to navigable waters.

\* \* \* \* \*

(c) *Basic oxygen furnace steelmaking—wet open combustion; and electric arc furnace steelmaking—wet.*

\* \* \* \* \*

(d) *Basic oxygen furnace steelmaking—semi-wet.*

(1) No discharge of process wastewater pollutants to navigable waters.

(2) If the permittee demonstrates to the satisfaction of the pretreatment control authority that safety considerations prevent attainment of these limitations, the pretreatment control authority may establish alternative limitations on a best professional judgment basis.

35. Section 420.46 is amended by revising paragraph (a) and removing paragraph (d) to read as follows.

**§ 420.46 Pretreatment standards for new sources (PSNS).**

\* \* \* \* \*

(a) *Basic oxygen furnace steelmaking—semi-wet; and electric arc furnace steelmaking—semi-wet.* No discharge of process wastewater pollutants to navigable waters.

\* \* \* \* \*

36. Section 420.47 is amended by revising the section heading, paragraph (a), and adding paragraph (d) to read as follows.

**§ 420.47 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology (BCT).**

(a) *Electric arc furnace steelmaking—semi-wet.* No discharge of process wastewater pollutants to navigable waters.

\* \* \* \* \*

(d) *Basic oxygen furnace steelmaking—semi-wet.*

(1) No discharge of process wastewater pollutants to navigable waters.

(2) If the permittee demonstrates to the satisfaction of the permitting authority that safety considerations prevent attainment of these limitations, the permitting authority may establish alternative limitations on a best professional judgment basis.

37. Section 420.48 is added to Subpart D to read as follows:

**§ 420.48 Pretreatment standards compliance dates.**

Compliance with the pretreatment standards for existing sources set forth in § 420.45(d) of this subpart is required not later than October 17, 2005 whether or not the pretreatment authority issues or amends a pretreatment permit requiring such compliance.

38. Subpart M is added to read as follows:

**Subpart M—Other Operations Subcategory**

Sec.

- 420.130 Applicability.
- 420.131 Subcategory definitions.
- 420.132 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).
- 420.133 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable (BAT).
- 420.134 New source performance standards (NSPS).
- 420.135 Pretreatment standards for existing sources (PSES).
- 420.136 Pretreatment standards for new sources (PSNS).
- 420.137 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best control technology for conventional pollutant (BCT).

**Subpart M—Other Operations Subcategory**

**§ 420.130 Applicability.**

The provisions of this subpart are applicable to discharges to waters of the U.S. and the introduction of pollutants into publicly owned treatment works resulting from production of direct-reduced iron and from briquetting and forging operations.

**§ 420.131 Specialized definitions.**

As used in this subpart:  
 (a) The term *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.  
 (b) The term *direct-reduced iron (DRI)* means iron produced by reduction of iron ore (pellets or briquettes) using gaseous (carbon monoxide-carbon dioxide, hydrogen) or solid reactants.  
 (c) The term *forging* means the hot-working of heated steel shapes (e.g., ingots, blooms, billets, slabs) by hammering or hydraulic presses, performed at iron and steel mills.  
 (d) For briquetting operations, the term product means the amount in tons of briquettes manufactured by hot or cold agglomeration processes.

(e) For direct reduced iron (DRI), the term product means the amount of direct reduced iron and any fines that are produced and sold commercially (as opposed to fines that may be reprocessed on site).

(f) For forging, the term product means the tons of finished steel forgings produced by hot working steel shapes.

(g) The term *O&G (as HEM)* means total recoverable oil & grease measured as n-hexane extractable materials.

**§ 420.132 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.*

**SUBPART M.—EFFLUENT LIMITATIONS (BPT)**

Pollutant	Maximum daily <sup>1</sup>	Maximum monthly avg. <sup>1</sup>
TSS .....	0.00998	0.00465
pH .....	( <sup>2</sup> )	( <sup>2</sup> )

<sup>1</sup> Pounds per thousand pound of product.  
<sup>2</sup> Within the range of 6.0 to 9.0.

(b) *Forging operations.*

**SUBPART M.—EFFLUENT LIMITATIONS (BPT)**

Pollutant	Maximum daily <sup>1</sup>	Maximum monthly avg. <sup>1</sup>
O&G (as HEM) .....	0.00746	0.00446
TSS .....	0.0123	0.00508
pH .....	( <sup>2</sup> )	( <sup>2</sup> )

<sup>1</sup> Pounds per thousand pound of product.  
<sup>2</sup> Within the range of 6.0 to 9.0.

(c) *Briquetting.* There shall be no discharge of process wastewater pollutants to waters of the U.S.

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

Except as provided in 40 CFR 125.30 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) *Direct-reduced iron*. [Reserved]  
 (b) *Forging operations*. [Reserved]  
 (c) *Briquetting*. There shall be no discharge of process wastewater pollutants.

**§ 420.134 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*.

**SUBPART M.—NEW SOURCE PERFORMANCE STANDARDS (NSPS)**

Pollutant	Maximum daily <sup>1</sup>	Maximum monthly avg. <sup>1</sup>
TSS .....	0.00998	0.00465
pH .....	( <sup>2</sup> )	( <sup>2</sup> )

<sup>1</sup> Pounds per thousand pound of product.  
<sup>2</sup> Within the range of 6.0 to 9.0.

(b) *Forging operations*.

**SUBPART M.—NEW SOURCE PERFORMANCE STANDARDS (NSPS)**

Pollutant	Maximum daily <sup>1</sup>	Maximum monthly avg. <sup>1</sup>
O&G (as HEM) .....	0.00746	0.00446
TSS .....	0.0123	0.00508

**SUBPART M.—NEW SOURCE PERFORMANCE STANDARDS (NSPS)—Continued**

Pollutant	Maximum daily <sup>1</sup>	Maximum monthly avg. <sup>1</sup>
pH .....	( <sup>2</sup> )	( <sup>2</sup> )

<sup>1</sup> Pounds per thousand pound of product.  
<sup>2</sup> Within the range of 6.0 to 9.0.

(c) *Briquetting*. There shall be no discharge of process wastewater pollutants to waters of the U.S.

**§ 420.135 Pretreatment standards for existing sources (PSES).**

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

- (a) *Direct-reduced iron*. [Reserved]
- (b) *Forging operations*. [Reserved]
- (c) *Briquetting*. There shall be no discharge of process wastewater pollutants to POTWs.

**§ 420.136 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*. [Reserved]
- (b) *Forging operations*. [Reserved]
- (c) *Briquetting*. There shall be no discharge of process wastewater pollutants to POTWs.

**§ 420.137 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 § 420.132 for the best practicable control technology currently available (BPT).

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