Chapter NR 260

ELECTROPLATING

NR 260.01 Purpose. The purpose of this chapter is to establish effluent limitations, standards of performance, and pretreatment standards for discharges from the electroplating industry category of point sources and subcategories thereof.

Note: The authority for promulgation of this chapter is set forth in ch. NR 205.

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

NR 260.02 Applicability. The effluent limitations, standards of performance, pretreatment standards, and other provisions of this chapter are applicable as specified herein to pollutants in discharges resulting from operations in the following process subcategories:

(1) The process in which a ferrous or nonferrous basis material is electroplated with copper, nickel, chromium, zinc, tin, lead, cadmium, iron, aluminum, or a combination thereof;

(2) The process in which a ferrous or nonferrous basis material is plated with gold, silver, iridium, palladium, platinum, rhodium, ruthenium, or a combination thereof;

(3) (Reserved for specialty metal plating);

(4) The process of anodizing ferrous or nonferrous materials;

(5) The process of chromating, phosphating, or immersion plating of ferrous or nonferrous materials; and

(6) The process of chemical milling or etching ferrous or nonferrous materials.

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

NR 260.03 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 ch. NR 205.

(1) "Sq. m." means as appropriate the area plated or acted upon by the anodizing, coating, milling, or etching process expressed in square meters.

(2) "Sq. ft." means as appropriate the area plated or acted upon by the anodizing, coating, milling, or etching process expressed in square feet.

(3) "Operation" means, for the process subcategories of s. NR 260.02:

(a) For subcategories (1) and (2) any step in the electroplating process which is followed by a rinse and in which a metal is electrodeposited on a basis material, and in addition when applicable;

1. The step of electroless plating on non-metallic materials, for the purpose of providing a conductive surface on such materials, preceding the actual electroplating step, forming an integral step in the plating line, and followed by a rinse.

2. The step of stripping where followed by a rinse and conducted in conjunction with electroplating for the purpose of salvaging improperly plated parts, and

3. For subcategory (1) only, the post plating steps of chromatizing, phosphating, and coloring if followed by a rinse and providing such steps are an integral part of the plating line;

(b) For subcategory (4) any step in the anodizing process which is followed by a rinse and in which a protective film is deposited on the object which acts as an anode;

(c) For subcategory (5) any step in the coating process which is followed by a rinse and in which a protective film is deposited on the basis material; or

(d) For subcategory (6) any step in the chemical etching or milling process which is followed by a rinse and in which some portion of the basis material is removed.

(4) "CN,A" shall mean those cyanides amenable to chlorination as described in the 1972 Annual Book of ASTM Standards, Standard D 2036-72, Method B, page 558. Copies of the 1972 Annual Book of ASTM Standards 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 American Society for Testing Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103.

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

NR 260.04 Compliance with effluent limitations and standards. Discharge of pollutants from facilities subject to the provisions of this chapter 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;

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

(3) Pretreatment standards for discharges to publicly owned treatment works;

(4) Standards of performance for new sources.

History: Cr. Register, August, 1976, No. 248, eff. 9-1-76; r. and recr. Register, August, 1983, No. 332, eff. 9-1-83.

NR 260.05 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 applicable sections of the EPA development documents identified in sub. (3) below. 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) The EPA development documents for effluent limitations guidelines and new source performance standards, identified by segment title, by EPA document number, and by publication date, applicable in accordance with sub. (2) above are:

Copper, Nickel, Chromium and Zinc	EPA 440/1-74-003a	March 1974
Common and Precious Metals	EPA 440/1-75-040	April 1975
Metal Finishing	EPA 440/1-75-040a	April 1975

(4) Copies of the development documents identified in sub. (3) above 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 260.06 Application of effluent limitations. (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 point sources subject to the provisions of this chapter, except as;

(a) They may be modified in accordance with s. NR 260.05,

(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 basis for application of the limitations and standards set forth in this chapter shall be the daily average for a maximum month of production in square meters or million square feet per day subject to the provisions of this chapter.

(3) Discharge limitations for facilities subject to the provisions of this chapter shall be, except where no discharge is specified, the sum of discharges allowable for the area plated in each operation as defined in s. NR 260.03.

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

NR 260.07 Record maintenance. Facilities subject to the provisions of this chapter shall maintain records of production expressed in sq. m. or sq. ft. as defined in s. NR 260.03 for the purpose of determining compliance with s. NR 260.10 or 260.13. For the purpose of complying with the requirements of this paragraph, a discharger may establish a correlation between area plated and another parameter, such as ampere-hours used in plating according to the formula: $S = \frac{EIT}{100kt}$ where:

S is the area plated, in sq. m. or square feet,

t is average thickness deposited, in mm or mils (thousandths of an inch) respectively,

T is the time in hours,

I is the current used in amperes,

E is the cathode current efficiency, and

k is a constant for each metal

Values of E and k are set forth in Table 1.

Table 1

Type of Operation	E(%)	k for sq. m.	k for sq. ft.
Cyanide Copper	50	3.75×10^3	8.84
Noncyanide Copper	100	7.49×10^3	17.68
Nickel	100	8.05×10^3	19.00
Chromium	13	21.95×10^3	51.80
Cyanide Zinc	60	5.80×10^3	13.70
Noncyanide Zinc	100	5.80×10^3	13.70

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

NR 260.10 Effluent limitations, best practicable treatment. The following effluent limitations unless modified in accordance with s. NR 260.05 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 practicable control technology currently available.

(1) For a point source having a total employment of less than 11 persons, a discharge of waste water from the metal finishing process of less than 7,800 liters per hour (2,061 gallons per hour), and a production rate of less than 4.9 sp.m. per hour (52.7 sq.ft. per hour) per employe:

(a) The discharge flow shall be equalized;

(b) The pH shall be within the range of 6.0 to 9.0; and

(c) The quantity of cyanide, both total and CN, A, shall be limited in accordance with the limitations of table 2.

(2) For facilities other than those subject to the provisions of sub. (1) above, the pH of all discharges shall be within the range of 6.0 to 9.5 and other applicable limitations are set forth in table 2.

Table 2

BPT Effluent Limitations (B)

Subcategory Parameter	(1)	(2)	(3) (reserved)	(4)	(5)	(6)
Copper	80	-		45	40	60
Nickel	80	-		45	40	60
Cr., total	80	80		45	40	60
Cr., VI	8	8		4.5	4	6
Zinc	80	-		45	40	60
Cyanide, total	80	80		45	40	60
Cyanide, A	8	8		4.5	4	9
Fluoride	3200	-		1800	1800	2400
Cadmium	48	-		27	24	36
Lead	80	-		-	-	-
Iron	160	-		90	80	120
Tin	160	-		90	80	120
Phosphorus	160	160		90	80	120
Sus. Solids	3200	3200		1800	1800	2400
Other Metals (A)	-	8		-	-	

Notes: (A) Limitations for other metals applicable to gold, silver, iridium, osmium, palladium, platimum, rhodium, and ruthenium.

(B) Limitations set forth in table 2 are daily average limitations in milligrams per square meter per operation. Daily maximum limitations are twice daily average limitations. To convert to english units in pounds per million square feet per operation, multiply metric unit value by 0.2046 and round off to nearest 0.1 pound.

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

NR 260.11 Effluent limitations, best available treatment. For the processes of electroplating with chromium, copper, nickel, and zinc only, the following effluent limitations when applied in accordance with s. NR 260.06 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 control technology economically achievable. There shall be no discharge of process wastewater pollutants to surface waters except that for a facility having a production less than 120 sq. m. (1,290 sq. ft.) per hour where variance is determined to be necessary the discharge limitations shall be based on the effluent limitations of s. NR 260.12.

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

NR 260.12 Standards of performance. For the processes of electroplating with chromium, copper, nickel, and zinc only, the standards of performance in Table 3 when applied in accordance with s. NR 260.06 establish the quantity or quality of pollutants or pollutant properties which may be discharged by a new source subject to the provisions of this chapter.

Table 3

Effluent Characteristic	Standards of Performance Effluent Limitation within the range of 6.0 to 9.5			
pH	Metric Units(A)		English Units(B)	
	30-day ave.	daily max.	30-day ave.	daily max.
Copper	40	80	8.2	16.4
Nickel	40	80	8.2	16.4
Chromium, hexavalent	4	8	.8	1.6
Chromium, total	40	80	8.2	16.4
Zinc	40	80	8.2	16.4
Cyanide, CN,A	4	8	.8	1.6
Cyanide, total	40	80	8.2	16.4
Total Suspended Solids	1,600	2,400	327.0	491.0

Note: (A) Limitations are in milligrams per square meter per day per operation.

(B) Limitations are in pounds per million square feet per day per operation.

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

NR 260.13 Pretreatment standards. The pretreatment standards for discharges to publicly owned treatment works from sources subject to the provisions of this chapter shall be as set forth in ch. NR 211.

History: Cr. Register, August, 1976, No. 248, eff. 9-1-76; r. and recr. Register, August, 1983, No. 332, eff. 9-1-83.