

## Chapter NR 230

**INORGANIC CHEMICAL MANUFACTURING**  
**(INTERIM EFFLUENT LIMITATIONS)**

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**Note:** Pursuant to chapter 147 Wis. Stats. and under the procedure of section 227.027 Wis. Stats., the department of natural resources has promulgated interim effluent limitations which were effective February 28, 1975 and will remain in effect for one year. These interim effluent limitations will be periodically replaced by permanent limitations.

**NR 230.01 Purpose.** The purpose of this chapter is to establish effluent limitations, standards of performance, and pretreatment standards for discharges of process wastes from the inorganic chemical 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. eff. 2-28-75.

**NR 230.02 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 manufacture of the following inorganic chemicals:

- Aluminum chloride,
- Aluminum sulfate,
- Calcium carbide, in uncovered furnaces,
- Calcium chloride, by the brine extraction process,
- Calcium oxide and hydroxide,
- Chlorine and sodium or potassium hydroxide, by the mercury cell process,
- Chlorine and sodium or potassium hydroxide, by the diaphragm cell process,
- Hydrochloric acid, by direct reaction of chlorine and hydrogen,
- Hydrofluoric acid,
- Hydrogen peroxide, by the electrolytic process,
- Hydrogen peroxide, by the oxidation of alkyl hydroanthroquinones
- Nitric acid; in concentrations up to 68 per cent,
- Potassium metal,
- Potassium dichromate,
- Potassium sulfate,
- Sodium bicarbonate,
- Sodium carbonate, by the Solvay Process,
- Sodium chloride, by the solution brine-mining process,
- Sodium chloride, by solar evaporation,
- Sodium dichromate and byproduct sodium sulfate,
- Sodium metal, by the Down cell process,
- Sodium silicate,

Sodium sulfite, by reacting sulfur dioxide with sodium carbonate,  
Sulfuric acid, in single and double absorption plants,  
Titanium dioxide, by the sulfate process, and  
Titanium dioxide, by the chloride process.

**History:** Cr. eff. 2-28-75.

**NR 230.03 Definitions.** The following special definitions and abbreviations are applicable to terms used in this chapter. Definitions of other terms and meanings of other abbreviations are set forth in Wis. Adm. Code chapter NR 205.

(1) "Bitterns" means the saturated brine solution remaining after precipitation of sodium chloride in the solar evaporation process.

(2) "CN,A" means those cyanides amenable to chlorination, as determined by the analytical methods specified in Wis. Adm. Code chapter NR 219.

(3) "Cr +6" means hexavalent chromium.

(4) "Cr T" means total chromium.

(5) "Iron" means the total iron present in process waste effluent.

(6) "Lead" means the total lead present in process waste effluent.

(7) "Mercury" means the total mercury present in process waste effluent.

(8) "Product" means as appropriate; calcium chloride, chlorine, hydrogen peroxide as a 100 percent solution, sodium carbonate, sodium chloride, sodium dichromate, sodium metal, sodium silicate, sodium sulfite, or titanium dioxide.

**History:** Cr. eff. 2-28-75.

**NR 230.04 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. eff. 2-28-75.

**NR 230.05 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 discharger 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 Inorganic Products Development Document, EPA 440/1-74-007-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 Inorganic Products," EPA 440/1-74-007-a, published March, 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. eff. 2-28-75.

**NR 230.06 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 of 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 230.05.

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

(c) They may be supplemented or superseded 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 for a maximum month for the facility in each subcategory subject to the provisions of this chapter.

(3) The provisions of this chapter are not applicable to discharges from plants manufacturing sulfuric acid by burning sulfides or recovering sulfuric acid from waste streams of other processes such as oil refining or metallurgical operations.

(4) The provisions of this chapter are not applicable to discharges from plants producing titanium dioxide using processes in which beneficiation of raw ilmenite ore and chlorination are inseparably combined in the same process step.

**History:** Cr. eff. 2-28-75.

**NR 230.07 Discharges from impoundments.** (1) A process waste water impoundment which is designed, constructed and operated so as to contain the precipitation from the 10 year, 24 hour rainfall event for the area in which such impoundment is located may discharge that volume of process waste water which is equivalent to the volume of precipitation that falls within the impoundment in excess of that attributable to such rainfall event when it occurs.

(2) A process waste water impoundment which is designed, constructed and operated so as to contain the precipitation from the 25 year, 24 hour rainfall event for the area in which such impoundment is located may discharge that volume of process waste water which is equivalent to the volume of precipitation that falls within the impoundment in excess of that attributable to such rainfall event when it occurs.

(3) During any calendar month, there may be discharged from a process wastewater impoundment either a volume of process wastewater equal to the difference between the precipitation for that month which falls within the impoundment and the evaporation for that month. Such process wastewater discharges shall have a pH within the range of 6.0 to 9.0, concentrations of suspended solids not exceeding a 30 day average of 25 mg/l or a daily maximum of 50 mg/l, and, in the case of process wastewaters from the manufacture of hydrofluoric acid, fluoride concentrations not exceeding 15 mg/l and 30 mg/l respectively.

(4) The 10 year and 25 year, 24 hour rainfall events for the impoundment location shall be as set forth in Wis. Adm. Code section NR 205.05.

**History:** Cr. eff. 2-28-75.

**NR 230.10 Effluent limitations, best practicable treatment.** The following effluent limitations for all or specific subcategories establish, except as provided in section NR 230.05, 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) There shall be no discharge to surface waters of process wastes resulting from the manufacture of the following inorganic chemicals:

- (a) aluminum chloride,
- (b) calcium carbide,
- (c) hydrochloric acid, by direct reaction of chlorine and hydrogen
- (d) nitric acid, in concentrations up to 68 percent,
- (e) potassium metal,

- (f) potassium dichromate,
- (g) sodium bicarbonate, by the Solvay process, and
- (h) sulfuric acid, in single and double absorption plants.

(2) There shall be no discharge to surface waters of process wastes resulting from the manufacture of the following inorganic chemicals except in accordance with section NR 230.07(1) and 230.07(3)

- (a) aluminum sulfate,
- (b) calcium oxide and hydroxide,
- (c) hydrofluoric acid, and
- (d) potassium sulfate;

(3) Effluent limitations in table 1 shall apply to discharges to surface waters of process wastes resulting from the manufacture of the inorganic chemicals listed therein:

Table 1

Inorganic Chemical (1)	BPT Effluent Limitations (2)			
	Ave.	SS Max.	Ave.	Other Parameter Max.
(a) calcium chloride	.0082	.016		
(b) chlorine* (mercury cell)	.32	.64	.00014	.00028 mercury
(c) chlorine* (diaphragm cell)	.32	.64	.0025	.005 lead
(d) hydrogen peroxide (electrolytic)	.0025	.005	.0002	.0004 CN,A
(e) hydrogen peroxide (Oxidation)	.4	.8	.22	.44 TOC
(f) sodium carbonate (Solvay)	.17	.34		
(g) sodium chloride (mining)	.17	.34		
(h) sodium dichromate**	.22	.44	.0005 .0044	.009 CR +6 .0088 Cr T
(i) sodium metal	.23	.46		
(j) sodium silicate	.005	.01		
(k) sodium sulfite	.016	.032	1.7	3.4 COD
(l) titanium dioxide (sulfate)	10.5	21.0	.84	1.7 iron
(m) titanium dioxide (chloride)	2.3	4.6	.36	.72 iron
(n) sodium chloride (solar evap.)	no discharge except in accordance with section NR 230.12(4)			

For all discharges the pH shall be within the range of 6.0 to 9.0

\*and sodium or potassium hydroxide

\*\*and byproduct sodium sulfate

Note 1: Processes are more completely defined in section NR 230.02.

Note 2: Limitations are in lbs/1000 lbs or kg/1000 kg and the abbreviations ave. and max. mean respectively the 30 day average and the daily maximum.

History: Cr. eff. 2-28-75.

**NR 230.11 Effluent limitations, best available treatment.** 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 subject to the provisions of this chapter after application to process wastes of the best available technology economically achievable.

(1) There shall be no discharge to surface waters of process wastes resulting from the manufacture of the following inorganic chemicals:

- (a) aluminum chloride,
- (b) calcium carbide, in uncovered furnaces,

- (c) calcium chloride, by the brine extraction process,
  - (d) chlorine and sodium or potassium hydroxide, by the diaphragm cell process,
  - (e) hydrochloric acid, by direct reaction of chlorine and hydrogen,
  - (f) hydrogen peroxide, by oxidation of alkyl hydroanthroquinones,
  - (g) nitric acid, in concentrations up to 68 percent,
  - (h) potassium metal,
  - (i) potassium dichromate,
  - (j) sodium bicarbonate,
  - (k) sodium chloride, by the solution brine-mining process,
  - (l) sulfuric acid, in single and double absorption plants,
- (2) There shall be no discharge to surface waters of process wastes resulting from the manufacture of the following inorganic chemicals except in accordance with section NR 230.07 (2):

- (a) aluminum sulfate,
- (b) calcium oxide and hydroxide,
- (c) chlorine and sodium or potassium hydroxide, by the mercury cell process,
- (d) hydrofluoric acid,
- (e) hydrogen peroxide by the electrolytic process,
- (f) potassium sulfate,
- (g) sodium dichromate and byproduct sodium sulfate,
- (h) sodium metal, by the Downs cell process,
- (i) sodium silicate, and
- (j) sodium sulphite, by reacting sulfur dioxide with sodium carbonate.

(3) Effluent limitations in table 2 shall apply to discharges to surface waters of process wastes resulting from the manufacture of the inorganic chemicals listed therein:

Table 2

Inorganic Chemical	BAT Effluent Limitations (1)			
	SS		Other Parameter	
	Ave.	Max.	Ave.	Max.
(a) sodium carbonate	.10	.20		
(b) titanium dioxide, sulfate process	5.3	10.6	.42	.84 iron
(c) titanium dioxide, chloride process	1.3	2.6	.18	.36 iron
(d) sodium chloride, by solar evap.	no discharge except in accordance with section NR 230.12 (4).			

For all discharges except the last of the above list the pH shall be within the range of 6.0 to 9.0.

Note 1: Limitations are in lbs/1000 lbs or kg/1000 kg and the abbreviations ave. and max. mean respectively the 30 day average and the daily maximum.

History: Cr. eff. 2-28-75.

**NR 230.12 Standards of performance.** The following effluent limitations 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) There shall be no discharge to surface waters of process wastes resulting from the manufacture of the following inorganic chemicals:

- (a) aluminum chloride,
- (b) calcium carbide, in uncovered furnaces,
- (c) calcium chloride, by the brine extraction process,
- (d) hydrochloric acid, by direct reaction of chlorine and hydrogen,
- (e) hydrogen peroxide, by the oxidation of alkyl hydroanthroquinones,
- (f) nitric acid, in concentrations up to 68 percent,
- (g) potassium metal,
- (h) potassium dichromate,
- (i) sodium bicarbonate
- (j) sodium carbonate, by the Solvay process,
- (k) sodium chloride, by the solution brine mining process,
- (l) sodium sulfite, and
- (m) sulfuric acid, in single and double absorption plants.

(2) There shall be no discharge except in accordance with section NR 230.07 (2) of process wastes resulting from the manufacture of the following inorganic chemicals:

- (a) aluminum sulfate,
- (b) calcium oxide and hydroxide,
- (c) hydrofluoric acid,
- (d) hydrogen peroxide, by the electrolytic process,
- (e) potassium sulphate,
- (f) sodium metal, by the Downs cell process, and
- (g) sodium silicate.

(3) Discharge of process waste waters resulting from the manufacture of titanium dioxide shall be limited in accordance with the limitations in section NR 230.11 (3) (b) and (c).

(4) There shall be no discharge to surface waters of process wastes resulting from the manufacture of sodium chloride by the solar evaporation process except that unused bitters may be returned to the body of water from which the process brine was originally

withdrawn, provided no additional pollutants are added to the bitterns during the production of sodium chloride.

(5) Effluent limitations in table 3 shall apply to discharges to surface waters of process wastes resulting from the manufacture of the inorganic chemicals listed therein.

Table 3

Inorganic chemical	Standards of Performance		Effluent Limitations
	TSS	Other	Other
Chlorine and sodium or potassium hydroxide;			
(a) by the mercury cell process	0.32	.00007 mercury	
(b) by the diaphragm cell process	0.32	.00004 lead	
(c) sodium dichromate and byproduce sodium sulfate	0.15	.0005 Cr+6	.0044 Cr T

The pH of all discharges shall be within the range of 6.0 to 9.0. Limitations are in lbs/1000 lbs or kg/1000 kg of chlorine and daily maximum limitations are 2 times the 30 day average values of the table.

**History:** Cr. eff. 2-28-75.

**NR 230.13 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 230.12, 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. eff. 2-28-75.