96-077

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

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STATE OF WISCONSIN)
) ss
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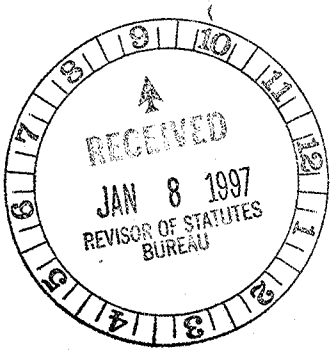
TO ALL TO WHOM THESE PRESENTS SHALL COME, GREETINGS:

I, George E. Meyer, Secretary of the Department of Natural Resources and custodian of the official records of said Department, do hereby certify that the annexed copy of Natural Resources Board Order No. WW-21-96 was duly approved and adopted by this Department on October 23, 1996. I further certify that said copy has been compared by me with the original on file in this Department and that the same is a true copy thereof, and of the whole of such original.



IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the official seal of the Department at the Natural Resources Building in the City of Madison, this 12th day of December, 1996

George E. Meyer

George E. Meyer, Secretary

(SEAL)

4-1-97

ORDER OF THE STATE OF WISCONSIN NATURAL RESOURCES BOARD
REPEALING AND RECREATING RULES

The Wisconsin Natural Resources Board proposes an order to repeal and recreate NR 235 relating to the regulation of effluent limitations and pretreatment standards for the organic chemicals, plastics, and synthetic fibers industry.

WW-21-96

Analysis Prepared by the Department of Natural Resources

Statutory authority: ss. 147.035(1), 147.06(1), 147.07(1), and 227.11(2)(a), Stats.
Statutes interpreted: ss. 147.035, 147.04, 147.06, and 147.07, Stats.

The Federal Water Pollution Control Act amendments of 1972 established a comprehensive program to "restore and maintain the chemical, physical and biological integrity of the Nation's waters" (section 101(a)). To implement the act, the U.S. Environmental Protection Agency issues effluent limitations, pretreatment standards, and new source performance standards for industrial wastewater discharges. The Clean Water Act of 1977 expanded the federal pollution control program by setting different types of effluent limitations: "best practicable technology" (BPT), "best available technology" (BAT), "best conventional technology" (BCT), "new source performance standards" (NSPS), "pretreatment standards for existing sources" (PSES), and "pretreatment standards for new sources" (PSNS). The Clean Water Act stressed control of toxic pollutants, including 65 "priority" pollutants and classes of pollutants from 21 major industries.

The Wisconsin Department of Natural Resources instituted the Wisconsin pollutant discharge elimination system in 1976. This system includes regulating discharges from various industries. The Wisconsin Department of Natural Resources is repealing and recreating ch. NR 235, Wis. Adm. Code, to regulate the organic chemicals, plastics, and synthetic fibers industry. The provisions of this chapter are based upon the U.S. Environmental Protection Agency's regulations in 40 C.F.R. Part 414.

The purpose of this rule is to specify effluent limitations for BPT, BAT, and NSPS for the direct discharge of pollutants to waters of the state and to establish pretreatment standards for the introduction of pollutants into publicly owned treatment works. The effect of the recreation of ch. NR 235, Wis. Adm. Code, will be to establish state standards and limitations for industrial wastewater discharges from the organic chemicals, plastics, and synthetic fibers industry. The Code will reflect changes made by the U.S. Environmental Protection Agency under authority of sections 301, 304, 306, 307, 308, and 501 of the Clean Water Act.

The organic chemicals, plastics, and synthetic fibers industry is large, diverse, and highly complex. The fundamental starting materials for this industry are primarily petroleum and natural gas, but some products are derived from coal. The industry is characterized by a wide mix of products and operations. Product mix often changes on a weekly or even daily basis. Some products are manufactured by different processes. Some processes, with slight changes in operating conditions, result in different products. In many cases, one facility's product is another plant's raw material.

An exceptionally wide variety of pollutants are found in this industry's wastewaters because of the variety and complexity of raw materials, processes, and products. Pollutant formation is dependent upon raw material and process chemistry. The chemical reactions used by this industry almost always result in a mixture of unreacted raw materials, products, and byproducts. The substances with no commercial value appear in the process wastewater, as air emissions, or as chemical wastes.

Three federal documents form the basis for 40 CFR Part 414 and ch. NR 235: (1) development document for effluent limitations guidelines and standards for the organic chemicals, plastics, and synthetic fibers point source category, volume I, (USEPA, Washington, D.C., EPA 440-1-87-009, October, 1987); and (2) development document for effluent limitations guidelines and standards for the organic chemicals, plastics, and synthetic fibers point source category, volume II, (USEPA, Washington, D.C., EPA 440-1-87-009, October, 1987); and (3) supplement to the development document for effluent limitations guidelines and new source performance standards for the organic chemicals, plastics, and synthetic fibers point source category, (USEPA, Washington, D.C., EPA 821-R-93-007, May, 1993). Copies of these documents are available for inspection at the central office of the Wisconsin Department of Natural Resources, 101 South Webster Street, Madison, and may be obtained from the National Technical Information Service (NTIS), Springfield, Virginia 22161, (703) 487-4600.

This rule is identical to 40 C.F.R. 414 for purposes of s. 227.14(1m)(a), Stats. However, changes have been made in the text of the federal regulation to make the rule useful to Wisconsin citizens, industry, and regulating authorities. These changes are consistent with the current state regulatory framework and reflect the conventions of state rule drafting.

Where possible, Wisconsin Administrative Code references were substituted in the text for references to the Code of Federal Regulations. Citations in the text to the Code of Federal Regulations may be cross-referenced to corresponding sections of the Wisconsin Administrative Code in the table which has been added at the end of the rule. Definitions for "direct discharge", "existing source", "indirect discharge", "new source", "OCPSF" and "SIC" have been added to the general definitions section in the state rule. As suggested by the administrative rules procedures manual, a purpose section has been added. A compliance dates section also has been added.

SECTION 1. Chapter NR 235 is repealed and recreated to read:

Chapter NR 235
Organic Chemicals, Plastics, and Synthetic Fibers

Subchapter VI - Commodity Organic Chemicals

NR 235.50 Applicability; description of the commodity organic chemicals subcategory.
NR 235.51 Effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT).
NR 235.52 Effluent limitations representing the degree of effluent reduction attainable by the application of best available technology economically achievable (BAT).
NR 235.53 New source performance standards (NSPS).
NR 235.54 Pretreatment standards for existing sources (PSES).
NR 235.55 Pretreatment standards for new sources (PSNS).

Subchapter VII - Bulk Organic Chemicals

NR 235.60 Applicability; description of the bulk organic chemicals subcategory.
NR 235.61 Effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT).
NR 235.62 Effluent limitations representing the degree of effluent reduction attainable by the application of best available technology economically achievable (BAT).
NR 235.63 New source performance standards (NSPS).
NR 235.64 Pretreatment standards for existing sources (PSES).
NR 235.65 Pretreatment standards for new sources (PSNS).

Subchapter VIII - Specialty Organic Chemicals

NR 235.70 Applicability; description of the specialty organic chemicals subcategory.
NR 235.71 Effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT).
NR 235.72 Effluent limitations representing the degree of effluent reduction attainable by the application of best available technology economically achievable (BAT).
NR 235.73 New source performance standards (NSPS).
NR 235.74 Pretreatment standards for existing sources (PSES).
NR 235.75 Pretreatment standards for new sources (PSNS).

Subchapter IX - Direct Discharge Point Sources That Use End-of-Pipe Biological Treatment

NR 235.80 Applicability; description of the subcategory of direct discharge point sources that use end-of-pipe biological treatment.
NR 235.81 Toxic pollutant effluent limitations and standards for direct discharge point sources that use end-of-pipe biological treatment.

Subchapter X - Direct Discharge Point Sources That Do Not Use End-of-Pipe Biological Treatment

NR 235.90 Applicability; description of the subcategory of direct discharge point sources that do not use end-of-pipe biological treatment.
NR 235.91 Toxic pollutant effluent limitations and standards for direct discharge point sources that do not use end-of-pipe biological treatment.

Subchapter XI - Indirect Discharge Point Sources

NR 235.100 Applicability; description of the subcategory of indirect discharge point sources.
NR 235.101 Toxic pollutant standards for indirect discharge point sources.

Subchapter I - General Provisions

NR 235.01 PURPOSE. The purpose of this chapter is to establish effluent limitations, performance standards and pretreatment standards for discharges of process wastes from the organic chemicals, plastics and synthetic fibers point source category and its subcategories.

NR 235.02 APPLICABILITY. (1) This chapter applies to process wastewater discharges from all facilities or portions of facilities that manufacture the organic chemicals, plastics and synthetic fibers (OCPSF) products or product groups covered by subchs. II to VIII and are included within the following U.S. department of commerce bureau of the census standard industrial classification (SIC) groups:

(a) SIC 2821 - Plastic materials, synthetic resins and nonvulcanizable elastomers.
(b) SIC 2823 - Cellulosic man-made fibers.
(c) SIC 2824 - Synthetic organic fibers, except cellulosic.
(d) SIC 2865 - Cyclic crudes and intermediates, dyes and organic pigments.
(e) SIC 2869 - Industrial organic chemicals, not elsewhere classified.

(2) This chapter applies to wastewater discharges from OCPSF research and development, pilot plant, technical service and laboratory bench scale operations if these operations are conducted in conjunction with and related to existing OCPSF manufacturing activities at the facility site.

(3) This chapter does not apply to discharges resulting from the manufacture of OCPSF products included in the following SIC subgroups, if a facility has reported under the following subgroups rather than under the SIC groups listed in sub. (1):

(a) SIC 2843085 - bulk surface active agents.
(b) SIC 28914 - synthetic resin and rubber adhesives.
(c) Chemicals and chemical preparations, not elsewhere classified:
1. SIC 2899568 - sizes, all types.
2. SIC 2899597 - other industrial chemical specialties, including fluxes, plastic wood preparations and embalming fluids.
(d) SIC 2911058 - aromatic hydrocarbons manufactured from purchased refinery products.
(e) SIC 2911632 - aliphatic hydrocarbons manufactured from purchased refinery products.

(4) This chapter does not apply to discharges for which a different set of previously promulgated effluent limitations guidelines and standards apply, unless the facility reports OCPSF products under SIC codes 2821, 2865 or 2869, and the facility's OCPSF wastewaters are treated in a separate treatment system or discharged separately to a POTW.

(5) This chapter does not apply to any process wastewater discharges from the manufacture of organic chemical compounds solely by extraction from plant and animal raw materials or by fermentation processes.

(6) This chapter does not apply to wastewater discharges of chromium, copper, lead, nickel or zinc in complexed metal-bearing waste streams listed as follows:

(a) Chromium:
Acid dyes
Azo acid dyes, including metallized azo acid dyes
Azo dye intermediates from substituted diazonium salts + coupling compounds
Metallized azo dyes from azo dye + metal acetate

Organic pigments, miscellaneous lakes and toners
Vat dyes

(b) Copper:
Acid dyes
Metallized azo dyes from azo dye + metal acetate
Direct dyes
Azo direct dyes
Disperse dyes
Disperse dye coupler from N-substitution of 2-amino-4-acetamidoanisole
Azo and vat disperse dyes
Organic pigments
Organic pigment green 7 from copper phthalocyanine
Organic pigments from phthalocyanine pigments
Organic pigments from copper phthalocyanine (blue crude)
Organic pigments, miscellaneous lakes and toners
Sulfur dyes
Vat dyes

(c) Lead:
Organic pigments, quinacridines
Organic pigments, thioindigoids
Tetraethyl lead from alkyl halide + sodium-lead alloy
Tetramethyl lead from alkyl halide + sodium-lead alloy

(d) Nickel:
Metallized azo dyes from azo dye + metal acetate

(e) Zinc:
Organic pigments from azo pigments by diazotization and coupling

(7) This chapter does not apply to discharges of cyanide in cyanide bearing waste streams listed in Appendix A if the department or control authority does the following:

(a) Determines that the cyanide limitations and standards are not achievable due to elevated levels of non-amenable cyanide that is not oxidized by chlorine treatment, that result from the unavoidable complexing of cyanide at the process source of the cyanide-bearing waste stream.

(b) Establishes an alternative total cyanide or amenable cyanide limitation that reflects the best available technology economically achievable.

(c) Bases the determination under par. (a) upon a review of relevant engineering, production and sampling and analysis information, including measurements of both total and amenable cyanide in the waste stream.

(d) Analyzes the extent of complexing in the waste stream, based on the foregoing information, and its impact of cyanide treatability in writing and, for direct dischargers, contained in the fact sheet required by 40 CFR 124.8.

(8) Discharge limitations for chromium, copper, lead, nickel and zinc or discharge standards for lead and zinc may be established for waste streams not listed in Appendix A and not otherwise determined to be metal-bearing waste streams if the department or control authority determines that the wastewater metals contamination is due to background levels that are not reasonably avoidable from sources such as intake water, corrosion of construction materials or contamination of raw materials. The determination shall be based upon a review of relevant facility operating conditions, process chemistry, engineering and sampling and analysis information. An analysis of the sources and levels of the metals, based on the foregoing information, shall be in writing as follows:

(a) For direct dischargers:

1. The analysis shall be contained in the fact sheet required by 40 CFR 124.8.

2. The department may establish limitations for chromium, copper, lead, nickel and zinc for non-metal-bearing waste streams between the lowest level which the permit writer determines based on professional judgment can be reliably measured and the concentrations of the metals present in the waste streams, but not to exceed the applicable limitations contained in ss. NR 235.81 and 235.91.

3. The applicable limitations for zinc which may not be exceeded are those appearing in the tables in ss. NR 235.81 and 235.91, not the alternative limitations listed in footnote 2 to each of these tables.

(b) For indirect dischargers:

1. The control authority may establish standards for lead and zinc for non-"metal-bearing waste streams" between the lowest level which the control authority determines based on best professional judgment can be reliably measured and the concentration of the metals present in the waste streams, but not to exceed the applicable standards contained in s. NR 235.101.

2. The applicable standards for zinc which may not be exceeded are those appearing in the table in s. NR 235.101 and not the alternative standards in footnote 2 to this table.

(c) The limitations and standards for individual dischargers shall be set on a mass basis by multiplying the concentration allowance established by the department or control authority by the process wastewater flow from the individual waste streams for which incidental metals have been found to be present.

(9) Any existing or new source direct discharge point source subject to 2 or more of subchs. II through VIII shall achieve BOD_5 and TSS discharges not exceeding the quantity or mass determined by multiplying the total OCPSF process wastewater flow subject to subchs. II to VIII times the following OCPSF production-proportioned concentration: For a specific facility, w_X is the proportion of the facility's total OCPSF production in subcategory X. Then the facility-specific production-proportioned concentration limitations are given by:

$$\text{Plant } BOD_5 \text{ Limit} = \sum_{X=II}^{VIII} (w_X)(BOD_5 \text{ Limit}_X)$$

and

$$\text{Plant TSS Limit} = \sum_{X=II}^{VIII} (w_X)(\text{TSS Limit}_X)$$

The "BOD_5 Limit_X" and "TSS Limit_X" are the respective subcategorical BOD_5 and the TSS maximum for any one day or maximum for monthly average limitations.

NR 235.03 DEFINITIONS. In addition to the definitions in ss. NR 205.03, 205.04 and 211.03, the following definitions apply to the terms used in this chapter:

(1) "Direct discharge" means the introduction of pollutants into waters of the state.

(2) "Existing source" means any point source, except a new source as defined in sub. (3), from which pollutants are or may be discharged either to waters of the state or into a publicly owned treatment works.

(3) "Indirect discharge" means the introduction of pollutants into a publicly owned treatment works.

(4) "New source" means any point source for which the commencement of construction occurred after March 21, 1983, and from which pollutants are or may be discharged either to waters of the state or into a publicly owned treatment works.

(5) "OCPSF" means organic chemicals, plastics and synthetic fibers.

(6) "Priority pollutants" means the toxic pollutants listed in s. NR 215.03.

(7) "SIC" means U.S department of commerce bureau of the census standard industrial classification.

NR 235.04 COMPLIANCE DATES. (1) Any existing source subject to this chapter which discharges to waters of the state shall achieve:

(a) The effluent limitations representing BPT by July 1, 1977; and

(b) The effluent limitations representing BAT by July 1, 1984.

(2) Any new source subject to this chapter which discharges to waters of the state shall achieve NSPS at the commencement of discharge.

(3) Any existing source subject to this chapter which introduces process wastewater pollutants into a POTW shall achieve PSES by the date for each parameter as listed in the following tables:

November 5, 1990

Benzene	Hexachloroethane
Carbon tetrachloride	Methyl chloride
Chlorobenzene	Methylene chloride
Chloroethane	Naphthalene
Chloroform	Nitrobenzene
1,2-Dichlorobenzene	2-Nitrophenol
1,3-Dichlorobenzene	4-Nitrophenol
1,4-Dichlorobenzene	Pyrene
1,1-Dichloroethane	Tetrachloroethylene
1,2-Dichloroethane	Toluene
1,1-Dichlorotheylene	Total Cyanide
1,2-trans-Dichloroethylene	Total Lead
1,2-Dichloropropane	Total Zinc
1,3-Dichloropropylene	1,2,4-Trichlorobenzene
4,6-Dinitro-o-cresol	1,1,1-Trichloroethane
Ethylbenzene	1,1,2-Trichloroethane
Hexachlorobenzene	Trichloroethylene
Hexachlorobutadiene	Vinyl Chloride

July 23, 1996

Acenaphthene	Fluoranthene
Anthracene	Fluorene
Bis(2-ethylhexyl) phthalate	Naphthalene
Di-N-butyl phthalate	Phenanthrene
Diethyl phthalate	Pyrene
Dimethyl phthalate	

(4) Any new source subject to this chapter which introduces process wastewater pollutants into a POTW shall achieve PSNS at the commencement of discharge.

SUBCHAPTER II - RAYON FIBERS

NR 235.10 APPLICABILITY; DESCRIPTION OF THE RAYON FIBERS SUBCATEGORY. This subchapter applies to process wastewater discharges resulting from the manufacture of rayon fiber by the viscose process only.

NR 235.11 EFFLUENT LIMITATIONS 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 to 125.32, and in s. NR 235.02 (9) for point sources with production in 2 or more subcategories, any existing point source subject to this subchapter shall achieve the following limitations:

(1) Limitations shall be calculated by multiplying the following concentrations by the manufacturing process wastewater flow:

Rayon Fiber By the Viscose Process

BPT Effluent Limitations		
	Maximum for any 1 day	Maximum for monthly average
Pollutant or pollutant property	mg/l	mg/l
BOD_5	64	24
TSS	130	40

(2) The pH shall be within the range of 6.0 to 9.0 at all times.

NR 235.12 EFFLUENT LIMITATIONS REPRESENTING THE DEGREE OF EFFLUENT REDUCTION ATTAINABLE BY THE APPLICATION OF THE BEST AVAILABLE TECHNOLOGY ECONOMICALLY ACHIEVABLE (BAT). (1) For existing point sources whose total OCPSF production defined by s. NR 235.02 is less than or equal to 5 million pounds of OCPSF products per year, the BAT level of treatment shall be the same as the BPT level of treatment.

(2) Except as provided in sub. (1) and in 40 CFR 125.30 to 125.32, any existing point source that uses end-of-pipe biological treatment and is subject to this subchapter shall achieve discharges in accordance with s. NR 235.81.

(3) Except as provided in sub. (1) and in 40 CFR 125.30 to 125.32, any existing point source that does not use end-of-pipe biological treatment and is subject to this subchapter shall achieve discharges in accordance with s. NR 235.91.

NR 235.13 NEW SOURCE PERFORMANCE STANDARDS (NSPS). (1) Any new source that uses end-of-pipe biological treatment and is subject to this subchapter:

(a) Shall achieve discharges in accordance with s. NR 235.81.

(b) May not exceed the BPT effluent limitations listed in the table in s. NR 235.11 (1); and

(c) Shall maintain the pH within 6.0 to 9.0 at all times.

(2) Any new source that does not use end-of-pipe biological treatment and is subject to this section:

(a) Shall achieve discharges in accordance with s. NR 235.91.

(b) May not exceed BPT effluent limitations listed in the table in s. NR 235.11 (1); and

(c) Shall maintain the pH within 6.0 to 9.0 at all times.

NR 235.14 PRETREATMENT STANDARDS FOR EXISTING SOURCES (PSES). Except as provided in ss. NR 211.13 and 211.14, any existing source subject to this subchapter which introduces pollutants into a POTW shall comply with ch. 211 and achieve discharges in accordance with s. NR 235.101.

NR 235.15 PRETREATMENT STANDARDS FOR NEW SOURCES (PSNS). Except as provided in s. NR 211.13, any new source subject to this subchapter which introduces pollutants into a POTW shall comply with ch. NR 211 and achieve discharges in accordance with s. NR 235.101.

SUBCHAPTER III - OTHER FIBERS

NR 235.20 APPLICABILITY; DESCRIPTION OF THE OTHER FIBERS CATEGORY. This subchapter applies to the process wastewater discharges resulting from the manufacture of products classified under SIC 2823 cellulosic man-made fibers, except rayon, and SIC 2824 synthetic organic fibers including the following fibers and fiber groups. Product groups are indicated with an asterisk.

*Acrylic fibers (85% polyacrylonitrile)
*Cellulose acetate fibers
*Fluorocarbon (Teflon) fibers
*Modacrylic fibers
*Nylon 6 fibers
Nylon 6 monofilament
*Nylon 66 fibers
Nylon 66 monofilament
*Polyamide fibers (Quiana)
*Polyaramid (Kevlar) resin-fibers
*Polyaramid (Nomex) resin-fibers
*Polyester fibers
*Polyethylene fibers
*Polypropylene fibers
*Polyurethane fibers (Spandex)

NR 235.21 EFFLUENT LIMITATIONS 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 to 125.32, and in s. NR 235.02 (9) for point sources with production in 2 or more subcategories, any existing point source subject to this section shall achieve the following limitations:

(1) Limitations shall be calculated by multiplying the following concentrations by the manufacturing process wastewater flow:

Other Fibers

BPT Effluent Limitations		
	Maximum for any 1 day	Maximum for monthly average
Pollutant or pollutant property	mg/l	mg/l
BOD_5	48	18
TSS	115	36

(2) The pH shall be within the range of 6.0 to 9.0 at all times.

NR 235.22 EFFLUENT LIMITATIONS REPRESENTING THE DEGREE OF EFFLUENT REDUCTION ATTAINABLE BY THE APPLICATION OF THE BEST AVAILABLE TECHNOLOGY ECONOMICALLY ACHIEVABLE (BAT). (1) For existing point sources whose total OCPSF production defined by s. NR 235.02 is less than or equal to 5 million pounds of OCPSF products per year, the BAT level of treatment shall be the same as the BPT level of treatment.

(2) Except as provided in sub. (1) and in 40 CFR 125.30 to 125.32, any existing point source that uses end-of-pipe biological treatment and is subject to this subchapter shall achieve discharges in accordance with s. NR 235.81.

(3) Except as provided in sub. (1) and in 40 CFR 125.30 to 125.32, any existing point source that does not use end-of-pipe biological treatment and is subject to this subchapter shall achieve discharges in accordance with s. NR 235.91.

NR 235.23 NEW SOURCE PERFORMANCE STANDARDS (NSPS). (1) Any new source that uses end-of-pipe biological treatment and is subject to this subchapter:

(a) Shall achieve discharges in accordance with s. NR 235.81.

(b) May not exceed the BPT effluent limitations listed in the table in s. NR 235.21 (1); and

(c) Shall maintain the pH within 6.0 to 9.0 at all times.

(2) Any new source that does not use end-of-pipe biological treatment and is subject to this section:

(a) Shall achieve discharges in accordance with s. NR 235.91.

(b) May not exceed BPT effluent limitations listed in the table in s. NR 235.21 (1); and

(c) Shall maintain the pH within 6.0 to 9.0 at all times.

NR 235.24 PRETREATMENT STANDARDS FOR EXISTING SOURCES (PSES). Except as provided in ss. NR 211.13 and 211.14, any existing source subject to this subchapter which introduces pollutants into a POTW shall comply with ch. NR 211 and achieve discharges in accordance with s. NR 235.101.

NR 235.25 PRETREATMENT STANDARDS FOR NEW SOURCES (PSNS). Except as provided in s. NR 211.13, any new source subject to this subchapter which introduces pollutants into a POTW shall comply with ch. NR 211 and achieve discharges in accordance with s. NR 235.101.

SUBCHAPTER IV - THERMOPLASTIC RESINS

NR 235.30 APPLICABILITY; DESCRIPTION OF THE THERMOPLASTIC RESINS SUBCATEGORY. This subchapter applies to the process wastewater discharges resulting from the manufacture of products classified under SIC 28213 thermoplastic resins including the following resins and resin groups. Product groups are indicated with an asterisk.

Thermoplastic Resins

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*Abietic Acid and derivatives
*ABS resins
*ABS-SAN resins
*Acrylate-methacrylate latexes
*Acrylic latex
*Acrylic resins
*Cellulose acetate butyrates
Cellulose acetate resin
*Cellulose acetates
*Cellulose acetate propionates
Polystyrene latex
Polystyrene expandable
Polystyrene expanded
*Polysulfone resins
Polyvinyl acetate
*Polyvinyl acetate-PVC copolymers
*Polyvinyl acetate copolymers
*Polyvinyl acetate resins
Polyvinyl alcohol resin
Polyvinyl chloride

Cellulose nitrate
*Ethylene-methacrylic acid copolymers
*Ethylene-vinyl acetate copolymers
*Fatty acid resins
*Fluorocarbon polymers
Nylon 11 resin
*Nylon 6 to 66 copolymers
*Nylon 6 to nylon 11 blends
Nylon 6 resin
Nylon 612 resin
Nylon 66 resin
*Nylons
*Petroleum hydrocarbon resins
*Polyvinyl pyrrolidone copolymers
*Poly(alpha)olefins
Polyacrylic acid
*Polyamides
*Polyarylamides
*Polybutadiene
*Polybutenes
Polybutenyl succinic anhydride
*Polycarbonates
*Polyester resins
*Polyester resins, polybutylene terephthalate
*Polyester resins, polyoxybenzoate
Polyethylene
*Polyethylene-ethyl acrylate resins
*Polyethylene polyvinyl acetate copolymers
HDPE polyethylene resin
LDPE polyethylene resin
Scrap polyethylene resin
Low MW polyethylene resin, wax
Latex polyethylene resin
Polyethylene resins
*Polyethylene resins, compounded
*Polyethylene chlorinated
*Polyimides
*Polypropylene resins
Crystal polystyrene
Modified crystal polystyrene
*Polystyrene copolymers
*Polystyrene acrylic latexes
Polystyrene impact resins
Chlorinated polyvinyl chloride
*Polyvinyl ether-maleic anhydride
*Polyvinyl formal resins
*Polyvinylacetate-methacrylic copolymers
*Polyvinylacetate acrylic copolymers
*Polyvinylacetate-2-ethylhexylacrylate copolymers
Polyvinylidene chloride
*Polyvinylidene chloride copolymers
*Polyvinylidene-vinyl chloride resins
*PVC copolymers, latex acrylates
*PVC copolymers, ethylene vinyl chloride
*Rosin derivative resins
*Rosin modified resins
*Rosin resins
*SAN resins
*Silicone resins
*Silicone rubbers
*Styrene maleic anhydride resins
Styrene polymeric residue
*Styrene acrylic copolymer resins
*Styrene-acrylonitrile-acrylates copolymers
*Styrene-butadiene resins
*Stryrene butadiene resins, less than 50% butadiene
*Styrene butadiene resins, latex
*Styrene-divinyl benzene resins (ion exchange
*Styrene-methacrylate terpolymer resins
*Styrene-methyl methacrylate copolymers
*Styrene, butadiene, vinyl toluene terpolymers
*Sulfonated styrene maleic anhydride resins
*Unsaturated polyester resins
*Vinyl toluene resins
*Vinyl toluene-acrylate resins
*Vinyl toluene butadiene resins
*Vinyl toluene-methacrylate resins
*Vinylacetate-N-butylacrylate copolymers

NR 235.31 EFFLUENT LIMITATIONS 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 to 125.32, and in s. NR 235.02 (9) for point sources with production in 2 or more subcategories, any existing point source subject to this section shall achieve the following limitations:

(1) Limitations shall be calculated by multiplying the following concentrations by the manufacturing process wastewater flow:

Thermoplastic Resins

BPT Effluent Limitations		
	Maximum for any 1 day	Maximum for monthly average
Pollutant or pollutant property	mg/l	mg/l
BOD_5	64	24
TSS	130	40

(2) The pH shall be within the range of 6.0 to 9.0 at all times.

NR 235.32 EFFLUENT LIMITATIONS REPRESENTING THE DEGREE OF EFFLUENT REDUCTION ATTAINABLE BY THE APPLICATION OF THE BEST AVAILABLE TECHNOLOGY ECONOMICALLY ACHIEVABLE (BAT). (1) For existing point sources whose total OCPSF production defined by s. NR 235.02 is less than or equal to 5 million pounds of OCPSF products per year, the BAT level of treatment shall be the same as the BPT level of treatment.

(2) Except as provided in sub. (1) and in 40 CFR 125.30 to 125.32, any existing point source that uses end-of-pipe biological treatment and is subject to this subchapter shall achieve discharges in accordance with s. NR 235.81.

(3) Except as provided in sub. (1) and in 40 CFR 125.30 to 125.32, any existing point source that does not use end-of-pipe biological treatment and is subject to this subchapter shall achieve discharges in accordance with s. NR 235.91.

NR 235.33 NEW SOURCE PERFORMANCE STANDARDS (NSPS). (1) Any new source that uses end-of-pipe biological treatment and is subject to this subchapter:

(a) Shall achieve discharges in accordance with s. NR 235.81.

(b) May not exceed the BPT effluent limitations listed in the table in s. NR 235.31 (1); and

(c) Shall maintain the pH within 6.0 to 9.0 at all times.

(2) Any new source that does not use end-of-pipe biological treatment and is subject to this section:

(a) Shall achieve discharges in accordance with s. NR 235.91.

(b) May not exceed BPT effluent limitations listed in the table in s. NR 235.31 (1); and

(c) Shall maintain the pH within 6.0 to 9.0 at all times.

NR 235.34 PRETREATMENT STANDARDS FOR EXISTING SOURCES (PSES). Except as provided in ss. NR 211.13 and 211.14, any existing source subject to this subchapter which introduces pollutants into a POTW shall comply with ch. NR 211 and achieve discharges in accordance with s. NR 235.101.

NR 235.35 PRETREATMENT STANDARDS FOR NEW SOURCES (PSNS). Except as provided in s. NR 211.13 any new source subject to this subchapter which introduces pollutants into a POTW shall comply with ch. NR 211 and achieve discharges in accordance with s. NR 235.101.

SUBCHAPTER V - THERMOSETTING RESINS

NR 235.40 APPLICABILITY; DESCRIPTION OF THE THERMOSETTING RESINS SUBCATEGORY. This subchapter applies to process wastewater discharges resulting from the manufacture of the products classified under SIC 28214 thermosetting resins including the following resins and resin groups. Product groups are indicated with an asterisk.

*Alkyd resins
Dicyanodiamide resin
*Epoxy resins
*Fumaric acid polyesters
*Furan resins
Glyoxal-urea formaldehyde textile resins
*Ketone-formaldehyde resins
*Melamine resins
*Phenolic resins
*Polyacetal resins
Polyacrylamide
*Polyurethane prepolymers
*Polyurethane resins
*Urea formaldehyde resins
*Urea resins

NR 235.41 EFFLUENT LIMITATIONS 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 to 125.32, and in s. NR 235.02 (9) for point sources with production in 2 or more subcategories, any existing point source subject to this section shall achieve the following limitations:

(1) Limitations shall be calculated by multiplying the following concentrations by the manufacturing process wastewater flow:

Thermosetting Resins

BPT Effluent Limitations		
	Maximum for any 1 day	Maximum for monthly average
Pollutant or pollutant property	mg/l	mg/l
BOD_5	163	61
TSS	216	67

(2) The pH shall be within the range of 6.0 to 9.0 at all times.

NR 235.42 EFFLUENT LIMITATIONS REPRESENTING THE DEGREE OF EFFLUENT REDUCTION ATTAINABLE BY THE APPLICATION OF THE BEST AVAILABLE TECHNOLOGY ECONOMICALLY ACHIEVABLE (BAT). (1) For existing point sources whose total OCPSF production defined by s. NR 235.02 is less than or equal to 5 million pounds of OCPSF products per year, the BAT level of treatment shall be the same as the BPT level of treatment.

(2) Except as provided in sub. (1) and in 40 CFR 125.30 to 125.32, any existing point source that uses end-of-pipe biological treatment and is subject to this subchapter shall achieve discharges in accordance with s. NR 235.81.

(3) Except as provided in sub. (1) and in 40 CFR 125.30 to 125.32, any existing point source that does not use end-of-pipe biological treatment and is subject to this subchapter shall achieve discharges in accordance with s. NR 235.91.

NR 235.43 NEW SOURCE PERFORMANCE STANDARDS (NSPS). (1) Any new source that uses end-of-pipe biological treatment and is subject to this subchapter:

(a) Shall achieve discharges in accordance with s. NR 235.81.

(b) May not exceed the BPT effluent limitations listed in the table in s. NR 235.41 (1); and

(c) Shall maintain the pH within 6.0 to 9.0 at all times.

(2) Any new source that does not use end-of-pipe biological treatment and is subject to this section:

(a) Shall achieve discharges in accordance with s. NR 235.91.

(b) May not exceed BPT effluent limitations listed in the table in s. NR 235.41 (1); and

(c) Shall maintain the pH within 6.0 to 9.0 at all times.

NR 235.44 PRETREATMENT STANDARDS FOR EXISTING SOURCES (PSES). Except as provided in ss. NR 211.13 and 211.14, any existing source subject to this subchapter which introduces pollutants into a POTW shall comply with ch. NR 211 and achieve discharges in accordance with s. NR 235.101.

NR 235.45 PRETREATMENT STANDARDS FOR NEW SOURCES (PSNS). Except as provided in s. NR 211.13 any new source subject to this subchapter which introduces pollutants into a POTW shall comply with ch. NR 211 and achieve discharges in accordance with s. NR 235.101.

SUBCHAPTER VI - COMMODITY ORGANIC CHEMICALS

NR 235.50 APPLICABILITY; DESCRIPTION OF THE COMMODITY ORGANIC CHEMICALS SUBCATEGORY. This subchapter applies to the process wastewater discharges resulting from the manufacture of the following SIC 2865 and 2869 commodity organic chemicals and commodity organic chemical groups. Product groups are indicated with an asterisk.

Commodity Organic Chemicals

Aliphatic Organic Chemicals	Aromatic Organic Chemicals
Acetaldehyde	Benzene
Acetic acid	Cumene
Acetic anhydride	Dimethyl terephthalate
Acetone	Ethylbenzene
Acrylonitrile	Phenol
Adipic acid	*Pitch tar residues
*Butylenes (butenes)	*Pyrolysis gasolines
Cyclohexane	Styrene
Ethanol	Terephthalic acid
Ethylene	Toluene
Ethylene glycol	*Xylenes, mixed
Ethylene oxide	o-Xylene
Formaldehyde	m-Xylene (impure)
Isopropanol	p-Xylene
Methanol	
Polyoxypropylene glycol	Halogenated Organic Chemicals
Propylene	
Propylene oxide	Vinyl chloride
Vinyl acetate	
1,2-Dichloroethane	
1,3-Butadiene	

NR 235.51 EFFLUENT LIMITATIONS 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 to 125.32, and in s. NR 235.02 (9) for point sources with production in two or more subcategories, any existing point source subject to this section shall achieve the following limitations:

(1) Limitations shall be calculated by multiplying the following concentrations by the manufacturing process wastewater flow:

Commodity Organic Chemicals

	BPT Effluent Limitations	
	Maximum for any 1 day	Maximum for monthly average
Pollutant or pollutant property	mg/l	mg/l
BOD_5	80	30
TSS	149	46

(2) The pH shall be within the range of 6.0 to 9.0 at all times.

NR 235.52 EFFLUENT LIMITATIONS REPRESENTING THE DEGREE OF EFFLUENT REDUCTION ATTAINABLE BY THE APPLICATION OF THE BEST AVAILABLE TECHNOLOGY ECONOMICALLY ACHIEVABLE (BAT). (1) For existing point sources whose total OCPSF production defined by s. NR 235.02 is less than or equal to 5 million pounds of OCPSF products per year, the BAT level of treatment shall be the same as the BPT level of treatment.

(2) Except as provided in sub. (1) and in 40 CFR 125.30 to 125.32, any existing point source that uses end-of-pipe biological treatment and is subject to this subchapter shall achieve discharges in accordance with s. NR 235.81.

(3) Except as provided in sub. (1) and in 40 CFR 125.30 to 125.32, any existing point source that does not use end-of-pipe biological treatment and is subject to this subchapter shall achieve discharges in accordance with s. NR 235.91.

NR 235.53 NEW SOURCE PERFORMANCE STANDARDS (NSPS). (1) Any new source that uses end-of-pipe biological treatment and is subject to this subchapter:

(a) Shall achieve discharges in accordance with s. NR 235.81.

(b) May not exceed the BPT effluent limitations listed in the table in s. NR 235.51 (1); and

(c) Shall maintain the pH within 6.0 to 9.0 at all times.

(2) Any new source that does not use end-of-pipe biological treatment and is subject to this section:

(a) Shall achieve discharges in accordance with s. NR 235.91.

(b) May not exceed BPT effluent limitations listed in the table in s. NR 235.51 (1); and

(c) Shall maintain the pH within 6.0 to 9.0 at all times.

NR 235.54 PRETREATMENT STANDARDS FOR EXISTING SOURCES (PSES). Except as provided in ss. NR 211.13 and 211.14, any existing source subject to this subchapter which introduces pollutants into a POTW shall comply with ch. NR 211 and achieve discharges in accordance with s. NR 235.101.

NR 235.55 PRETREATMENT STANDARDS FOR NEW SOURCES (PSNS). Except as provided in s. NR 211.13 any new source subject to this subchapter which introduces pollutants into a POTW shall comply with ch. NR 211 and achieve discharges in accordance with s. NR 235.101.

SUBCHAPTER VII - BULK ORGANIC CHEMICALS

NR 235.60 APPLICABILITY; DESCRIPTION OF THE BULK ORGANIC CHEMICALS SUBCATEGORY. This subchapter applies to the process wastewater discharges resulting from the manufacture of the following SIC 2865 and 2869 bulk organic chemicals and bulk organic chemical groups. Product groups are indicated with an asterisk.

Bulk Organic Chemicals

(1) Aliphatic Organic Chemicals

*Acetic acid esters
*Acetic acid salts
Acetone cyanohydrin
Acetylene
Acrylic acid
*Acrylic acid esters
*Alkoxy alkanols
*Alkylates
*Alpha-olefins
Butane (all forms)
*C-4 Unsaturated hydrocarbons
Calcium stearate
Caprolactam
Carboxymethyl cellulose
Cellulose acetate butyrates
*Cellulose ethers
Cumene hydroperoxide
Cyclohexanol
Cyclohexanol, cyclohexanone mixed
Cyclohexanone
Cyclohexene
*C12-C18 Primary alcohols
*C5 concentrates
*C9 concentrates
Decanol
Diacetone alcohol
*Dicarboxylic acids salts
Diethyl ether
Diethylene glycol
Diethylene glycol diethyl ether
Diethylene glycol dimethyl ether
Diethylene glycol monoethyl ether
Diethylene glycol monomethyl ether
*Dimer acids
Dioxane
Ethane
Ethylene glycol monophenyl ether
*Miscellaneous ethoxylates
Ethylene glycol dimethyl ether
Ethylene glycol monobutyl ether
Ethylene glycol monoethyl ether
Ethylene glycol monomethyl ether
Synthetic glycerine
Glyoxal
Hexane
*Hexanes and other C6 hydrocarbons
Isobutanol
Isobutylene
Isobutyraldehyde
Isophorone
Isophthalic acid
Isoprene
Isopropyl acetate
Ligninsulfonic acid, calcium salt
Maleic anhydride
Methacrylic acid
*Methacrylic acid esters
Methane
Methyl ethyl ketone
Methyl methacrylate
Methyl tert-butyl ether
Methylisobutyl ketone
*n-Alkanes
n-Butyl alcohol
n-Butylacetate
n-Butyraldehyde
n-Butyric acid
n-Butyric anhydride
*n-Paraffins
n-Propyl acetate
n-Propyl alcohol
Nitrilotriacetic acid
Nylon salt
Oxalic acid
*Oxo aldehydes-alcohols
Pentaerythritol
Pentane
*Pentenes
*Petroleum sulfonates
Pine oil
Polyoxybutylene glycol
Polyoxyethylene glycol
Propane
Propionaldehyde
Propionic acid
Propylene glycol
Sec-butyl alcohol
Sodium formate
Sorbitol
Stearic acid, calcium salt (wax)
Tert-Butyl alcohol
1-Butene
1-Pentene
1,4-Butanediol
Isobutyl acetate
2-Butene (cis and trans)
2-Ethyl hexanol
2-Ethylbutyraldehyde
2,2,4-Trimethyl-1,3-pentanediol

Bulk Organic Chemicals

(2) Amine and Amide Organic Chemicals

2,4-Diaminotoluene
*Alkyl amines
Aniline
Caprolactam, aqueous concentrate
Diethanolamine
Diphenyl amine
*Ethanolamines
Ethylamine
Ethylenediamine
Ethylenediaminetetraacetic acid
*Fatty amines
Hexamethylene diamine
Isopropylamine
m-Toluidine
Melamine
Melamine crystal
*Methylamines
Methylene dianiline
n-Butylamine
N,N-Diethylaniline
N,N-Dimethylformamide
*Nitroanilines
Polymeric methylene dianiline
Sec-Butylamine
Tert-Butylamine
Toluenediamine (mixture)
*Toluidines
o-Phenylenediamine
2,6-Dimethylaniline
4-(N-Hydroxyethylethylamino)-2-hydroxyethyl aniline
4,4'-Methylenebis (N,N'-dimethyl)-aniline
4,4'-Methylenedianiline

Bulk Organic Chemicals

(3) Aromatic Organic Chemicals

Alpha-methylstyrene
*Alkyl benzenes
*Alkyl phenols
*Alkylbenzene sulfonic acids, salts
*Aminobenzoic acid (meta and para)
Beta-Naphthalene sulfonic acid
Benzenedisulfonic acid
Benzoic acid
Bis(2-ethylhexyl)phthalate
Bisphenol A
BTX-benzene, toluene, xylene (mixed)
Butyl octyl phthalate
Coal tar
*Coal tar products (misc.)
Creosote
*Cresols, mixed
Cyanuric acid
Cyclic aromatic sulfonates
Dibutyl phthalate
Diisobutyl phthalate
Diisodecyl phthalate
Diisooctyl phthalate
Dimethyl phthalate
Dinitrotoluene (mixed)
Ditridecyl phthalate
m-Cresol
Metanilic acid
Methylenediphenyldiisocyanate
Naphthalene
*Naphthas, solvent
Nitrobenzene
Nitrotoluene
Nonylphenol
p-Cresol
Phthalic acid
Phthalic anhydride
*Tars-pitches
Tert-Butylphenol
*Toluene diisocyanates (mixture)
Trimellitic acid
o-Cresol
1-Tetralol, 1-tetralone mix
2,4-Dinitrotoluene
2,6-Dinitrotoluene

Bulk Organic Chemicals

(4) Halogenated Organic Chemicals

1,4-Phenylenediamine dihydrochloride	Cyanuric chloride
Allyl chloride	Dichloropropane
Benzyl chloride	Epichlorohydrin
Carbon tetrachloride	Ethyl chloride
*Chlorinated paraffins, 35-64 PCT, Chlorine	*Fluorocarbons (Freons)
Chlorobenzene	Methyl chloride
*Chlorobenzenes (mixed)	Methylene chloride
Chlorodifluoroethane	Pentachlorophenol
Chloroform	Phosgene
*Chloromethanes	Tetrachloroethylene
2-Chloro-5-methylphenol (6-chloro-m-cresol)	Trichloroethylene
*Chlorophenols	Trichlorofluoromethane
Chloroprene	Vinylidene chloride
Cyanogen chloride	1,1-Dichloroethane
	1,1,1-Trichloroethane
	2,4-Dichlorophenol

Bulk Organic Chemicals

(5) Other Organic Chemicals

Adiponitrile	*Phosphate esters
Carbon disulfide	Tetraethyl lead
Fatty Nitriles	Tetramethyl lead
*Organo-tin compounds	Urethane prepolymers

NR 235.61 EFFLUENT LIMITATIONS 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 to 125.32, and in s. NR 235.02 (9) for point sources with production in 2 or more subcategories, any existing point source subject to this section shall achieve the following limitations:

(1) Limitations shall be calculated by multiplying the following concentrations by the manufacturing process wastewater flow:

Bulk Organic Chemicals

BPT Effluent Limitations		
	Maximum for any 1 day	Maximum for monthly average
Pollutant or pollutant property	mg/l	mg/l
BOD_5	92	34
TSS	159	49

(2) The pH level shall be within the range of 6.0 to 9.0 at all times.

NR 235.62 EFFLUENT LIMITATIONS REPRESENTING THE DEGREE OF EFFLUENT REDUCTION ATTAINABLE BY THE APPLICATION OF THE BEST AVAILABLE TECHNOLOGY ECONOMICALLY ACHIEVABLE (BAT). (1) For existing point sources whose total OCPSF production defined by s. NR 235.02 is less than or equal to 5 million pounds of OCPSF products per year, the BAT level of treatment shall be the same as the BPT level of treatment.

(2) Except as provided in sub. (1) and in 40 CFR 125.30 to 125.32, any existing point source that uses end-of-pipe biological treatment and is subject to this subchapter shall achieve discharges in accordance with s. NR 235.81.

(3) Except as provided in sub. (1) and in 40 CFR 125.30 to 125.32, any existing point source that does not use end-of-pipe biological treatment and is subject to this subchapter shall achieve discharges in accordance with s. NR 235.91.

NR 235.63 NEW SOURCE PERFORMANCE STANDARDS (NSPS). (1) Any new source that uses end-of-pipe biological treatment and is subject to this subchapter:

(a) Shall achieve discharges in accordance with s. NR 235.81.

(b) May not exceed the BPT effluent limitations listed in the table in s. 235.61 (1); and

(c) Shall maintain the pH within 6.0 to 9.0 at all times.

(2) Any new source that does not use end-of-pipe biological treatment and is subject to this section:

(a) Shall achieve discharges in accordance with s. NR 235.91.

(b) May not exceed BPT effluent limitations listed in the table in s. NR 235.61 (1); and

(c) Shall maintain the pH within 6.0 to 9.0 at all times.

NR 235.64 PRETREATMENT STANDARDS FOR EXISTING SOURCES (PSES). Except as provided in ss. NR 211.13 and 211.14, any existing source subject to this subchapter which introduces pollutants into a POTW shall comply with ch. NR 211 and achieve discharges in accordance with s. NR 235.101.

NR 235.65 PRETREATMENT STANDARDS FOR NEW SOURCES (PSNS). Except as provided in s. NR 211.13 any new source subject to this subchapter which introduces pollutants into a POTW shall comply with ch. NR 211 and achieve discharges in accordance with s. NR 235.101.

SUBCHAPTER VIII - SPECIALTY ORGANIC CHEMICALS

NR 235.70 APPLICABILITY; DESCRIPTION OF THE SPECIALTY ORGANIC CHEMICALS SUBCATEGORY. This subchapter applies to the process wastewater discharges resulting from the manufacture of all SIC 2865 and 2869 organic chemicals and organic chemical groups which are not defined as commodity chemicals in s. NR 235.50 or bulk organic chemicals in s. NR 235.60.

NR 235.71 EFFLUENT LIMITATIONS 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 to 125.32, and in s. NR 235.02 (9) for point sources with production in 2 or more subcategories, any existing point source subject to this section shall achieve the following limitations:

(1) Limitations shall be calculated by multiplying the following concentrations by the manufacturing process wastewater flow:

Specialty Organic Chemicals

BPT Effluent Limitations		
	Maximum for any 1 day	Maximum for monthly average
Pollutant or pollutant property	mg/l	mg/l
BOD_5	120	45
TSS	183	57

(2) The pH shall be within the range of 6.0 to 9.0 at all times.

NR 235.72 EFFLUENT LIMITATIONS REPRESENTING THE DEGREE OF EFFLUENT REDUCTION ATTAINABLE BY THE APPLICATION OF THE BEST AVAILABLE TECHNOLOGY ECONOMICALLY ACHIEVABLE (BAT). (1) For existing point sources whose total OCPSF production defined by s. NR 235.02 is less than or equal to 5 million pounds of OCPSF products per year, the BAT level of treatment shall be the same as the BPT level of treatment.

(2) Except as provided in sub. (1) and in 40 CFR 125.30 to 125.32, any existing point source that uses end-of-pipe biological treatment and is subject to this subchapter shall achieve discharges in accordance with s. NR 235.81.

(3) Except as provided in sub. (1) and in 40 CFR 125.30 to 125.32, any existing point source that does not use end-of-pipe biological treatment and is subject to this subchapter shall achieve discharges in accordance with s. NR 235.91.

NR 235.73 NEW SOURCE PERFORMANCE STANDARDS (NSPS). (1) Any new source that uses end-of-pipe biological treatment and is subject to this subchapter:

(a) Shall achieve discharges in accordance with s. NR 235.81.

(b) May not exceed the BPT effluent limitations listed in the table in s. NR 235.71 (1); and

(c) Shall maintain the pH within 6.0 to 9.0 at all times.

(2) Any new source that does not use end-of-pipe biological treatment and is subject to this section:

(a) Shall achieve discharges in accordance with s. NR 235.91.

(b) May not exceed BPT effluent limitations listed in the table in s. NR 235.71 (1); and

(c) Shall maintain the pH within 6.0 to 9.0 at all times.

NR 235.74 PRETREATMENT STANDARDS FOR EXISTING SOURCES (PSES). Except as provided in ss. NR 211.13 and 211.14, any existing source subject to this subchapter which introduces pollutants into a POTW shall comply with ch. NR 211 and achieve discharges in accordance with s. NR 235.101.

NR 235.75 PRETREATMENT STANDARDS FOR NEW SOURCES (PSNS). Except as provided in s. NR 211.13 any new source subject to this subchapter which introduces pollutants into a POTW shall comply with ch. NR 211 and achieve discharges in accordance with s. NR 235.101.

SUBCHAPTER IX - DIRECT DISCHARGE POINT SOURCES THAT USE END-OF-PIPE BIOLOGICAL TREATMENT

NR 235.80 APPLICABILITY; DESCRIPTION OF THE SUBCATEGORY OF DIRECT DISCHARGE POINT SOURCES THAT USE END-OF-PIPE BIOLOGICAL TREATMENT. This subchapter applies to the process wastewater discharges resulting from the manufacture of the OCPSF products and products groups defined by s. NR 235.02 from any point source that uses end-of-pipe biological treatment or installs end-of-pipe biological treatment to comply with BPT effluent limitations.

NR 235.81 TOXIC POLLUTANT EFFLUENT LIMITATIONS AND STANDARDS FOR DIRECT DISCHARGE POINT SOURCES THAT USE END-OF-PIPE BIOLOGICAL TREATMENT. (1) Any point source subject to this subchapter must achieve discharges not exceeding the quantity determined by multiplying the process wastewater flow times the concentrations in the following table.

(2) For chromium, copper, lead, nickel, zinc and total cyanide:

(a) The discharge quantity shall be determined by multiplying the concentrations listed in the following table for these pollutants times the flow from the metal-bearing waste streams for the metals and times the flow from the cyanide bearing waste streams for total cyanide.

(b) The metal-bearing waste streams and cyanide-bearing waste streams are defined as:

1. Those waste streams listed in Appendix A.

2. Any additional OCPSF process wastewater streams identified by the permitting authority on a case-by-case basis as metal or cyanide bearing based upon a determination that such streams contain significant amounts of the pollutants identified above.

(c) Any streams designated under subd. 2 shall be treated independently of other metal or cyanide bearing waste streams unless the permitting authority determines that the combination of such streams, prior to treatment, with the Appendix A waste streams will result in substantial reduction of these pollutants. This determination shall be based upon a review of relevant engineering, production and sampling information.

Sources Using End of Pipe Biological Treatment

	BAT Effluent Limitations and NSPS[1]	
	Maximum for any 1 day	Maximum for monthly average
Pollutant or pollutant property	µg/l	µg/l
Acenaphthene	59	22
Acenaphthylene	59	22
Acrylonitrile	242	96
Anthracene	59	22
Benzene	136	37
Benzo(a)anthracene	59	22
3,4-Benzofluoranthene	61	23
Benzo(k)fluoranthene	59	22
Benzo(a)pyrene	61	23
Bis(2-ethylhexyl)phthalate	279	103
Carbon tetrachloride	38	18
Chlorobenzene	28	15

Chloroethane	268	104
Chloroform	46	21
2-Chlorophenol	98	31
Chrysene	59	22
Di-n-butyl phthalate	57	27
1,2-Dichlorobenzene	163	77
1,3-Dicholorbenzene	44	31
1,4-Dicholorbenzene	28	15
1,1-Dichloroethane	59	22
1,2-Dichloroethane	211	68
1,1-Dichloroethylene	25	16
1,2-trans-Dichloroethylene	54	21
2,4-Dichlorophenol	112	39
1,2-Dichloropropane	230	153
1,3-Dichloropropylene	44	29
Diethyl phthalate	203	81
2,4-Dimethylphenol	36	18
Dimethyl phthalate	47	19
4,6-Dinitro-o-cresol	277	78
2,4-Dinitrophenol	123	71
2,4-Dinitrotoluene	285	113
2,6-Dinitrotoluene	641	255
Ethylbenzene	108	32
Fluoranthene	68	25
Fluorene	59	22
Hexachlorobenzene	28	15
Hexachlorobutadiene	49	20
Hexachloroethane	54	21
Methyl chloride	190	86
Methylene chloride	89	40
Naphthalene	59	22
Nitrobenzene	68	27
2-Nitrophenol	69	41
4-Nitrophenol	124	72
Phenanthrene	59	22
Phenol	26	15
Pyrene	67	25
Tetrachloroethylene	56	22
Toluene	80	26
Total Chromium	2,770	1,110
Total Copper	3,380	1,450
Total Cyanide	1,200	420
Total Lead	690	320
Total Nickel	3,980	1,690
Total Zinc[2]	2,610	1,050
1,2,4-Trichlorobenzene	140	68
1,1,1-Trichloroethane	54	21
1,1,2-Trichloroethane	54	21
Trichloroethylene	54	21
Vinyl Chloride	268	104

[1]All units are micrograms per liter.
[2]Total zinc for rayon fiber manufacture that uses the viscose process and acrylic fiber manufacture that uses the zinc chloride/solvent process is 6,796 μg/l maximum for any one day and 3,325 μg/l maximum for monthly average.

SUBCHAPTER X - DIRECT DISCHARGE POINT SOURCES THAT DO NOT USE END-OF-PIPE BIOLOGICAL TREATMENT

NR 235.90 APPLICABILITY; DESCRIPTION OF THE SUBCATEGORY OF DIRECT DISCHARGE POINT SOURCES THAT DO NOT USE END-OF-PIPE BIOLOGICAL TREATMENT. This subchapter applies to the process wastewater discharges resulting from the manufacture of the OCPSF products and product groups defined by s. NR 235.02 from any point source that does not use end-of-pipe biological treatment and does not install end-of-pipe biological treatment to comply with BPT effluent limitations.

NR 235.91 TOXIC POLLUTANT EFFLUENT LIMITATIONS AND STANDARDS FOR DIRECT DISCHARGE POINT SOURCES THAT DO NOT USE END-OF-PIPE BIOLOGICAL TREATMENT.

(1) Any point source subject to this subchapter must achieve discharges not exceeding the quantity determined by multiplying the process wastewater flow times the concentrations in the following table.

(2) For chromium, copper, lead, nickel, zinc and total cyanide:

(a) The discharge quantity shall be determined by multiplying the concentrations listed in the following table for these pollutants times the flow from the metal-bearing waste streams for the metals and times the flow from the cyanide bearing waste streams for total cyanide.

(b) The metal-bearing waste streams and cyanide-bearing waste streams are defined as:

1. Those waste streams listed in Appendix A.

2. Any additional OCPSF process wastewater streams identified by the permitting authority on a case-by-case basis as metal or cyanide bearing based upon a determination that such streams contain significant amounts of the pollutants identified above.

(c) Any streams designated under subd. 2 shall be treated independently of other metal or cyanide bearing waste streams unless the permitting authority determines that the combination of such streams, prior to treatment, with the Appendix A waste streams will result in substantial reduction of these pollutants. This determination shall be based upon a review of relevant engineering, production and sampling information.

Sources Not Using End of Pipe Biological Treatment

	BAT Effluent Limitations and NSPS[1]	
	Maximum for any 1 day	Maximum for monthly average
Pollutant or pollutant property	µg/l	µg/l
Acenaphthene	47	19
Acenaphthylene	47	19
Acrylonitrile	232	94
Anthracene	47	19
Benzene	134	57
Benzo(a)anthracene	47	19
3,4-Benzofluoranthene	48	20
Benzo(k)fluoranthene	47	19
Benzo(a)pyrene	48	20
Bis(2-ethylhexyl)phthalate	258	95
Carbon tetrachloride	380	142
Chlorobenzene	380	142
Chloroethane	295	110
Chloroform	325	111
Chrysene	47	19
Di-n-butyl phthalate	43	20
1,2-Dichlorobenzene	794	196
1,3-Dichlorobenzene	380	142

1,4-Dichlorobenzene	380	142
1,1-Dichloroethane	59	22
1,2-Dichloroethane	574	180
1,1-Dichloroethylene	60	22
1,2-trans-Dichloroethylene	66	25
1,2-Dichloropropane	794	196
1,3-Dichloropropylene	794	196
Diethyl phthalate	113	46
2,4-Dimethylphenol	47	19
Dimethyl phthalate	47	19
4,6-Dinitro-o-cresol	277	78
2,4-Dinitrophenol	4,291	1,207
Ethylbenzene	380	142
Fluoranthene	54	22
Fluorene	47	19
Hexachlorobenzene	794	196
Hexachlorobutadiene	380	142
Hexachloroethane	794	196
Methyl chloride	295	110
Methylene chloride	170	36
Naphthalene	47	19
Nitrobenzene	6,402	2,237
2-Nitrophenol	231	65
4-Nitrophenol	576	162
Phenanthrene	47	19
Phenol	47	19
Pyrene	48	20
Tetrachloroethylene	164	52
Toluene	74	28
Total Chromium	2,770	1,110
Total Copper	3,380	1,450
Total Cyanide	1,200	420
Total Lead	690	320
Total Nickel	3,980	1,690
Total Zinc[2]	2,610	1,050
1,2,4-Trichlorobenzene	794	196
1,1,1-Trichloroethane	59	22
1,1,2-Trichloroethane	127	32
Trichloroethylene	69	26
Vinyl chloride	172	97

[1]All units are micrograms per liter.
[2]Total Zinc for rayon fiber manufacture that uses the viscose process and acrylic fibers manufacture that uses the zinc chloride/solvent process is 6,796 µg/l maximum for any one day and 3,325 µg/l maximum for monthly average.

SUBCHAPTER XI - INDIRECT DISCHARGE POINT SOURCES

NR 235.100 APPLICABILITY; DESCRIPTION OF THE SUBCATEGORY OF INDIRECT DISCHARGE POINT SOURCES. This subchapter applies to the process wastewater discharges resulting from the manufacture of the OCPSF products and products groups defined by s. NR 235.02 from any indirect discharge point source.

NR 235.101 TOXIC POLLUTANT STANDARDS FOR INDIRECT DISCHARGE POINT SOURCES. (1) Any point source subject to this subchapter must achieve discharges not exceeding the quantity determined by multiplying the process wastewater flow times the concentrations in the following table.

(2) For chromium, copper, lead, nickel, zinc and total cyanide:

(a) The discharge quantity shall be determined by multiplying the concentrations listed in the following table for these pollutants times the flow from the metal-bearing waste streams for the metals and times the flow from the cyanide bearing waste streams for total cyanide.

(b) The metal-bearing waste streams and cyanide-bearing waste streams are defined as:

1. Those waste streams listed in Appendix A.
2. Any additional OCPSF process wastewater streams identified by the permitting authority on a case-by-case basis as metal or cyanide bearing based upon a determination that such streams contain significant amounts of the pollutants identified above.

(c) Any streams designated under subd. 2 shall be treated independently of other metal or cyanide bearing waste streams unless the permitting authority determines that the combination of such streams, prior to treatment, with the Appendix A waste streams will result in substantial reduction of these pollutants. This determination shall be based upon a review of relevant engineering, production, and sampling information.

PSES and PSNS[1]

Pollutant or pollutant property	Maximum for any 1 day µg/l	Maximum for monthly average µg/l
Acenaphthene	47	19
Anthracene	47	19
Benzene	134	57
Bis(2-ethylhexyl)phthalate	258	95
Carbon tetrachloride	380	142
Chlorobenzene	380	142
Chloroethane	295	110
Chloroform	325	111
Di-n-butyl phthalate	43	20
1,2-Dichlorobenzene	794	196
1,3-Dichlorobenzene	380	142
1,4-Dichlorobenzene	380	142
1,1-Dichloroethane	59	22
1,2-Dichloroethane	574	180
1,1-Dichloroethylene	60	22
1,2-trans-Dichloroethylene	66	25
1,2-Dichloropropane	794	196
1,3-Dichloropropylene	794	196
Diethyl phthalate	113	46
Dimethyl phthalate	47	19
4,6-Dinitro-o-cresol	277	78
Ethylbenzene	380	142
Fluoranthene	54	22
Fluorene	47	19

Hexachlorobenzene	794	196
Hexachlorobutadiene	380	142
Hexachlorethane	794	196
Methyl chloride	295	110
Methylene chloride	170	36
Naphthalene	47	19
Nitrobenzene	6,402	2,237
2-Nitrophenol	231	65
4-Nitrophenol	576	162
Phenanthrene	47	19
Pyrene	48	20
Tetrachloroethylene	164	52
Toluene	74	28
Total Cyanide	1,200	420
Total Lead	690	320
Total Zinc[2]	2,610	1,050
1,2,4-Trichlorobenzene	794	196
1,1,1-Trichloroethane	59	22
1,1,2-Trichloroethane	127	32
Trichloroethylene	69	26
Vinyl chloride	172	97

[1]All units are micrograms per liter.
[2]Total zinc for rayon fiber manufacture that uses the viscose process and acrylic fiber manufacture that uses the zinc chloride/solvent process is 6,796 μg/l maximum for any one day and 3,325 μg/l maximum monthly average.

APPENDIX A TO CHAPTER NR 235 - NONCOMPLEXED METAL-BEARING WASTE STREAMS AND CYANIDE-BEARING WASTE STREAMS

Chromium Bearing Waste Streams

Product	Process
Methylhydroabietate	Esterification of hydroabietic acid (rosin) with methanol
Acrylic acid	Oxidation of propylene via acrolein
N-Butyl alcohol	Hydrogenation of n-butyraldehyde, Oxo process
Cyclohexanone	From phenol via cyclohexanol by hydrogenation-dehydrogenation
Fatty amines	Batch hydrogenation of fatty nitriles
Heliotropin	Oxidation of isosafrole, chromium catalyst
Isobutanol	Hydrogenation of isobutyraldehyde, Oxo process
Cyclohexyl mercaptan	Cyclohexanol + hydrogen sulfide
Ethyl mercaptan	Ethanol + hydrogen sulfide
Methanol	H.P. synthesis from natural gas via synthetic gas
Oxo alcohols, C7-C11	Carbonation and hydrogenation of C6-C10 olefins
Polyoxypropylene diamine	Polypropylene glycol + ammonia
n-Propyl alcohol	Hydrogenation of propionaldehyde, oxo process
SAN resin	Suspension polymerization
Styrene	Dehydrogenation of ethylbenzene
Styrene	Dehydration of methyl benzyl alcohol, coproduct of propylene oxide
1-Tetralol, 1-tetralone mix	Oxidation of tetralin (1,2,3,4-tetrahydronaphthalene)
3,3,3-Trifluoropropene	Catalyzed hydrogen fluoride exchange with chlorinated propane
Vinyl toluene	Thermal dehydrogenation of ethyltoluene

Copper Bearing Waste Streams

Product	Process
Methylhydroabietate	Esterfication of hydroabietic acid (rosin) with methanol
Acetaldehyde	Oxidation of ethylene with cupric chloride catalyst
Acetic acid	Catalytic oxidation of butane
Acetone	Dehydrogenation of isopropanol
Acrylamide	Catalytic hydration of acrylonitrile
Acrylic acid	Oxidation of propylene via acrolein
Acrylonitrile	Propylene ammoxidation
Adiptic Acid	Oxidation of cyclohexanol-cyclohexanone mixture
Adipic acid	Oxidation of cyclohexane via cyclohexanol-cyclohexanone mixture
Allynitrile	Allychloride + sodium cyanide
Aniline	Hydrogenation of nitrobenzene
Benzofurans, 2,3 dihydro-2,2-dimethyl-7-benzofuranol	From o-Nitrophenol + methallyl chloride
n-Butyl alcohol	Hydrogenation of n-butyraldehyde, oxo process
1,4 Butanediol	Hydrogenation of 1,4-butynediol
Butryolactone	Dehydrogenation of 1,4-butanediol
Caprolactam	From cyclohexane via cyclohexanone and its oxime
Lilian (hydroxydihydrocitronellal)	Hydration and oxidation of citronellol
1,2-Dichloroethane	Oxyhydrochlorination of ethylene
Dialkyldithiocarbamates, metal salts	Dialkylamines + carbon disulfide
2-Ethylhexanol	From n-butyraldehyde by aldo condensation and hydrogenation
Fatty amines	Batch hydrogenation of fatty nitriles
Geraniol	B-Myrcene + hydrogen chloride, esterfication of geranyl chloride hydrolysis of geranyl acetate

Furfuryl alcohol	Hydrogenation of furfural
Geraniol (citral)	Oxidation of geraniol, copper catalyst
Glyoxal	Oxidation of ethylene glycol
Isobutanol	Hydrogenation of isobutyraldehyde, Oxo process
Isopropanol	Catalytic hydrogenation of acetone
2-Mercaptobenzothiazoles, copper salt	2-Mercaptobenzothiazole + copper salt
Methanol	High pressure synthesis from natural gas via synthetic gas
Methanol	Low pressure synthesis from natural gas via synthetic gas
Methyl ethyl ketone	Dehydrogenation of sec-butanol
C7-C11 oxo alcohols	Carbonation and hydrogenation of C6-C10 olefins
Phenol	Liquid phase oxidation of benzoic acid
Polyoxyalkylene amines	Polyoxyalkylene glycol + ammonia
Polyphenylene oxide	Solution polymerization of 2-6-xylenol by oxidative coupling cuprous salt catalyst
Polyoxypropylene diamine	Polypropylene glycol + ammonia
Quinaldine dye intermediate	Skraup reaction of aniline crotonaldehye
Silicone fluids	Hydrolysis and condensation of chlorosilanes
Silicone rubbers	Hydrolysis and condensation of chlorosilanes
Silicone specialties, such as grease, dispersion agents, defoamers, and other products	
Silicone resins	Hydrolysis and condensation of methyl, phenyl, and vinyl chlorosilanes
Silicone fluids	Hydrolysis of chlorosilanes to acyclic and cyclic organosiloxanes
Styrene	Dehydration of a-methylbenzyl alcohol, coproduct of propylene oxide

Tetrachloroethylene (perchloroethylene)	Oxyhydrochlorination of tetrachloroethane
Tris(anilino)s-triazine	Cyanuric chloride + aniline + cogeners
Trichloroethylene	Oxyhydrochlorination of tetrachloroethane
Unsaturated polyester resin	Reaction of maleic anhydride + phthalic anhydride + propylene glycol polyester with styrene or methyl methacrylate

Cyanide Bearing Waste Streams

Product	Process
Acetone cyanohydrin	Acetone + hydrogen cyanide
Acetonitrile	By-product of acrylonitrile from propylene by ammoxidation
Acrylic resins	Solution polymerization
Acrylic fiber (85% acrylonitrile)	Suspension polymerization and wet spinning
Acrylic fiber (85% acrylonitrile)	Solution polymerization and wet spinning
Acrylonitrile	Ammoxidation of propylene
Adiponitrile	Butadiene + hydrogen cyanide (direct cyanation)
Allylnitrile	Allyl chloride + sodium cyanide
Dimethoxybenzaldehyde	Hydroquinone dimethyl ether + hydrogen cyanide, hydrolysis
Benzyl cyanide	Benzyl chloride + sodium cyanide
Coal tar products	Distillation of coal tar condensate
Cyanoacetic acid	Chloracetic acid + sodium cyanide
Cyanuric chloride	Catalyzed trimerization of cyanogen chloride
Vat dyes, indigo paste as vat blue 1	Sodamide + potassium N-phenylglycine, fused with caustic; or N-phenylglycine + aniline +formaldehyde + sodium bisulfite, sodium cyanide hydrolysis with potassium hydroxide

Disperse dyes, azo and vat	
Ethylenediamine tetraacetic acid	Ethylene diamine + formaldehyde + sodium cyanide
Diethylenetriamine pentaacetic acid	Diethylenetriamine + formaldehyde + sodium cyanide
N,N'-Bis(o-acetamidophenol)ethylene-diamine, ferric complex	Salicylaldehyde + ethylene diamine + hydrogen cyanide, hydrolysis to amide
Diethylenetriamine pentaacetic acid, pentasodium salts	Diethylenetriamine pentaacetic acid + caustic
Hydroxyethyl ethylenediamine triacetic acid, trisodium salt	Ethylene diamine + ethylene oxide + formaldehyde + sodium cyanide, hydrolysis
5,5 Dimethyl hyantoin	Acetone + ammonia + carbon dioxide + hydrogen cyanide
Hydrogen cyanide	Byproduct of acrylonitrile by ammoxidation of propylene
Iminodiacetic acid	Hexamethylene tetraamine + hydrogen cyanide, hydrolysis of iminoacetonitrile salt
Methionine	Acrolein + methyl mercaptan, with hydrogen cyanide and ammonium carbonate
Nitrilotriacetic acid	Hexamethylene tetraamine + hydrogen cyanide, hydrolysis of nitrilotriacetonitrile salt
Picolines, mixed	Condensation of acetaldehyde + formaldehyde + ammonia
Organic pigments, azo	Diazotization of aniline cogener, coupling to B-napthol
2-Isopropyl-4-methoxy-pyrimidines	Isobutyronitril + methanol, ammonia and methylacetoacetate, ring closure
Synthetic pyridine	Condensation of acetaldehyde + ammonia + formaldehyde
Cyanopyridine	Ammoxidation of picoline
Sarcosine (N-methyl glycine) sodium salt	Hexamethylene tetraamine + sodium cyanide, hydrolysis
Thiophene acetic acid	Chloromethylation (hydrogen chloride + formaldehyde) + sodium cyanide, hydrolysis
Tris(anilino)S-triazine	Cyanuric chloride + aniline and its cogeners

Triethylorthoformate	Ethanol + hydrogen cyanide
Trimethylorthoformate	Methanol + hydrogen cyanide

Lead Bearing Waste Streams

Product	Process
Alkyd resin	Condensation polymerization
Alkyd resins	Condensation polymerization of phthalic anhydride + glycerin + vegetable oil esters
Dialkyldithiocarbamates, metal salts	Dialkylamines + carbon disulfide
Thiuram (dimethyldithiocarbamate) hexasulfide	Dimethyldithiocarbamate + sulfur
Triphenylmethane dyes (methyl violet)	Condensation of formaldehyde + N-methylaniline + N,N-dimethylaniline, oxidation of reaction product
4,4-Bis(N,N-dimethylaniline) carbinol, Michler's hydrol	Oxidation of 4,4-methanylene-bis(N,N-dimethylaniline) with lead oxide
Naphthenic acid salts	
Stearic acid, metal salts	Neutralization with a metallic base

Nickel Bearing Waste Streams

Product	Process
Acetates, 7,11-hexadecadien-1-ol (gossyplure)	Coupling reactions, low pressure hydrogenation, esterification
Acetates, 9-dodecen-1-ol pheromone	Coupling reactions, low pressure hydrogenation, esterification
Acrylic acid	Oxidation of propylene via acrolein
Acrylonitrile	Propylene ammoxidation
n-Alkanes	Hydrogenation of C6-C22 alpha olefins (ethylene oligomers)
Adiponitrile	Direct cyanation of butadiene
Alkyl amines	Amination of alcohols
4-Aminoacetanilide	Hydrogenation of 4-Nitroacetanilide
BTX	Hydrogenation of olefins (cyclohexenes)
Hydrogenated terphenyls	Nickel catalyst, hydrogenation of terphenyl
Bisphenol-A, hydrogenated (biscyclohexanol-A)	Hydrogenation of bisphenol-A
Butadiene (1,3)	Extractive distillation of C-4-pyrolyzates
n-Butanol	Hydrogenation of n-butyraldehyde, oxo process
1,3 Butylene glycol	Hydrogenation of acetaldol
1,4 Butanediol	Hydrogenation of 1,4 butynediol
Butylenes mixed	Distillation of C4 pyrolyzates
4-Chloro-2-aminophenol	Hydrogenation of 4-chloro-2-nitrophenol
Lilial (hydroxydihydrocitronellal)	Hydration and oxidation of citronellol
Cycloparaffins	Catalytic hydrogenation of aromatics in kerosene solvent
Cyclohexanol	Hydrogenation of phenol, distillation

Cyclohexanone	From phenol via cyclohexanol by hydrogenation-dehydrogenation
Dialkyldithiocarbamates, metal salts	Dialkylamines + carbon disulfide
Ethylamine	Reductive amination of ethanol
Ethylamines (mono, di, and tri)	Reductive amination (ammonia + hydrogen) of ethanol
Isoeugenol, high percent trans	Separation of mixed cis and trans isoeugenols
2-Ethylhexanol	From n-butyraldehyde by aldol condensation and hydrogenation
Hydrogenated fatty acids	Tallow and coco acids + hydrogen
Fatty amines	Batch hydrogenation of fatty nitriles
Fatty amines	Hydrogenation of tallow and coco nitriles
Glyoxal-urea formaldehyde textile resin	Condensation to N-bis(hydroxymethyl)ureas and N,N'-di(hydroxyethyl) ureas
11-Hexadecenal	Coupling reactions, low pressure hydrogenation
Hexahydrophthalic anhydride	Condensation of butadiene and maleic anhydride (Diels-Alder reaction) + hydrogenation
Isobutanol	Hydrogenation of isobutyraldehyde, oxo process
Diisobutyl amine	Ammonolysis of isobutanol
Isopropyl amines (mono, di)	Reductive amination (ammonia + hydrogen) of isopropanol
Linalool	Pyrolysis of 2-pinanol
Methanol	High pressure synthesis from natural gas via synthetic gas
Methanol	Low pressure synthesis from natural gas via synthetic gas
Methanol	Butane oxidation
Tris-(hydroxymethyl)methyl amine	Hydrogenation of tris(hydroxymethyl) nitromethane
N-Methyl morpholine	Morpholine + methanol
N-Ethyl morpholine	Morpholine + ethanol

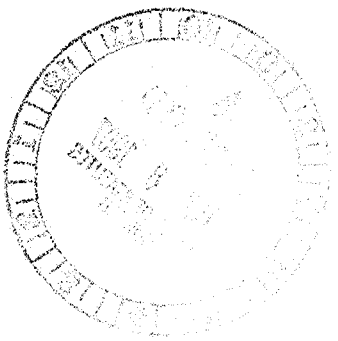
2-Methyl-7,8-epoxy octadecane	Coupling reactions, low pressure hydrogenation, epoxidation
Alpha-olefins	Ethylene oligomer and Zeigler catalyst
Petroleum hydrocarbon resins, hydrogenated	Hydrogenation of petroleum hydrocarbon resin products
Pinane	Hydrogenation of A-pinene
2-Pinanol	Reduction of pinane hydroperoxide
Bis-(p-octylphenol)sulfide, nickel salt	p-Octylphenol + sulfur chloride (S2C12) neutralize with nickel base
Piperazine	Reductive amination of ethanol amine (ammonia and hydrogenation metal catalyst)
N,N-Dimethylpiperazine	Condensation piperazine + formaldehyde hydrogenation
Polyoxyalkylene amines	Polyoxyalkylene glycol + ammonia
Polyoxypropylene diamine	Polypropylene glycol + ammonia
2-Amino-2-methyl-1-propanol	Hydrogenation of 2-nitro 2-methyl-1-propanol
3-Methoxypropyl amine	Reductive amination of acrylamide with methanol and hydrogen
N-Propylamine	Reductive amination (ammonia + hydrogen) of n-propanol
Sorbitol	Hydrogenation of sugars
Sulfolane	Condensation butadiene + sulfur dioxide, hydrogenation
Thionocarbamates, N-ethyl-o-isopropyl	Isopropyl xanthate + ethylamine
Toluene diamine (mixture)	Catalytic hydrogenation of dinitrotoluene
Methylated urea formaldehyde resins (textile)	Methylation of urea-formaldehyde adduct
Methylated urea-formaldehyde glyoxol (textile resins)	Reaction of methylated urea-formaldehyde + glyoxal

Zinc Bearing Waste Streams

Product	Process
Methylhydroabietate, diels-alder adducts	Derivatives of abietic esters from rosin
Acrylic resins	Emulsion or solution polymerization to coatings
Acrylic resins (latex)	Emulsion polymerization of acrylonitrile with polybutadiene
Acrylic fibers (85% polyacrylonitrile)	By solution polymerization/wet spinning
Alkyd resins	Condensation polymerization of phthalic anhydride + glycerin + vegetable oil esters
Benzene	By-product of styrene by ethyl-benzene dehydrogenation
Benzene	Byproduct of vinyl toluene from ethyl toluene
n-Butyl alcohol	Hydrogenation of n-butyraldehyde, oxo process
Coumarin (benz-a-pyrone)	Salicylaldehyde, Oxo process
Cycloparaffins	Catalytic hydrogenation of aromatics in kerosene solvent
Dithiocarbamates, zinc salt	Reaction of zinc oxide + sodium dithiocarbamates
Dialkyldithiocarbamates, metal salts	Dialkylamines + carbon disulfide
Dithiocarbamates, metal salts	Dithiocarbamic acid + metal oxide
Thiuram (dimethyldithiocarbamate) hexasulfide	Dimethyldithiocarbamate + sulfur
Fluorescent brighteners	Coumarin based
Ethyl acetate	Redox reaction (Tschenko) of acetaldehyde
Ethylbenzene	Benzene alkylation in liquid phase
Ethylbenzyl chloride	Chloromethylation (hydrogen chloride + formaldehyde, zinc chloride) of ethylbenzene
2-Ethyl hexanol	Aldol condensation-hydrogenation of n-butyraldehyde

Glyoxal-urea formaldehyde textile resin	Condensation to N-bis (hydroxymethyl) ureas + N,N'-(dihydroxyethyl) ureas
Isobutanol	Hydrogenation of isobutyraldehyde, Oxo process
Isopropanol	Catalytic hydrogenation of acetone
Methallylidene diacetate	Condensation of 2-methypropenal + acetic anhydride
Methanol	Low pressure synthesis from natural gas via synthetic gas
Methyl chloride	Hydrochlorination of methanol
Methylethyl ketone	Dehydrogenation of sec-butanol
Naphthenic acid salts	
Nylon	
Nylon 6 and 66 copolymers	Polycondensation of nylon salt + caprolatam
Nylon 6 fiber	Extrusion melt spinning
C12-C15 oxo alcohols	Hydroformylation and hydrogenation of C11-C14 olefins
Phenolic urethan resins	Phenol + excess formaldehyde + methylene aniline diisocyanate
Polystyrene crystal modified	Polystyrene + sulfonation, Chloromethylation and/or amination
Rayon	Viscose process
SAN resin	Emulsion polymerization
Silicone rubbers	Hydrolysis and condensation of chlorosilanes
Silicone specialties, such as grease, dispersion agents, defoamers, and other products	
Silicone resins	Hydrolysis and condensation of methyl, phenyl, and vinyl chlorosilanes
Silicone fluids	Hydrolysis of chlorosilanes to acyclic and cyclic organosiloxanes Neutralization with a metallic base
Stearic acid, metal salts	Neutralization with a metallic base

Styrene	Dehydrogenation of ethylbenzene
Styrene-butadiene resin	Emulsion polymerization
Vinyl acetate	Reduction of acetylene + acetic acid
Vinyl toluene	Thermal dehydrogenation of ethyltoluene
Xylenes, mixed	By-product vinyl toluene from ethyltoluene



Note: The Wisconsin administrative code corresponds to the code of federal regulations according to the following table:

State code	Code of Federal Regulations
s. NR 205.03	40 C.F.R. s. 401.11
s. NR 205.04	40 C.F.R. s. 401.11
ch. NR 211	40 C.F.R. Part 403
s. NR 211.03	40 C.F.R. s. 403.3
s. NR 211.13	40 C.F.R. s. 403.7
s. NR 211.14	40 C.F.R. s. 403.17
ch. NR 235	40 C.F.R. Part 414

The foregoing rules were approved and adopted by the State of Wisconsin Natural Resources Board on October 23, 1996.

The rules shall take effect on the first day of the month following publication in the Wisconsin administrative register, as provided in s. 227.22(2), Stats.

Dated at Madison, Wisconsin December 12, 1996.

STATE OF WISCONSIN DEPARTMENT OF NATURAL RESOURCES

By George E. Meyer
George E. Meyer, Secretary

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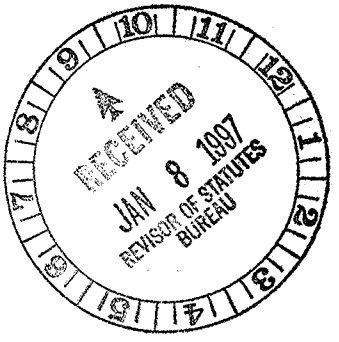

WISCONSIN
DEPT. OF NATURAL RESOURCES

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Tommy G. Thompson, Governor
George E. Meyer, Secretary

Box 7921
101 South Webster Street
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December 11, 1996

Mr. Gary L. Poulson
Assistant Revisor of Statutes
131 West Wilson Street - Suite 800
Madison, WI

Dear Mr. Poulson:

Enclosed are two copies, including one certified copy, of State of Wisconsin Natural Resources Board Order No. WW-21-96. These rules were reviewed by the Assembly Committee on Environment and Utilities and the Senate Committee on Environmental Resources and Urban Affairs pursuant to s. 227.19, Stats. Summaries of the final regulatory flexibility analysis and comments of the legislative review committees are also enclosed.

You will note that this order takes effect following publication. Kindly publish it in the Administrative Code accordingly.

Sincerely,

George E. Meyer
Secretary

Enc.