

## Chapter NR 235

## ORGANIC CHEMICAL MANUFACTURING

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**NR 235.01 Purpose.** The purpose of this chapter is to establish effluent limitations, standards of performance, and pretreatment standards for discharges of process wastes from the organic chemicals manufacturing category of point sources and subcategories thereof.

**Note:** The authority for promulgation of this chapter is set forth in Wis. Adm. Code chapter NR 205.

**History:** Cr. Register, August, 1976, No. 248, eff. 9-1-76.

**NR 235.02 Applicability.** The effluent limitations, standards of performance, pretreatment standards, and other provisions in this chapter are applicable to pollutants or pollutant properties in discharges of process waste resulting from the manufacture of the organic chemicals identified under the following process subcategories.

(1) **NONAQUEOUS PROCESSES.** This subcategory includes the manufacture in nonaqueous processes of the following chemicals;

Chemicals ..... Manufacturing processes  
 BTX aromatics ..... hydrotreatment of pyrolysis gasoline.  
 BTX aromatics ..... solvent extraction from reformate.  
 cyclohexane ..... hydrogenation of benzene.  
 vinylchloride ..... addition of hydrochloric acid to acetylene.

(2) **PROCESSES WITH PROCESS WATER CONTACT.** This subcategory includes the manufacture in processes with process water contact as steam diluent or absorbent of the following groups of organic chemicals. The manufacturing process does not include ion exchange purification of the product.

Chemicals ..... Manufacturing processes

(a) Group:

acetone ..... dehydrogenation of isopropanol  
 butadiene ..... coproduct of ethylene  
 ethyl benzene ..... alkylation of benzene with ethylene.  
 ethylene and pyrolysis of naphtha or liquid petroleum  
 propylene ..... gas.  
 ethylene dichloride ..... direct chlorination of ethylene.  
 ethylene oxide ..... catalytic oxidation of ethylene.  
 formaldehyde-37% ..... oxidation of methanol.  
 methanol ..... steam reforming of natural gas.  
 methylamines ..... addition of ammonia to methane.

vinyl acetate .....synthesis of ethylene and acetic acid.  
vinyl chloride.....cracking of ethylene dichloride.

- (b) Group:  
acetaldehyde.....dehydrogenation of ethanol.  
acetylene.....partial oxidation of methane.  
butadiene.....dehydrogenation of n-butane.  
butadiene.....oxidative-dehydrogenation of butylene  
styrene .....dehydrogenation of ethyl benzene.

(3) AQUEOUS LIQUID PHASE PROCESSES. This subcategory includes the manufacture in aqueous liquid phase reaction systems of the following groups of organic chemicals.

Chemicals ..... Manufacturing processes

- (a) Group:  
acetic acid ..... oxidation of acetaldehyde.  
acrylic acid..... synthesis with carbon monoxide  
and acetylene.  
coal tar..... distillation of coal tar.  
ethylene glycol..... hydration of ethylene oxide.  
terephthalic acid ..... catalytic oxidation of p-xylene.  
terephthalic acid ..... purification of crude terephthalic  
(polymer grade). acid.  
(b) Group:  
acetaldehyde ..... oxidation of ethylene with oxygen.  
caprolactam..... oxidation of cyclohexane.  
coal tar..... pitch forming.  
oxo chemicals..... carbonylation and condensation.  
phenol and acetone..... cumene oxidation and cleavage.  
(c) Group:  
acetaldehyde ..... oxidation of ethylene with air.  
aniline ..... nitration and hydrogenation of  
benzene.  
bisphenol A..... condensation of phenol and  
acetone.  
dimethyl terephthalate ..... esterification of terephthalic acid.  
(d) Group:  
acrylates ..... esterification of acrylic acid.  
p-Cresol ..... sulfonation of toluene.  
methyl methacrylate..... acetone cyanohydrin process.  
terephthalic acid ..... nitric acid process.  
tetraethyl lead..... addition of ethyl chloride to lead  
amalgam.

**History:** Cr. Register, August, 1976, No. 248, eff. 9-1-76.

**NR 235.03 Definitions.** The following abbreviation is used in this chapter. Definitions of other terms and meanings of other abbreviations are set forth in Wis. Adm. Code chapter NR 205. "BTX" means benzene-toluene-xylene.

**History:** Cr. Register, August, 1976, No. 248, eff. 9-1-76.

**NR 235.04 Compliance with effluent limitations and standards.** Discharge of pollutants from facilities subject to the provisions of this chapter shall not exceed, as appropriate:

(1) By July 1, 1977 effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available;

(2) By July 1, 1977 pretreatment standards for existing discharges to publicly owned treatment works;

(3) By July 1, 1983, effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable;

(4) Standards of performance for new sources; or

(5) Pretreatment standards for new sources discharging to publicly owned treatment works.

**History:** Cr. Register, August, 1976, No. 248, eff. 9-1-76.

**NR 235.05 Modification of effluent limitations.** (1) Effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available may be modified in accordance with this section.

(2) An individual discharger or other interested person may submit evidence to the department that factors relating to the equipment or facilities involved, the process applied, or other such factors related to such discharges are fundamentally different from the factors considered in the establishment of the effluent limitations. On the basis of such evidence or other available information the department will make a written determination that such factors are or are not fundamentally different for that facility compared to those specified in the Major Organic Products Development Document, EPA 440/1-74-009-a. If such fundamentally different factors are found to exist, the department shall establish for the discharge effluent limitations in the WPDES permit either more or less stringent than the limitations in this chapter, to the extent dictated by such fundamentally different factors. Such limitations must be approved by EPA which may approve, disapprove, or specify other limitations.

(3) Copies of this Development Document, "Major Organic Products", EPA 440/1-74-009-a, published April, 1974, are available for inspection at the office of the department of natural resources, the secretary of state's office, and the office of the revisor of statutes, and may be obtained for personal use from the Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20460.

**History:** Cr. Register, August, 1976, No. 248, eff. 9-1-76.

**NR 235.06 Application of effluent limitations and standards.** (1) The effluent limitations and standards set forth in this chapter shall be used in accordance with this section to establish the quantity or quality of pollutants or pollutant properties which may be discharged by a point source subject to the provisions of this chapter, except as;

(a) They may be modified in accordance with section NR 235.05.

(b) They may be superceded by more stringent limitations and standards necessary to achieve water quality standards or meet other legal requirements, or

(c) They may be supplemented or superceded by standards or prohibitions for toxic pollutants or by additional limitations for other pollutants required to achieve water quality.

(2) The production basis for application of the limitations and standards set forth in this chapter shall be the daily average of a maximum month for the facility in each subcategory subject to the provisions of this chapter.

**History:** Cr. Register, August, 1976, No. 248, eff. 9-1-76.

**NR 235.10 Effluent limitations, best practicable treatment.** The following effluent limitations for all or specific subcategories establish, except as provided in section NR 235.05, the quantity or quality of pollutants or pollutant properties which may be discharged by a facility subject to the provisions of this chapter after application to process wastes of the best practicable control technology currently available.

(1) The pH of all discharges shall be within the range of 6.0 to 9.0.

(2) The 30-day average and daily maximum limitations for BOD,, suspended solids, and phenol are set forth in table 1. Limitations for subcategories (2) (a) and (3) (a) and (b) are not applicable to discharges resulting from the manufacture of the specific materials set forth in table 1.

Process Category Group, defined in sec. NR 235.02	BOD		TSS		Phenol	
	ave.	max.	ave.	max.	ave.	max.
(1)	.02	.045	.03	.067		
(2) (a)	.058	.13	.088	.20		
(2) (b)	.42	.95	.64	1.42		
(3) (a)	.12	.28	.19	.42		
(3) (b)	.25	.55	.25	.56	.020	.045
(3) (c)	.51	1.15	.068	.15	.020	.045
(3) (d)	1.37	3.08	1.25	2.80	.020	.045
<b>Specific Materials</b>						
ethylene oxide	.032	.072	.032	.072		
methyl amines	.10	.22	.10	.22		
ethylene glycol	.088	.20	.13	.30		
oxo chemicals	.24	.54	.24	.54		

**Note:** Phenol limitations applicable only to discharges resulting from the manufacture of phenol and acetone, bisphenol A, and p-cresol.

**History:** Cr. Register, August, 1976, No. 248, eff. 9-1-76.

**NR 235.11 Effluent limitations, best available treatment.** The following effluent limitations for all of specific subcategories establish the quantity or quality of pollutants or pollutant properties which may be discharged by a facility subject to the provisions of this chapter after application to process wastes of the best available technology economically achievable.

(1) The pH of all discharges shall be within the range of 6.0 to 9.0.

(2) The 30-day average and daily maximum limitations for BOD<sub>s</sub>, suspended solids, phenol and COD are set forth in table 2. Limitations for subcategories (2) (a) and (3) (a) and (b) are not applicable to discharges resulting from the manufacture of the specific materials set forth in table 2.

Table 2

Process Category Group, defined in sec. NR 235.02	BAT Effluent limitations							
	COD		(in lbs/1000 lbs or kg/1000 kg of product)				Phenol	
	ave.	max.	BOD		TSS		ave.	max.
(1)	.045	.062	.0085	.015	.013	.022		
(2) (a)	.58	.80	.025	.044	.04	.066		
(2) (b)	.95	1.32	.18	.32	.29	.48		
(3) (a)	.37	.52	.053	.093	.085	.14		
(3) (b)	.98	1.75	.068	.12	.11	.19	.0017	.003
(3) (c)	4.37	6.07	.043	.067	.03	.05	.0017	.003
(3) (d)	28.26	39.25	.35	.62	.57	.94	.0017	.003
Specific								
Materials								
ethylene oxide	.52	.98	.011	.020	.016	.030		
methyl amines	.21	.39	.034	.062	.052	.098		
ethylene glycol	.65	1.20	.046	.086	.069	.13		
oxo chemicals	2.2	4.1	.088	.16	.13	.24		

**Note:** Phenol limitations applicable only to discharges resulting from the manufacture of phenol and acetone, bisphenol A, and p-cresol.

**History:** Cr. Register, August, 1976, No. 248, eff. 9-1-76.

**NR 235.12 Standards of performance.** The following effluent limitations for all or specific subcategories establish the quantity or quality of pollutants or pollutant properties which may be discharged by a facility which is a new source subject to the provisions of this chapter.

(1) The pH of all discharges shall be within the range of 6.0 to 9.0.

(2) The 30-day average and daily maximum limitations for BOD<sub>s</sub>, suspended solids, and phenol are set forth in table 3. Limitations for subcategories (2) (a) and (3) (a) and (b) are not applicable to discharges resulting from the manufacture of the specific materials set forth in table 3.

Process Category Group, defined in sec. NR 235.02	BOD		TSS		phenol	
	ave.	max.	ave.	max.	ave.	max.
(1)	.017	.037	.015	.034		
(2) (a)	.048	.11	.044	.10		
(2) (b)	.34	.76	.32	.72		
(3) (a)	.10	.23	.094	.21		
(3) (b)	.20	.45	.12	.28	.020	.045
(3) (c)	.42	.94	.034	.076	.020	.045
(3) (d)	1.14	2.56	.63	1.40	.020	.045
Specific Materials						
ethylene oxide	.024	.054	.014	.032		
methyl amines	.088	.16	.052	.098		
ethylene glycol	.076	.14	.069	.13		
oxo chemicals	.21	.39	.13	.24		

**Note:** Phenol limitations applicable only to discharges resulting from the manufacture of phenol and acetone, bisphenol A, and p-cresol.

**History:** Cr. Register, August, 1976, No. 248, eff. 9-1-76.

**NR 235.13 Pretreatment standards for new sources.** The pretreatment standards for discharges to publicly owned treatment works from new sources subject to the provisions of this chapter shall be as set forth in Wis. Adm. Code chapter NR 211. In addition the limitations for incompatible pollutants shall be those set forth in section NR 235.12, except as provided in Wis. Adm. Code section NR 211.30(2). Wastewaters from such new sources may not be discharged to publicly owned treatment works except in compliance with this section.

**History:** Cr. Register, August, 1976, No. 248, eff. 9-1-76.

**NR 235.14 Pretreatment standards for existing sources.** The pretreatment standards for discharges to publicly owned treatment works from existing point sources subject to the provisions of this chapter shall be as set forth in Wis. Adm. Code chapter NR 211 except that section NR 211.30 shall not apply.

**History:** Cr. Register, August, 1976, No. 248, eff. 9-1-76.