Chapter NR 290

STEAM ELECTRIC POWER GENERATING

Note: Chapter NR 290 as it existed on October 31, 1986 was repealed and a new chapter NR 290 was created effective November 1, 1986.

NR 290.01 Purpose. The purpose of this chapter is to establish effluent limitations, standards of performance, and pretreatment standards for discharges from the steam electric power generating category of point sources.

History: Cr. Register, October, 1986, No. 370, eff. 11-1-86.

NR 290.02 Applicability. The effluent limitations, standards of performance, pretreatment standards, and other provisions in this chapter are applicable to pollutants or pollutant properties in discharges resulting from the operation of a generating unit by an establishment primarily engaged in the generation of electricity for distribution and sale which results primarily from a process utilizing fossil-type fuel (coal, gas, or oil) or nuclear fuel in conjunction with a thermal cycle employing the steam/water system as the thermodynamic medium.

History: Cr. Register, October, 1986, No. 370, eff. 11-1-86.

NR 290.03 Definitions. The following definitions are applicable to terms used in this chapter. Definitions of other terms and meanings of abbreviations are set forth in ss. NR 205.03, 205.04 and 211.03, and the Development Document for Effluent Limitations Guidelines and Standards for the Steam Electric Point Source Category, EPA-440/1-82/029, November 1982, pages 518-545.

Note: Copies of this document are available for inspection at the office of the department of natural resources, 101 S. Webster, Madison; the secretary of state's office; and the office of the legislative reference bureau, and may be obtained for personal use from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20460.

(1) "Ash transport water" means water used in the hydraulic transport of either fly or bottom ash.

(2) "Average concentration" as it relates to chlorine discharge means the average of analyses made over a single period of chlorine release which does not exceed 2 hours.

(3) "Bottom ash" means the ash that drops out of the furnace gas stream in the furnace and in the economizer sections. Economizer ash is included when it is collected with bottom ash.

(4) "Chemical metal cleaning waste" means any wastewater resulting from the cleaning of any metal process equipment with chemical compounds, including, but not limited to, boiler tube cleaning.

(5) "Coal pile runoff" means the rainfall runoff from or through any coal storage pile.

(6) "Fly ash" means the ash that is carried out of the furnace by the gas stream and collected by mechanical collectors, electrostatic precipitators, fabric filters, or any combination of the 3. Economizer ash is included when it is collected with fly ash.

(7) "Free available chlorine" or "FAC" means the value obtained using the amperometric titration method for free available chlorine described in "Standard Methods for the Examination of Water and Wastewater", page 286 (15th edition, 1980).

Note: Copies of the above document are available for inspection at the office of the department of natural resources, 101 S. Webster, Madison; the secretary of state's office, and the office of the legislative reference bureau, and may be obtained for personal use from the American Public Health Association, Inc., 1015 Fifteenth St. NW, Washington, D.C. 20005.

(8) "Low volume waste sources" means, taken collectively as if from one source, wastewater from all sources except those for which specific limitations are otherwise established in s. NR 290.12. Low volume waste sources include wastewaters from wet scrubber air pollution control systems, ion exchange water treatment systems, water treatment evaporator blowdown, laboratory and sampling streams, boiler blowdown, floor drainage, cooling tower basin cleaning wastes and recirculating house service water systems. Sanitary and air conditioning wastes are specifically not included in this definition.

(9) "Metal cleaning wastes" means any wastewater resulting from the cleaning (with or without chemical cleaning compounds) of any metal process equipment including boiler tube cleaning, boiler fireside cleaning, and air preheater cleaning.

(10) "New source" for indirect dischargers means any building, structure, facility, or installation from which there is or may be a discharge of pollutants, the construction of which commenced on or after October 14, 1980; or for direct dischargers means any point source the construction of which commenced after November 19, 1982.

(11) "No detectable amount" means any amount less than or equal to the level of pollutant detectability listed in 40 CFR Part 136.

(12) "Nonchemical metal cleaning waste" means any wastewater resulting from the cleaning of any metal process equipment without chemical compounds.

(13) "Once through cooling water" means water passed through the main cooling condensers in one or 2 passes for the purpose of removing waste heat.

(14) "126 priority pollutants" means those pollutants listed in s. NR 215.03.

(15) "Recirculated cooling water" means water which is passed through the main condensers for the purpose of removing waste heat, passed through a cooling device for the purpose of removing such heat from the water and then passed again, except for blowdown, through the main condenser.

(16) "10 year, 24 hour rainfall event" means a rainfall event with a probable recurrence interval of once in 10 years. Probable intensities of 10 year, 24 hour rainfall events are specified in s. NR 205.05.

(17) "Total residual chlorine" or "TRC" or "total residual oxidants for intake water with bromides" means the value obtained

using the amperometric method for total residual chlorine described in ch. NR 219.

History: Cr. Register, October, 1986, No. 370, eff. 11-1-86.

Subchapter I - Direct Discharges

NR 290.10 Applicability. The provisions in this subchapter are applicable to discharges of wastewater from the steam electric power generating category of point sources into waters of the state.

NR 290.11 Compliance dates. Discharge of pollutants from facilities subject to the provisions of this subchapter may 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 (BPT);

(2) By July 1, 1984, effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable (BAT);

(3) At the commencement of discharge, new source performance standards (NSPS).

History: Cr. Register, October, 1986, No. 370, eff. 11-1-86.

NR 290.12 Discharge standards. (1) BEST PRACTICABLE TECHNOLOGY. The following effluent limitations and standards for all or specific wastewater flows establish, except as provided in subch. IV of ch. NR 220, 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 of the best practicable control technology currently available:

Note: Despite this reference, federal regulations in 40 CFR 125.30 and state regulations in s. NR 220.31 (3) state that steam electric power generators are ineligible to receive a fundamentally different factors variance for BPT limitations.

(a) The pH of all discharges, except once through cooling water, shall be within the range of 6.0 to 9.0. Dischargers which continuously monitor pH shall be subject to s. NR 205.06.

(b) There may be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

(c) The quantity of pollutants in each of the wastewater sources identified in Table 1 may not exceed the quantity determined by multiplying the flow by the concentration of each pollutant listed in Table 1.

(d) Neither free available chlorine nor total residual chlorine may be discharged from any unit for more than 2 hours in any one day and not more than one unit in any plant may discharge free available or total residual chlorine at any one time unless the utility can demonstrate to the department that the units in a particular location cannot operate at or below this level of chlorination.

(e) In the event that wastestreams from various sources are combined for treatment or discharge, the quantity of each pollutant or pollutant property limited in pars. (a) to (d) attributable to each regulated stream except coal pile runoff may not exceed the specified limitation for that waste source.

(f) Any untreated discharge from facilities designed, constructed, and operated to treat the volume of coal pile runoff which is associated with a 10 year, 24 hour rainfall event may not be subject to the limitations of par. (c).

(g) Where the department determines there is no need for a restriction on the mass of pollutants discharged, the quantity of any pollutant allowed to be discharged may be expressed as a concentration limitation instead of the mass limitation required to be calculated by par. (c). Concentration limitations shall be those concentrations specified in this subsection.

Table 1
BPT Effluent Limitations in mg/l

	TSS		O&G		Iron (total)		Copper (total)		FAC	
Wastewater	Avg.	Max.	Avg.	Max.	Avg.	Max.	Avg.	Max.	Avg.	Max.
Low volume waste	30	100	15	20						
Fly ash transport water	30	100	15	20						
Bottom ash transport water	30	100	15	20						
Metal cleaning wastes	30	100	15	20	1.0	1.0	1.0	1.0		
Once through cooling water									0.2	0.5
Cooling tower blowdown									0.2	0.5
Coal pile runoff[1]	—	50[2]								

Avg. = Average of daily values for 30 consecutive days may not exceed (mg/l)
Max. = Maximum for any 1 day (mg/l)
O & G = Oil and grease
[1] This limitation is subject to the provisions of s. NR 290.12 (1) (f).
[2] Maximum concentration for any time.

(2) BEST AVAILABLE TECHNOLOGY. The following effluent limitations and standards for all or specific wastewater flows 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 of the best available technology economically achievable:

(a) There may be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

(b) The quantity of pollutants in each of the wastewater sources identified in Table 2 may not exceed the quantity determined by multiplying the flow by the concentration of each pollutant listed in that table.

(c) For any plant with a total rated electric generating capacity of 25 or more megawatts discharging once through cooling water, total residual chlorine may not be discharged from any single generating unit for more than 2 hours per day unless the utility demonstrates to the department that discharge for more than 2 hours is required for macroinvertebrate control. Simultaneous multi-unit chlorination is permitted.

(d) For any plant with a total rated generating capacity of less than 25 megawatts discharging once through cooling water and for plants of any size discharging cooling tower blowdown, neither free available chlorine nor total residual chlorine may be discharged from any unit for more than 2 hours in any one day and not more than one unit in any plant may discharge free available or total residual chlorine at any one time unless the utility can demonstrate to the department that the units in a particular location cannot operate at or below this level of chlorination.

(e) Where the discharger requests and the department approves in writing, instead of monitoring cooling tower blowdown, compliance with the limitations for the 126 priority pollutants may be determined by engineering calculations which demonstrate that the regulated pollutants are not present or are present in the final discharge in no detectable amount.

(f) Where the department determines there is no need for a restriction on the mass of pollutants discharged, the quantity of any pollutant allowed to be discharged may be expressed as a concentration limitation instead of the mass limitation required to be calculated by par. (b). Concentration limitations shall be those concentrations specified in this subsection.

(g) In the event that wastestreams from various sources are combined for treatment or discharge, the quantity of each pollutant or pollutant property controlled in pars. (a) to (e) attributable to each regulated stream may not exceed the specified limitations for that waste source.

Table 2
BAT Effluent Limitations in mg/1

	Iron (total)		Copper (total)		FAC[1]		TRC[2]		Chromium (total)		Zinc (total)		Other Priority Pollutants	
Wastewater	Avg.	Max.	Avg.	Max.	Avg.	Max.	Avg.	Max.	Avg.	Max.	Avg.	Max.	Avg.	Max.
Chemical metal cleaning wastes	1.0	1.0	1.0	1.0										
Once through cooling water					0.2	0.5	—	0.2						
Cooling tower blowdown[3]					0.2	0.5			0.2	0.2	1.0	1.0	nda[4]	nda[4]

Avg. = Average of daily values for 30 consecutive days may not exceed (mg/l)
Max. = Maximum for any 1 day (mg/l)
[1] These limitations apply only to plants with a total rated electric generating capacity of less than 25 megawatts.
[2] This limitation applies only to plants with a total rated electric generating capacity of 25 or more megawatts.
[3] Except as shown for total chromium and total zinc, discharge of cooling tower blowdown shall be limited to no detectable amount, for the 126 priority pollutants contained in chemicals added for cooling tower maintenance.
[4] "nda" means no detectable amount.

(3) NEW SOURCE PERFORMANCE STANDARDS (NSPS). The following effluent limitations and standards 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:

(a) The pH of all discharges, except once through cooling water shall be within the range of 6.0 to 9.0. Dischargers which continuously monitor pH shall be subject to s. NR 205.06.

(b) There may be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

(c) The quantity of pollutants in each of the wastewater sources identified in Table 3 may not exceed the quantity determined by multiplying the flow by the concentration of each pollutant listed in that table.

(d) For any plant with a total rated electric generating capacity of 25 or more magawatts discharging once through cooling water, total residual chlorine may not be discharged from any single generating unit for more than 2 hours per day unless the utility demonstrates to the department that discharge for more than 2 hours is required for macroinvertebrate control. Simultaneous multi-unit chlorination is permitted.

(e) For any plant with a total rated electric generating capacity of less than 25 magawatts discharging once through cooling water and for plants of any size discharging cooling tower blowdown, neither free available chlorine nor total residual chlorine may be discharged from any unit for more than 2 hours in any one day and not more than one unit in any plant may discharge free available or total residual chlorine at any one time unless the utility can demonstrate to the department that the units in a particular location cannot operate at or below this level of chlorination.

(f) Where the discharger requests and the department approves in writing, instead of monitoring cooling tower blowdown, compliance with the limitations for the 126 priority pollutants may be determined by engineering calculations which demonstrate that the regulated pollutants are not present or are present in the final discharge in no detectable amount.

(g) Where the department determines there is no need for a restriction on the mass of pollutants discharged, the quantity of any pollutant allowed to be discharged may be expressed as a concentration limitation instead of the mass limitation required to be calculated by par. (c). Concentration limitations shall be those concentrations specified in this subsection.

(h) In the event that wastestreams from various sources are combined for treatment or discharge, the quantity of each pollutant or pollutant property controlled in pars. (a) to (f) attributable to each regulated stream except coal pile runoff may not exceed the specified limitation for that waste source.

(i) Any untreated discharge from facilities designed, constructed, and operated to treat the volume of coal pile runoff which is associated with a 10 year, 24 hour rainfall event may not be subject to the limitations of par. (c).

Table 3
NSPS Effluent Limitations in mg/1

Wastewater	TSS Avg.	TSS Max.	O&G Avg.	O&G Max.	Iron (total) Avg.	Iron (total) Max.	Copper (total) Avg.	Copper (total) Max.	FAC Avg.	FAC Max.	TRC[1] Avg.	TRC[1] Max.	Zinc (total) Avg.	Zinc (total) Max.	Chromium (total) Avg.	Chromium (total) Max.	Other Priority Pollutants Avg.	Other Priority Pollutants Max.
Low volume waste	30	100	15	20														
Fly ash transport water[2]																		
Bottom ash transport water	30	100	15	20														
Chemical metal cleaning wastes	30	100	15	20	1.0	1.0	1.0	1.0										
Once through cooling water									0.2	0.5	—	0.2						
Cooling tower blowdown[3]									0.2	0.5			1.0	1.0	0.2	0.2	nda[5]	nda[5]
Coal pile runoff[4]	—	50																

Avg. = Average of daily values for 30 consecutive days may not exceed (mg/l)
Max. = Maximum for any 1 day (mg/l)
O & G = Oil and grease
[1] This limitation applies only to plants with a total rated electric generating capacity of 25 or more megawatts. Those plants with a total rated electric generating capacity of less than 25 megawatts should use the FAC limits set for once through cooling water
[2] There may be no discharge of wastewater pollutants from fly ash transport water.
[3] Except as shown for total chromium and total zinc, discharge of cooling tower blowdown shall be limited to no detectable amount for the other priority pollutants contained in chemicals added for cooling tower maintenance.
[4] This limitation is subject to s. NR 290.12 (3) (i).
[5] "nda" means no detectable amount.

History: Cr. Register, October, 1986, No. 370, eff. 11-1-86; correction in (1) (intro.) made under s. 13.92 (4) (b) 7, Stats., Register April 2018 No. 748.

Subchapter II - Indirect Discharges

NR 290.20 Applicability. The provisions in this subchapter are applicable to discharges of wastewater from the steam electric power generating category of point sources into publicly owned treatment works.

History: Cr. Register, October, 1986, No. 370, eff. 11-1-86.

NR 290.21 Compliance dates. Discharge of pollutants from facilities subject to the provisions of this subchapter may not exceed, as appropriate:

(1) By July 1, 1984 for pretreatment standards for existing sources;

(2) At the commencement of discharge for pretreatment standards for new sources.

History: Cr. Register, October, 1986, No. 370, eff. 11-1-86.

NR 290.22 Discharge standards. (1) PRETREATMENT STANDARDS FOR EXISTING SOURCES (PSES). Except as provided in s. NR 211.13 any existing source subject to this section which introduces pollutants into a publicly owned treatment works shall comply with ch. NR 211 and achieve the following pretreatment standards for existing sources by July 1, 1984.

(a) There shall be no discharge of polychlorinated biphenyl compounds such as those used for transformer fluid.

(b) The quantity of pollutants in each of the wastewater sources identified in Table 4 may not exceed the concentration listed in that table.

(c) Where the discharger requests and the control authority approves in writing, instead of monitoring cooling tower blowdown, compliance with the limitations for the 126 priority pollutants may be determined by engineering calculations which demonstrate that the regulated pollutants are not present or are present in the final discharge in no detectable amount.

(2) PRETREATMENT STANDARDS FOR NEW SOURCES (PSNS). Except as provided in s. NR 211.13 any new source subject to this section which introduces pollutants into a publicly owned treatment works shall comply with ch. NR 211 and the following pretreatment standards for new sources:

(a) There may be no discharge of polychlorinated biphenyl compounds such as those used for transformer fluid.

(b) The quantity of pollutants in each of the wastewater sources identified in Table 4 may not exceed the concentration listed in that table.

(c) Where the discharger requests and the control authority approves in writing, instead of monitoring cooling tower blowdown, compliance with the limitations for the 126 priority pollutants may be determined by engineering calculations which demonstrate that the regulated pollutants are not present or are present in the final discharge in no detectable amount.

(d) There may be no discharge of wastewater pollutants from fly ash transport water.

Table 4
PSES and PSNS Effluent Limitations in mg/l

Wastewater	Copper (total) Max. for any 1 day	Chromium (total) Max. for any time	Zinc (total) Max. for any time	Other Priority Pollutants Max. for any time
Chemical metal cleaning wastes	1.0			
Cooling tower blowdown[1]		0.2	1.0	nda
Fly ash transport water[2]				

[1]Except as shown for total chromium and total zinc, discharge of cooling tower blowdown shall be limited to no detectable amount for the 126 priority pollutants contained in chemicals added for cooling tower maintenance.
[2]There may be no discharge of wastewater pollutants from fly ash transport water for PSNS.
[3]"nda" means no detectable amount.

History: Cr. Register, October, 1986, No. 370, eff. 11-1-86.