

as part of the manufacturing process to recover parts that have been improperly coated or as part of maintenance and rebuilding to restore parts to a usable condition. Organic coatings (including paint) are stripped using thermal, mechanical, and chemical means. Thermal methods include burn-off ovens, fluidized beds of sand, and molten salt baths. Mechanical methods include scraping and abrasive blasting (as defined in "Abrasive Blasting" in appendix B of this part). Chemical paint strippers include alkali solutions, acid solutions, and solvents (e.g., methylene chloride). Wastewater generated during organic coating stripping includes process solutions (limited mostly to chemical paint strippers and rinses).

*Stripping (Metallic Coating)* involves removing a metallic coating from a metal basis material. Stripping is commonly part of the manufacturing process to recover parts that have been improperly coated or as part of maintenance and rebuilding to restore parts to a usable condition. Metallic coating stripping most often uses chemical baths, although mechanical means (e.g., grinding, abrasive blasting) also are used. Chemical stripping frequently is performed as an aqueous electrolytic process. Wastewater generated during metallic coating stripping includes process solutions and rinses. Stripping solutions become contaminated from dissolution of the base metal. Typically, the entire solution is discharged to treatment. Rinsing is used to remove the corrosive film remaining on the parts.

*Thermal Infusion* uses heat to infuse metal powder or dust onto the surface of a part. Typically, thermal infusion is a dry operation. In some cases, however, water may be used to remove excess metal powder, metal dust, or molten metal.

*Ultrasonic Machining* involves forcing an abrasive liquid between a vibrating tool and a part. Particles in the abrasive liquid strike the part, removing any microscopic flakes on the part.

*Vacuum Impregnation* is used to reduce the porosity of the part. A filler material (usually organic) is applied to the surface of the part and polymerized under pressure and heat. Wastewater is generated in this unit operation when rinse water is used to remove residual organic coating from the part.

*Vacuum Plating* involves applying a thin layer of metal oxide onto a part using molten metal in a vacuum chamber.

*Water Shredder* involves applying a dilute water-based chemical compound to a part to accelerate drying. This operation typically is used to prevent a part from streaking when excess water remains on the part.

*Wet Air Pollution Control* involves using water to remove chemicals, fumes, or dusts that are entrained in air streams exhausted from process tanks or production areas. Most frequently, wet air pollution control devices

are used with electroplating, cleaning, and coating processes. A common type of wet air pollution control is the wet packed scrubber consisting of a spray chamber that is filled with packing material. Water is continuously sprayed onto the packing and the air stream is pulled through the packing by a fan. Pollutants in the air stream are absorbed by the water droplets and the air is released to the atmosphere. A single scrubber often serves numerous process tanks; however, the air streams typically are segregated by source into chromium, cyanide, and acid/alkaline sources. Wet air pollution control can be divided into several suboperations, including:

- (1) Wet Air Pollution Control for Acid Alkaline Baths;
- (2) Wet Air Pollution Control for Cyanide Baths;
- (3) Wet Air Pollution Control for Chromium-Bearing Baths; and
- (4) Wet Air Pollution Control for Fumes and Dusts.

*Wire Galvanizing Flux* involves using flux to remove rust and oxide from the surface of steel wire prior to galvanizing. This provides long-term corrosion protection for the steel wire.

## PART 439—PHARMACEUTICAL MANUFACTURING POINT SOURCE CATEGORY

### GENERAL

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trol technology currently available (BPT).

### APPENDIX A TO PART 439—TABLES

AUTHORITY: 33 U.S.C. 1311, 1314, 1316, 1317, 1318, 1342 and 1361.

SOURCE: 48 FR 49821, Oct. 27, 1983, unless otherwise noted.

### GENERAL

#### § 439.0 Applicability.

(a) This part applies to process wastewater discharges resulting from the research and manufacture of pharmaceutical products, which are generally, but not exclusively, reported under SIC 2833, SIC 2834 and SIC 2836 (1987 Standard Industrial Classification Manual).

(b) Although not reported under SIC 2833, SIC 2834 and SIC 2836, discharges from the manufacture of other pharmaceutical products to which this part applies include (but are not limited to):

(1) Products manufactured by one or more of the four types of manufacturing processes described in subcategories A, B, C or D of this part, and considered by the Food and Drug Administration to be pharmaceutical active ingredients;

(2) Multiple end-use products (e.g., components of formulations, chemical intermediates, or final products) derived from pharmaceutical manufacturing operations and intended for use primarily in pharmaceutical applications;

(3) Pharmaceutical products and intermediates not subject to other categorical limitations and standards, provided the manufacturing processes generate process wastewaters that are similar to those derived from the manufacture of pharmaceutical products elsewhere (an example of such a product is citric acid);

(4) Cosmetic preparations that are reported under SIC 2844 and contain pharmaceutical active ingredients, or active ingredients that are intended for the treatment of a skin condition. (These preparations do not include products such as lipsticks or perfumes that serve to enhance appearance, or provide a pleasing odor, but do not enhance skin care. Also excluded are deodorants, manicure preparations, shaving preparations and non-medicated

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shampoos that do not function primarily as a skin treatment.)

(c) The provisions of this part do not apply to wastewater discharges resulting from the manufacture of the following products, or as a result of providing one or more of the following services:

(1) Surgical and medical instruments and apparatus reported under SIC 3841;

(2) Orthopedic, prosthetic, and surgical appliances and supplies reported under SIC 3842;

(3) Dental equipment and supplies reported under SIC 3843;

(4) Medical laboratory services reported under SIC 8071;

(5) Dental laboratory services reported under SIC 8072;

(6) Outpatient care facility services reported under SIC 8081;

(7) Health and allied services reported under SIC 8091, and not classified elsewhere;

(8) Diagnostic devices other than those reported under SIC 3841;

(9) Animal feed products that include pharmaceutical active ingredients such as vitamins and antibiotics, where the major portion of the product is non-pharmaceutical, and the resulting process wastewater is not characteristic of process wastewater from the manufacture of pharmaceutical products;

(10) Food and beverage products fortified with vitamins or other pharmaceutical active ingredients, where the major portion of the product is non-pharmaceutical, and the resulting process wastewater is not characteristic of process wastewater from the manufacture of pharmaceutical products;

(11) Pharmaceutical products and intermediates subject to the provisions of 40 CFR part 414, provided their manufacture results in less than 50 percent of the total flow of process wastewater that is regulated by 40 CFR part 414 at the facility.

[63 FR 50424, Sept. 21, 1998]

**§ 439.1 General definitions.**

As used in this part:

(a) The general definitions, abbreviations and methods of analysis in 40 CFR part 401 shall apply.

(b) *Bench-scale operation* means the laboratory testing of materials, methods, or processes on a small scale, such as on a laboratory worktable.

(c) *Cyanide (T)* means the parameter total cyanide.

(d) *In-plant monitoring point* means a location within a plant, where an individual process effluent can be exclusively monitored before it is diluted or mixed with other process wastewaters en route to the end-of-pipe.

(e) *Maximum daily* means the highest allowable discharge of wastewater pollutants during a calendar day or any 24 hour period that reasonably represents a calendar day for purposes of sampling.

(f) *Maximum monthly average* means the highest allowable average of daily discharges of wastewater pollutants over a calendar month, and is calculated as the sum of all daily values measured during a calendar month divided by the number of daily values measured during that month.

(g) *mg/L* means milligrams per liter or parts per million (ppm)

(h) *Minimum level* means the level at which an analytical system gives recognizable signals and an acceptable calibration point.

(i) *Nitrification capability* means the capability of a POTW treatment system to oxidize ammonia or ammonium salts initially to nitrites (via *Nitrosomonas* bacteria) and subsequently to nitrates (via *Nitrobacter* bacteria). Criteria for determining the nitrification capability of a POTW treatment system are: bioassays confirming the presence of nitrifying bacteria; and analyses of the nitrogen balance demonstrating a reduction in the concentration of ammonia or ammonium salts and an increase in the concentrations of nitrites and nitrates.

(j) *Non-detect (ND)* means a concentration value below the minimum level that can be reliably measured by the analytical method.

(k) *Pilot-scale operation* means processing equipment being operated at an intermediate stage between laboratory-scale and full-scale operation for the purpose of developing a new product or manufacturing process.

(l) *POTW* means publicly owned treatment works (40 CFR 403.3).

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(m) *Process wastewater*, as defined at 40 CFR 122.2 and for the purposes of this part, does not include the following:

(1) Trimethyl silanol, any active anti-microbial materials, process wastewater from imperfect fermentation batches, and process area spills. Discharges containing such materials are not subject to the limitations and standards of this part.

(2) Non-contact cooling water, utility wastewaters, general site surface runoff, groundwater (e.g., contaminated groundwaters from on-site or off-site groundwater remediation projects), and other non-process water generated on site. Discharges of such waters and wastewaters are not subject to the limitations and standards of this part.

(n) *Non-conventional pollutants* means parameters that are neither conventional pollutants (40 CFR 401.16), nor “toxic” pollutants (40 CFR 401.15).

(o) *Surrogate pollutant* means a regulated parameter that, for the purpose of compliance monitoring, is allowed to serve as a surrogate for a group of specific regulated parameters. Plants would be allowed to monitor for a surrogate pollutant(s), when the other parameters for which it stands are receiving the same degree of treatment as the surrogate pollutant(s) and all of the parameters discharged are in the same treatability class(es) as their respective surrogate pollutant(s). Treatability classes have been identified in appendix A of this part for both steam stripping and biological treatment technologies, which are the respective technology bases for PSES/PSNS and BAT/NSPS limitations controlling the discharge of regulated organic parameters.

(p) *Xylenes* means a combination of the three isomers: o-xylene, m-xylene, and p-xylene.

[63 FR 50425, Sept. 21, 1998; 64 FR 48104, Sept. 2, 1999, as amended at 68 FR 12270, Mar. 13, 2003]

### § 439.2 General monitoring requirements.

(a) Permit compliance monitoring is required for each regulated pollutant generated or used at a pharmaceutical manufacturing facility, except where the regulated pollutant is monitored as

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a surrogate parameter. Permit limits and compliance monitoring are not required for regulated pollutants that are neither used nor generated at the facility. Except for cyanide, for which an alternate monitoring requirement is established in subparts A and C of this part, a determination that regulated pollutants are neither used nor generated should be based on a review of all raw materials in use, and an assessment of the process chemistry, products and by-products resulting from each of the manufacturing processes. This determination along with a recommendation of any surrogate must be submitted with permit applications for approval by the permitting authority, reconfirmed by an annual chemical analysis of wastewater from each monitoring location, and measurement of a non-detect value for each regulated pollutant or its surrogate. Permits must specify that such determinations will be maintained in the facility's permit records with their discharge monitoring reports and will be available to regulatory authorities upon request.

(b) Unless noted otherwise, self-monitoring will be conducted at the point where the final effluent is discharged.

[68 FR 12271, Mar. 13, 2003]

### § 439.3 General pretreatment standards.

Any source subject to this part that introduces process wastewater pollutants into a publicly owned treatment works (POTW) must comply with 40 CFR part 403.

[63 FR 50425, Sept. 21, 1998]

### § 439.4 General limitation or standard for pH.

The pH must remain within the range 6.0 to 9.0 in any discharge subject to BPT, BCT or NSPS limitations or standards in this part.

[68 FR 12271, Mar. 13, 2003]

## Subpart A—Fermentation Products

### § 439.10 Applicability.

This subpart applies to discharges of process wastewater resulting from the

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manufacture of pharmaceutical products by fermentation.

[63 FR 50426, Sept. 21, 1998]

**§ 439.11 Special definitions.**

For the purpose of this subpart:

(a) *Fermentation* means process operations that utilize a chemical change induced by a living organism or enzyme, specifically, bacteria, or the microorganisms occurring in unicellular plants such as yeast, molds, or fungi to produce a specified product.

(b) *Product* means pharmaceutical products derived from fermentation processes.

[68 FR 12271, Mar. 13, 2003]

**§ 439.12 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 the following effluent limitations representing the application of BPT:

(a) The maximum monthly average limitation for BOD<sub>5</sub>, expressed as mass loading (lbs., kg) per day, must reflect not less than 90 percent reduction in the long-term average daily BOD<sub>5</sub> load of the raw (untreated) process wastewater, multiplied by a variability factor of 3.0.

(1) The long-term average daily BOD<sub>5</sub> load of the raw process wastewater (*i.e.*, the base number to which the percent reduction is applied) is defined as the average daily BOD<sub>5</sub> load during any calendar month, over 12 consecutive months within the most recent 36 months, and must include one or more periods during which production was at a maximum.

(2) To assure equity in the determination of NPDES permit limitations regulating discharges subject to this subpart, calculation of the long-term average daily BOD<sub>5</sub> load in the influent to the wastewater treatment system must exclude any portion of the load associated with separable mycelia and solvents, except for residual amounts of mycelia and solvents remaining after the practices of recovery and/or separate disposal or reuse. These resid-

ual amounts may be included in the calculation of the average influent BOD<sub>5</sub> loading.

(3) The practices of recovery, and/or separate disposal or reuse include: physical separation and removal of separable mycelia; recovery of solvents from waste streams; incineration of concentrated solvent wastestreams (including tar still bottoms); and concentration of broth for disposal other than to the treatment system. This part does not prohibit the inclusion of such wastes in raw waste loads in fact, nor does it mandate any specific practice, but rather describes the rationale for determining NPDES permit limitations. The effluent limitation for BOD<sub>5</sub> may be achieved by any of several, or a combination, of these practices.

(b) The maximum monthly average limitation for TSS, expressed as mass loading (lbs., kg) per day, must be calculated as 1.7 times the BOD<sub>5</sub> limitation determined in paragraph (a) of this section.

(c) Except as provided in paragraph (d) of this section, the limitations for COD are as follows:

**EFFLUENT LIMITATIONS (BPT)**

Regulated parameter	Maximum daily <sup>1</sup>	Maximum monthly average <sup>1</sup>
COD .....	1675	856

<sup>1</sup>mg/L (ppm).

(d) If the maximum monthly average COD concentration in paragraph (c) of this section is higher than a concentration value reflecting a reduction in the long-term average daily COD load in the raw (untreated) process wastewater of 74 percent multiplied by a variability factor of 2.2, then the monthly average limitation for COD corresponding to the lower concentration value must be applied.

(e) The effluent limitations for cyanide are as follows:

**EFFLUENT LIMITATIONS (BPT)**

Regulated parameter	Maximum daily <sup>1</sup>	Maximum monthly average <sup>1</sup>
Cyanide (T) .....	33.5	9.4

<sup>1</sup>mg/L (ppm).

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(f) When monitoring for cyanide at the end-of-pipe is impractical because of dilution by other process wastewaters, compliance with the cyanide effluent limitations in paragraph (e) of this section must be demonstrated at in-plant monitoring points pursuant to 40 CFR 122.44(i) and 122.45(h). Under the same provisions, the permitting authority may impose monitoring requirements on internal wastestreams for any other parameter(s) regulated by this section.

(g) Compliance with the limitation in paragraph (e) or (f) of this section may be achieved by certifying to the permit issuing authority that the facility's manufacturing processes neither use nor generate cyanide.

[63 FR 50426, Sept. 21, 1998, as amended at 68 FR 12271, Mar. 13, 2003]

**§ 439.13 Effluent limitations attainable by the application of the best conventional pollutant control technology (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 application of BCT: Limitations for  $BOD_5$ , TSS and pH are the same as the corresponding limitations in § 439.12.

[63 FR 50426, Sept. 21, 1998]

**§ 439.14 Effluent limitations attainable by the application of best available technology economically achievable (BAT).**

(a) 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 application of BAT:

**EFFLUENT LIMITATIONS (BAT)**

Regulated parameter	Maximum daily <sup>1</sup>	Maximum monthly average <sup>1</sup>
Ammonia (as N) .....	84.1	29.4
Acetone .....	0.5	0.2
4-methyl-2-pentanone .....	0.5	0.2
Isobutylaldehyde .....	1.2	0.5
n-Amyl acetate .....	1.3	0.5
n-Butyl acetate .....	1.3	0.5
Ethyl acetate .....	1.3	0.5
Isopropyl acetate .....	1.3	0.5
Methyl formate .....	1.3	0.5
Amyl alcohol .....	10.0	4.1

**EFFLUENT LIMITATIONS (BAT)—Continued**

Regulated parameter	Maximum daily <sup>1</sup>	Maximum monthly average <sup>1</sup>
Ethanol .....	10.0	4.1
Isopropanol .....	3.9	1.6
Methanol .....	10.0	4.1
Methyl Cellosolve .....	100.0	40.6
Dimethyl sulfoxide .....	91.5	37.5
Triethyl amine .....	250.0	102.0
Phenol .....	0.05	0.02
Benzene .....	0.05	0.02
Toluene .....	0.06	0.02
Xylenes .....	0.03	0.01
n-Hexane .....	0.03	0.02
n-Heptane .....	0.05	0.02
Methylene chloride .....	0.9	0.3
Chloroform .....	0.02	0.13
1,2-dichloroethane .....	0.4	0.1
Chlorobenzene .....	0.15	0.06
o-Dichlorobenzene .....	0.15	0.06
Tetrahydrofuran .....	8.4	2.6
Isopropyl ether .....	8.4	2.6
Diethyl amine .....	250.0	102.0
Acetonitrile .....	25.0	10.2

<sup>1</sup> mg/L (ppm).

(b) The limitations for COD are the same as specified in § 439.12(c) and (d).

(c) The limitations for cyanide are the same as specified in § 439.12(e), (f) and (g).

[68 FR 12271, Mar. 13, 2003]

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

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

**PERFORMANCE STANDARDS (NSPS)**

Regulated parameter	Maximum daily <sup>1</sup>	Maximum monthly average <sup>1</sup>
$BOD_5$ .....	267	111
TSS .....	472	166
COD .....	1675	856
Ammonia (as N) .....	84.1	29.4
Acetone .....	0.5	0.2
4-methyl-2-pentanone .....	0.5	0.2
Isobutylaldehyde .....	1.2	0.5
n-Amyl acetate .....	1.3	0.5
n-Butyl acetate .....	1.3	0.5
Ethyl acetate .....	1.3	0.5
Isopropyl acetate .....	1.3	0.5
Methyl formate .....	1.3	0.5
Amyl alcohol .....	10.0	4.1
Ethanol .....	10.0	4.1
Isopropanol .....	3.9	1.6
Methanol .....	10.0	4.1
Methyl Cellosolve .....	100.0	40.6
Dimethyl sulfoxide .....	91.5	37.5
Triethyl amine .....	250.0	102.0
Phenol .....	0.05	0.02
Benzene .....	0.05	0.02
Toluene .....	0.06	0.02
Xylenes .....	0.03	0.01
n-Hexane .....	0.03	0.02

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**PERFORMANCE STANDARDS (NSPS)—  
Continued**

Regulated parameter	Maximum daily <sup>1</sup>	Maximum monthly average <sup>1</sup>
n-Heptane .....	0.05	0.02
Methylene chloride .....	0.9	0.3
Chloroform .....	0.02	0.13
1,2-dichloroethane .....	0.4	0.1
Chlorobenzene .....	0.15	0.06
o-Dichlorobenzene .....	0.15	0.06
Tetrahydrofuran .....	8.4	2.6
Isopropyl ether .....	8.4	2.6
Diethyl amine .....	250.0	102.0
Acetonitrile .....	25.0	10.2

<sup>1</sup> mg/L (ppm)

(b) The limitations for cyanide are the same as specified in § 439.12(e), (f) and (g).

(c) Any new source subject to the provisions of this section that commenced discharging after November 21, 1988, and prior to November 20, 1998, must continue to achieve the standards specified for this section in the 1988 edition of 40 CFR part 439, until the expiration of the applicable time period specified in 40 CFR 122.29(d)(1), after which the source must achieve the standards specified in §§ 439.13 and 439.14.

[68 FR 12272, Mar. 13, 2003]

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

(a) Except as provided in 40 CFR 403.7 and 403.13, any existing source subject to this subpart must continue achieving the standards for cyanide specified in paragraph (c) of this section and must achieve the following standards by September 21, 2001:

**PRETREATMENT STANDARDS (PSES)**

Regulated parameter	Maximum daily <sup>1</sup>	Maximum monthly average <sup>1</sup>
Ammonia (as N) <sup>2</sup> .....	84.1	29.4
Acetone .....	20.7	8.2
4-methyl-2-pentanone .....	20.7	8.2
Isobutyraldehyde .....	20.7	8.2
n-Amyl acetate .....	20.7	8.2
n-Butyl acetate .....	20.7	8.2
Ethyl acetate .....	20.7	8.2
Isopropyl acetate .....	20.7	8.2
Methyl formate .....	20.7	8.2
Isopropyl ether .....	20.7	8.2
Tetrahydrofuran .....	9.2	3.4
Benzene .....	3.0	0.7
Toluene .....	0.3	0.2
Xylenes .....	3.0	0.7
n-Heptane .....	3.0	0.7
n-Hexane .....	3.0	0.7

**PRETREATMENT STANDARDS (PSES)—  
Continued**

Regulated parameter	Maximum daily <sup>1</sup>	Maximum monthly average <sup>1</sup>
Methylene chloride .....	3.0	0.7
Chloroform .....	0.1	0.03
1,2-dichloroethane .....	20.7	8.2
Chlorobenzene .....	3.0	0.7
o-Dichlorobenzene .....	20.7	8.2
Diethyl amine .....	255.0	100.0
Triethyl amine .....	255.0	100.0

<sup>1</sup> mg/L (ppm)

<sup>2</sup> Not applicable to sources that discharge to a POTW with nitrification capability.

(b) Sources that discharge to a POTW with nitrification capability (defined at § 439.1(i)) are not required to achieve the pretreatment standard for ammonia (as N).

(c) The limitations for cyanide are the same as specified in § 439.12(e), (f) and (g).

[68 FR 12272, Mar. 13, 2003]

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

Except as provided in 40 CFR 403.7, any new source subject to this subpart must achieve the same standards as specified in § 439.16.

(a) Sources that discharge to a POTW with nitrification capability (defined at § 439.2(i)) are not required to achieve the pretreatment standard for ammonia (as N).

(b) The pretreatment standards for cyanide are as follows:

Regulated parameter	Pretreatment standards <sup>1</sup>	
	Maximum daily discharge	Average monthly discharge must not exceed
Cyanide (T) .....	33.5	9.4

<sup>1</sup> Mg/L (ppm).

(c) When monitoring for cyanide at the end-of-pipe is impractical because of dilution by other process wastewaters, compliance with the cyanide standards in § 439.17(b) must be demonstrated at in-plant monitoring points pursuant to 40 CFR 403.6(e)(2) and (4). Under the same provisions, the permitting authority may impose monitoring requirements on internal wastestreams for any other parameter(s) regulated by this section.

(d) Compliance with the standards in paragraph (b) or (c) of this section may

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be achieved by certifying to the permit issuing authority that a facility's manufacturing processes neither use nor generate cyanide.

[63 FR 50429, Sept. 21, 1998; 64 FR 10393, Mar. 4, 1999; 64 FR 48104, Sept. 2, 1999, as amended at 68 FR 34832, June 11, 2003]

### Subpart B—Extraction Products

#### § 439.20 Applicability.

This subpart applies to discharges of process wastewater resulting from the manufacture of pharmaceutical products by extraction.

[63 FR 50430, Sept. 21, 1998]

#### § 439.21 Special definitions.

For the purpose of this subpart:

(a) *Extraction* means process operations that derive pharmaceutically active ingredients from natural sources such as plant roots and leaves, animal glands, and parasitic fungi by chemical and physical extraction.

(b) *Product* means any substance manufactured by an extraction process, including blood fractions, vaccines, serums, animal bile derivatives, endocrine products and medicinal products such as alkaloids that are isolated from botanical drugs and herbs.

[68 FR 12272, Mar. 13, 2003]

#### § 439.22 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BPT:

(a) The limitation for  $BOD_5$  is the same as specified in § 439.12(a). No facility shall be required to attain a monthly average limitation for  $BOD_5$  that is less than the equivalent of 45 mg/L.

(1) The long-term average daily  $BOD_5$  load of the raw process wastewater (*i.e.*, the base number to which the percent reduction is applied) is defined as the average daily  $BOD_5$  load during any calendar month, over 12 consecutive months within the most recent 36 months, and must include one or more

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periods during which production was at a maximum.

(2) To assure equity in the determination of NPDES permit limitations regulating discharges subject to this subpart, calculation of the long-term average daily  $BOD_5$  load in the influent to the wastewater treatment system must exclude any portion of the load associated with separable mycelia and solvents, except for residual amounts of mycelia and solvents remaining after the practices of recovery and/or separate disposal or reuse. Residual amounts of these substances may be included in the calculation of the average influent  $BOD_5$  loading.

(3) The practices of recovery, and/or separate disposal or reuse include: physical separation and removal of separable mycelia; recovery of solvents from wastestreams; incineration of concentrated solvent wastestreams (including tar still bottoms); and broth concentration for disposal other than to the treatment system. This part does not prohibit the inclusion of such wastes in raw waste loads in fact, nor does it mandate any specific practice, but rather describes the rationale for determining NPDES permit limitations. The effluent limitation for  $BOD_5$  may be achieved by any of several, or a combination, of these practices.

(b) The limitation for TSS is the same as specified in § 439.12(b).

(c) Except for the provisions in paragraph (d) of this section, the limitations for COD are as follows:

#### EFFLUENT LIMITATIONS (BPT)

Regulated parameter	Maximum daily <sup>1</sup>	Maximum monthly average <sup>1</sup>
COD .....	228	86

<sup>1</sup> mg/L (ppm)

(d) If the maximum monthly average COD concentration in paragraph (c) of this section is higher than a concentration value reflecting a reduction in the long-term average daily COD load in the raw (untreated) process wastewater of 74 percent multiplied by a variability factor of 2.2, then a monthly average limitation for COD corresponding

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to the lower concentration value must be applied.

[63 FR 50430, Sept. 21, 1998, as amended at 68 FR 12273, Mar. 13, 2003]

**§ 439.23 Effluent limitations attainable by the application of the best conventional pollutant control technology (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 application of BCT: Limitations for BOD<sub>5</sub>, TSS and pH are the same as the corresponding limitations in § 439.22.

[63 FR 50430, Sept. 21, 1998]

**§ 439.24 Effluent limitations attainable by the application of 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 application of BAT: Limitations for COD are the same as the corresponding limitations in § 439.22(c) and (d).

[63 FR 50431, Sept. 21, 1998]

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

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

**PERFORMANCE STANDARDS (NSPS)**

Regulated parameter	Maximum daily <sup>1</sup>	Maximum monthly average <sup>1</sup>
BOD <sub>5</sub> .....	35	18
TSS .....	58	31
COD .....	228	86

<sup>1</sup> mg/L (ppm)

(b) Any new source subject to the provisions of this section that commenced discharging after November 21, 1988, and prior to November 20, 1998, must continue to achieve the standards specified for this section in the 1988 edition of 40 CFR part 439, until the expiration of the applicable time period specified in 40 CFR 122.29(d)(1), after which the source must achieve the

standards specified in §§ 439.23 and 439.24.

[68 FR 12273, Mar. 13, 2003]

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

Except as provided in 40 CFR 403.7 and 403.13, any existing source subject to this subpart must achieve the following standards by September 21, 2001:

**PRETREATMENT STANDARDS (PSES)**

Regulated parameter	Maximum daily <sup>1</sup>	Maximum monthly average <sup>1</sup>
Acetone .....	20.7	8.2
n-Amyl acetate .....	20.7	8.2
Ethyl acetate .....	20.7	8.2
Isopropyl acetate .....	20.7	8.2
Methylene chloride .....	3.0	0.7

<sup>1</sup> mg/L (ppm).

[68 FR 12273, Mar. 13, 2003]

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

Except as provided in 40 CFR 403.7, any new source subject to this subpart must achieve the following pretreatment standards:

Regulated parameter	Pretreatment standards <sup>1</sup>	
	Maximum daily discharge	Average monthly discharge must not exceed
1 Acetone .....	20.7	8.2
2 n-Amyl acetate .....	20.7	8.2
3 Ethyl acetate .....	20.7	8.2
4 Isopropyl acetate .....	20.7	8.2
5 Methylene chloride .....	3.0	0.7

<sup>1</sup> Mg/L (ppm).

[63 FR 50431, Sept. 21, 1998; 64 FR 48104, Sept. 2, 1999]

**Subpart C—Chemical Synthesis Products****§ 439.30 Applicability.**

This subpart applies to discharges of process wastewater resulting from the manufacture of pharmaceutical products by chemical synthesis.

[63 FR 50431, Sept. 21, 1998]

**§ 439.31 Special definitions.**

For the purpose of this subpart:

**§ 439.32****40 CFR Ch. I (7-1-25 Edition)**

(a) *Chemical synthesis* means using one or a series of chemical reactions in the manufacturing process of a specified product.

(b) *Product* means any pharmaceutical product manufactured by chemical synthesis.

[68 FR 12273, Mar. 13, 2003]

**§ 439.32 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).**

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BPT:

(a) The limitation for BOD<sub>5</sub> is the same as specified in § 439.12(a).

(b) The limitation for TSS is the same as specified in § 439.12(b).

(c) The limitations for COD are the same as specified in § 439.12(c) and (d).

(d) The limitations for cyanide are the same as specified in § 439.12(e), (f) and (g).

[63 FR 50431, Sept. 21, 1998, as amended at 68 FR 12273, Mar. 13, 2003]

**§ 439.33 Effluent limitations attainable by the application of the best conventional pollutant control technology (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 application of BCT: Limitations for BOD<sub>5</sub>, TSS and pH are the same as the corresponding limitations in § 439.32.

[63 FR 50432, Sept. 21, 1998]

**§ 439.34 Effluent limitations attainable by the application of 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 application of BAT:

(a) The limitations are the same as specified in § 439.14(a).

(b) The limitations for COD are the same as specified in § 439.12(c) and (d).

(c) The limitations for cyanide are the same as specified in § 439.12(e), (f) and (g).

[67 FR 12273, Mar. 13, 2003]

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

(a) Any new source subject to this subpart must achieve the same standards as specified in § 439.15(a).

(b) The limitations for cyanide are the same as specified in § 439.12(e), (f) and (g).

(c) Any new source subject to the provisions of this section that commenced discharging after November 21, 1988, and prior to November 20, 1998, must continue to achieve the standards specified for this section in the 1988 edition of 40 CFR part 439, until the expiration of the applicable time period specified in 40 CFR 122.29(d)(1), after which the source must achieve the standards specified in § 439.33 and § 439.34.

[68 FR 12273, Mar. 13, 2003]

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

Except as provided in 40 CFR 403.7 and 403.13, any existing source subject to this subpart must continue achieving the standards for cyanide specified in paragraph (b) of this section and must achieve the standards specified in § 439.16(a) by September 21, 2001.

(a) Sources that discharge to a POTW with nitrification capability (defined at § 439.1(i)) are not required to achieve the standards for ammonia (as N).

(b) The standards for cyanide are the same as specified in § 439.12(e), (f) and (g).

[68 FR 12274, Mar. 13, 2003]

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

Except as provided in 40 CFR 403.7, any new source subject to this subpart must achieve the same standards as specified in § 439.36.

(a) Sources that discharge to a POTW with nitrification capability (defined at § 439.2(i)) are not required to achieve the pretreatment standard for ammonia (as N).

(b) The pretreatment standards for cyanide are as follows:

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Regulated parameter	Effluent limitation <sup>1</sup>	
	Maximum daily discharge	Average monthly discharge must not exceed
Cyanide (T) .....	33.5	9.4

<sup>1</sup> Mg/L (ppm).

(c) When monitoring for cyanide at the end-of-pipe is impractical because of dilution by other process wastewaters, compliance with the cyanide pretreatment standards in paragraph (b) of this section must be demonstrated at in-plant monitoring points pursuant to 40 CFR 403.6(e) (2) and (4). Under the same provisions, the permitting authority may impose monitoring requirements on internal wastestreams for any other parameter(s) regulated by this section.

(d) Compliance with the standard in paragraph (b) or (c) of this section may be achieved by certifying to the permit issuing authority that a facility's manufacturing processes neither use nor generate cyanide.

[63 FR 50434, Sept. 21, 1998; 64 FR 10393, Mar. 4, 1999; 64 FR 48104, Sept. 2, 1999, as amended at 68 FR 34832, June 11, 2003]

**Subpart D—Mixing/Compounding and Formulation****§ 439.40 Applicability.**

This subpart applies to discharges of process wastewater resulting from the manufacture of pharmaceutical products by mixing, compounding and formulating operations.

[63 FR 50435, Sept. 21, 1998]

**§ 439.41 Special definitions.**

For the purpose of this subpart:

(a) *Mixing, compounding, and formulating operations* means processes that put pharmaceutical products in dosage forms.

(b) *Product* means any pharmaceutical product manufactured by blending, mixing, compounding, and formulating pharmaceutical ingredients. The term includes pharmaceutical preparations for both human and veterinary use such as ampules, tablets, capsules, vials, ointments, me-

dicinal powders, solutions, and suspensions.

[68 FR 12274, Mar. 13, 2003]

**§ 439.42 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).**

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BPT:

(a) The limitation for BOD<sub>5</sub> is the same as specified in § 439.12(a). No facility shall be required to attain a monthly average limitation for BOD<sub>5</sub> that is less than the equivalent of 45 mg/L.

(b) The limitation for TSS is the same as specified in § 439.12(b).

(c) The limitations for COD are the same as specified in § 439.22(c) and (d).

[63 FR 50435, Sept. 21, 1998, as amended at 68 FR 12274, Mar. 13, 2003]

**§ 439.43 Effluent limitations attainable by the application of the best conventional pollutant control technology (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 application of BCT: Limitations for BOD<sub>5</sub>, TSS and pH are the same as the corresponding limitations in § 439.42.

[63 FR 50436, Sept. 21, 1998]

**§ 439.44 Effluent limitations attainable by the application of 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 application of BAT: The limitations for COD are the same as specified in § 439.22(c) and (d).

[68 FR 12274, Mar. 13, 2003]

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

(a) Any new source subject to this subpart must achieve the same standards as specified in § 439.25(a).

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(b) Any new source subject to the provisions of this section that commenced discharging after November 21, 1988, and prior to November 20, 1998, must continue to achieve the standards specified for this section in the 1988 edition of 40 CFR part 439, until the expiration of the applicable time period specified in 40 CFR 122.29(d)(1), after which the source must achieve the standards specified in § 439.43 and § 439.44.

[68 FR 12274, Mar. 13, 2003]

### § 439.46 Pretreatment standards for existing sources (PSES).

Except as provided in 40 CFR 403.7 and 403.13, any existing source subject to this subpart must achieve the following standards by September 21, 2001:

#### PRETREATMENT STANDARDS (PSES)

Regulated parameter	Maximum daily <sup>1</sup>	Maximum monthly average <sup>1</sup>
Acetone .....	20.7	8.2
n-Amyl acetate .....	20.7	8.2
Ethyl acetate .....	20.7	8.2
Isopropyl acetate .....	20.7	8.2
Methylene chloride .....	3.0	0.7

<sup>1</sup> mg/L (ppm).

[68 FR 12274, Mar. 13, 2003]

### § 439.47 Pretreatment standards for new sources (PSNS).

Except as provided in 40 CFR 403.7, any new source subject to this subpart must achieve the following pretreatment standards:

Regulated parameter	Pretreatment standards <sup>1</sup>	
	Maximum daily discharge	Average monthly discharge must not exceed
1 Acetone .....	20.7	8.2
2 n-Amyl acetate .....	20.7	8.2
3 Ethyl acetate .....	20.7	8.2
4 Isopropyl acetate .....	20.7	8.2
5 Methylene chloride .....	3.0	0.7

<sup>1</sup> Mg/L (ppm).

[68 FR 50436, Sept. 21, 1998; 64 FR 48104, Sept. 2, 1999]

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### Subpart E—Research

#### § 439.50 Applicability.

This subpart applies to discharges of process wastewater resulting from pharmaceutical research.

[63 FR 50436, Sept. 21, 1998]

#### § 439.51 Special definitions.

For the purpose of this subpart, *product* means products or services resulting from research and product development activities.

[68 FR 12274, Mar. 13, 2003]

#### § 439.52 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BPT:

(a) The limitation for BOD<sub>5</sub> is the same as specified in § 439.12(a). No facility shall be required to attain a monthly average limitation for BOD<sub>5</sub> that is less than the equivalent of 45 mg/L.

(b) The limitation for TSS is the same as specified in § 439.12(b).

(c) The maximum monthly average limitation for COD, expressed as mass loading (lbs, kg) per day, must reflect not less than 74 percent reduction in the long-term average daily COD load of the raw (untreated) process wastewater, multiplied by a variability factor of 2.2. No facility shall be required to attain a limitation for COD that is less than the equivalent of 220 mg/L.

(d) The long-term average daily BOD<sub>5</sub> or COD mass loading of the raw process wastewater (*i.e.*, the base number to which the percent reduction is applied) is defined as the average daily BOD<sub>5</sub> or COD load during any calendar month, over 12 consecutive months within the most recent 36 months.

(1) To assure equity in the determination of NPDES permit limitations regulating discharges subject to this subpart, calculation of the long-term average daily BOD<sub>5</sub> or COD load in the influent to the wastewater treatment system must exclude any portion of the load associated with solvents, except

for residual amounts of solvents remaining after the practices of recovery and/or separate disposal or reuse. Residual amounts of these substances may be included in the calculation of the average influent BOD<sub>5</sub> or COD loading.

(2) The practices of recovery, and/or separate disposal or reuse include: recovery of solvents from wastestreams; and incineration of concentrated solvent wastestreams (including tar still bottoms). This regulation does not prohibit the inclusion of such wastes in raw waste loads in fact, nor does it mandate any specific practice, but rather describes the rationale for determining NPDES permit limitations. The effluent limitation for BOD<sub>5</sub> or COD may be achieved by any of several, or a combination, of these practices.

(e) The pH must be within the range 6.0 to 9.0.

[63 FR 50436, Sept. 21, 1998, as amended at 68 FR 12274, Mar. 13, 2003]

#### APPENDIX A TO PART 439—TABLES

TABLE 1—SURROGATE PARAMETERS FOR DIRECT DISCHARGERS  
[Utilizing biological treatment technology]

Regulated parameters	Treatability class
Amyl alcohol	Alcohols.
Ethanol <sup>1</sup>	
Isopropanol <sup>1</sup>	
Methanol <sup>1</sup>	
Phenol	
Isobutylaldehyde <sup>1</sup>	Aldehydes.
n-Heptane <sup>1</sup>	Alkanes.
n-Hexane <sup>1</sup>	
Diethylamine <sup>1</sup>	Amines.
Triethylamine	
Benzene	Aromatics.
Toluene <sup>1</sup>	
Xylenes <sup>1</sup>	
Chlorobenzene	
o-Dichlorobenzene	
Chloroform <sup>1</sup>	Chlorinated Alkanes.
Methylene chloride <sup>1</sup>	
1,2-Dichloroethane <sup>1</sup>	
Ethyl acetate <sup>1</sup>	Esters.
Isopropyl acetate	
n-Amyl acetate	
n-Butyl acetate	
Methyl formate	
Tetrahydrofuran <sup>1</sup>	Ethers.
Isopropyl ether	
Acetone <sup>1</sup>	Ketones.
4-Methyl-2-pentanone (MIBK)	
Ammonia (aqueous)	Miscellaneous. <sup>2</sup>
Acetonitrile	

TABLE 1—SURROGATE PARAMETERS FOR DIRECT DISCHARGERS—Continued  
[Utilizing biological treatment technology]

Regulated parameters	Treatability class
Methyl Cellosolve	
Dimethyl Sulfoxide	

<sup>1</sup> These parameters may be used as a surrogate to represent other parameters in the same treatability class.

<sup>2</sup> Surrogates have not been identified for the "Miscellaneous" treatability class.

TABLE 2—SURROGATE PARAMETERS FOR INDIRECT DISCHARGERS (UTILIZING STEAM STRIPPING TREATMENT TECHNOLOGY)

Regulated parameters	Treatability class
Benzene	
Toluene <sup>1</sup>	
Xylenes	
n-Heptane	
Chloroform <sup>1</sup>	High strippability.
Methylene chloride <sup>1</sup>	
Chlorobenzene	
Ammonia (aqueous)	
Diethyl amine	
Triethyl amine	
Acetone <sup>1</sup>	
4-methyl-2-pentanone	
n-Amyl acetate	
n-Butyl acetate	
Ethyl acetate	
Isopropyl acetate	Medium strippability.
Methyl formate	
Isopropyl ether	
Tetrahydrofuran <sup>1</sup>	
1,2-dichloroethane	
o-Dichlorobenzene	

<sup>1</sup> These parameters may be used as a surrogate to represent other parameters in the same treatability class.

[63 FR 50437, Sept. 21, 1998; 64 FR 10393, Mar. 4, 1999, as amended at 68 FR 12275, Mar. 13, 2003]

## PART 440—ORE MINING AND DRESSING POINT SOURCE CATEGORY

### Subpart A—Iron Ore Subcategory

Sec.

440.10 Applicability; description of the iron ore subcategory.

440.11 [Reserved]

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

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