



Displaying title 40, up to date as of 10/12/2021. Title 40 was last amended 10/12/2021.

ENHANCED CONTENT - TABLE OF CONTENTS

Part 413	Electroplating Point Source Category	413.01 – 413.84
	General Provisions	413.01 – 413.04
	§ 413.01	Applicability and compliance dates.
	§ 413.02	General definitions.
	§ 413.03	Monitoring requirements.
	§ 413.04	Standards for integrated facilities.
Subpart A	Electroplating of Common Metals Subcategory	413.10 – 413.14
	§ 413.10	Applicability: Description of the electroplating of common metals subcategory.
	§ 413.11	Specialized definitions.
	§§ 413.12-413.13	[Reserved]
	§ 413.14	Pretreatment standards for existing sources.
Subpart B	Electroplating of Precious Metals Subcategory	413.20 – 413.24
	§ 413.20	Applicability: Description of the electroplating of precious metals subcategory.
	§ 413.21	Specialized definitions.
	§§ 413.22-413.23	[Reserved]
	§ 413.24	Pretreatment standards for existing sources.
	<i>Subpart C - Electroplating of Speciality Metals Subcategory [Reserved]</i>	
Subpart D	Anodizing Subcategory	413.40 – 413.44
	§ 413.40	Applicability: Description of the anodizing subcategory.
	§ 413.41	Specialized definitions.
	§§ 413.42-413.43	[Reserved]
	§ 413.44	Pretreatment standards for existing sources.
Subpart E	Coatings Subcategory	413.50 – 413.54
	§ 413.50	Applicability: Description of the coatings subcategory.
	§ 413.51	Specialized definitions.
	§§ 413.52-413.53	[Reserved]
	§ 413.54	Pretreatment standards for existing sources.
Subpart F	Chemical Etching and Milling Subcategory	413.60 – 413.64
	§ 413.60	Applicability: Description of the chemical etching and milling subcategory.
	§ 413.61	Specialized definitions.
	§§ 413.62-413.63	[Reserved]
	§ 413.64	Pretreatment standards for existing sources.
Subpart G	Electroless Plating Subcategory	413.70 – 413.74
	§ 413.70	Applicability: Description of the electroless plating subcategory.
	§ 413.71	Specialized definitions.
	§§ 413.72-413.73	[Reserved]
	§ 413.74	Pretreatment standards for existing sources.
Subpart H	Printed Circuit Board Subcategory	413.80 – 413.84
	§ 413.80	Applicability: Description of the printed circuit board subcategory.
	§ 413.81	Specialized definitions.
	§§ 413.82-413.83	[Reserved]
	§ 413.84	Pretreatment standards for existing sources.

Title 40

PART 413 - ELECTROPLATING POINT SOURCE CATEGORY

Authority: Secs. 301, 304(g), 307, 308, 309, 402, 405, 501(a), Clean Water Act, as amended, (33 U.S.C. 1311, 1314(g), 1317, 1318, 1319, 1322, 1325 and 1341(a)).

Source: 46 FR 9467, Jan. 28, 1981, unless otherwise noted.

GENERAL PROVISIONS

§ 413.01 Applicability and compliance dates.

- (a) This part shall apply to electroplating operations in which metal is electroplated on any basis material and to related metal finishing operations as set forth in the various subparts, whether such operations are conducted in conjunction with electroplating, independently, or as part of some other operation. The compliance deadline for metals and cyanide at integrated facilities shall be June 30, 1984. The compliance date for metals and cyanide at non-integrated facilities shall be April 27, 1984. Compliance with TTO for all facilities shall be July 15, 1986. These part 413 standards shall not apply to a facility which must comply with all the pollutant limitations listed in § 433.15 (metal finishing PSES).
- (b) Operations similar to electroplating which are specifically excepted from coverage of this part include:
 - (1) Electrowinning and electrorefining conducted as a part of nonferrous metal smelting and refining (40 CFR part 421);
 - (2) Metal surface preparation and conversion coating conducted as a part of coil coating (40 CFR part 465);
 - (3) Metal surface preparation and immersion plating or electroless plating conducted as a part of porcelain enameling (40 CFR part 466); and
 - (4) Electrodeposition of active electrode materials, electroimpregnation, and electroforming conducted as a part of battery manufacturing (40 CFR part 461).
- (c) Metallic platemaking and gravure cylinder preparation conducted within or for printing and publishing facilities, and continuous strip electroplating conducted within iron and steel manufacturing facilities which introduce pollutants into a publicly owned treatment works are exempted from the pretreatment standards for existing sources set forth in this part.

(Secs. 301, 304, 306, 307, 308, and 501 of the Clean Water Act (the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1251 et. seq., as amended by the Clean Water Act of 1977, Pub. L. 95-217))

[46 FR 9467, Jan. 28, 1981, as amended at 48 FR 32482, July 15, 1983; 48 FR 41410, Sept. 15, 1983; 51 FR 40421, Nov. 7, 1986]

§ 413.02 General definitions.

In addition to the definitions set forth in 40 CFR part 401 and the chemical analysis methods set forth in 40 CFR part 136, both of which are incorporated herein by reference, the following definitions apply to this part:

- (a) The term *CN,A* shall mean cyanide amenable to chlorination as defined by 40 CFR 136.
- (b) The term *CN,T* shall mean cyanide, total.
- (c) The term *Cr,VI* shall mean hexavalent chromium.
- (d) The term *electroplating process wastewater* shall mean process wastewater generated in operations which are subject to regulation under any of subparts A through H of this part.
- (e) The term *total metal* is defined as the sum of the concentration or mass of Copper (Cu), Nickel (Ni), Chromium (Cr) (total) and Zinc (Zn).
- (f) The term *strong chelating agents* is defined as all compounds which, by virtue of their chemical structure and amount present, form soluble metal complexes which are not removed by subsequent metals control techniques such as pH adjustment followed by clarification or filtration.
- (g) The term *control authority* is defined as the POTW if it has an approved pretreatment program; in the absence of such a program, the NPDES State if it has an approved pretreatment program or EPA if the State does not have an approved program.

- (h) The term *integrated facility* is defined as a facility that performs electroplating as only one of several operations necessary for manufacture of a product at a single physical location and has significant quantities of process wastewater from non-electroplating manufacturing operations. In addition, to qualify as an "integrated facility" one or more plant electroplating process wastewater lines must be combined prior to or at the point of treatment (or proposed treatment) with one or more plant sewers carrying process wastewater from non-electroplating manufacturing operations.
- (i) the term *TTO* shall mean total toxic organics, which is the summation of all quantifiable values greater than 0.01 milligrams per liter for the following toxic organics:

Acenaphthene

Acrolein

Acrylonitrile

Benzene

Benzidine

Carbon tetrachloride (tetrachloromethane)

Chlorobenzene

1,2,4-trichlorobenzene

Hexachlorobenzene

1,2-dichloroethane

1,1,1-trichloroethane

Hexachloroethane

1,1-dichloroethane

1,1,2-trichloroethane

1,1,2,2-tetrachloroethane

Chloroethane

Bis (2-chloroethyl) ether

2-chloroethyl vinyl ether (mixed)

2-chloronaphthalene

2,4,6-trichlorophenol

Parachlorometa cresol

Chloroform (trichloromethane)

2-chlorophenol

1,2-dichlorobenzene

1,3-dichlorobenzene

1,4-dichlorobenzene

3,3-dichlorobenzidine

1,1-dichloroethylene

1,2-trans-dichloroethylene

2,4-dichlorophenol

1,2-dichloropropane

1,3-dichloropropylene (1,3-dichloropropene)

2,4-dimethylphenol

2,4-dinitrotoluene

2,6-dinitrotoluene

1,2-diphenylhydrazine

Ethylbenzene

Fluoranthene

4-chlorophenyl phenyl ether

4-bromophenyl phenyl ether

Bis (2-chloroisopropyl) ether

Bis (2-chloroethoxy) methane

Methylene chloride (dichloromethane)

Methyl chloride (chloromethane)

Methyl bromide (bromomethane)

Bromoform (tribromomethane)

Dichlorobromomethane

Chlorodibromomethane

Hexachlorobutadiene

Hexachlorocyclopentadiene

Isophorone

Naphthalene

Nitrobenzene

2-nitrophenol

4-nitrophenol

2,4-dinitrophenol

4,6-dinitro-o-cresol

N-nitrosodimethylamine

N-nitrosodiphenylamine

N-nitrosodi-n-propylamine

Pentachlorophenol

Phenol

Bis (2-ethylhexyl) phthalate

Butyl benzyl phthalate

Di-n-butyl phthalate

Di-n-octyl phthalate

Diethyl phthalate

Dimethyl phthalate

1,2-benzanthracene

(benzo(a)anthracene)

Benzo(a)pyrene (3,4-benzopyrene)

3,4-Benzofluoranthene

(benzo(b)fluoranthene)

11,12-benzofluoranthene

(benzo(k)fluoranthene)

Chrysene

Acenaphthylene

Anthracene

1,12-benzoperylene

(benzo(ghi)perylene)

Fluorene

Phenanthrene

1,2,5,6-dibenzanthracene

(dibenzo(a,h)anthracene)

Indeno (1,2,3-cd) pyrene)

(2,3-o-phenylene pyrene)

Pyrene

Tetrachloroethylene

Toluene

Trichloroethylene

Vinyl chloride (chloroethylene)

Aldrin

Dieldrin

Chlordane (technical mixture and metabolites)

4,4-DDT

4,4-DDE (p,p-DDX)

4,4-DDD (p,p-TDE)

Alpha-endosulfan

Beta-endosulfan

Endosulfan sulfate

Endrin

Endrin aldehyde

Heptachlor

Heptachlor epoxide

(BHC-hexachlorocyclohexane)

Alpha-BHC

Beta-BHC

Gamma-BHC

Delta-BHC

(PCB-polychlorinated biphenyls)

PCB-1242 (Arochlor 1242)

PCB-1254 (Arochlor 1254)

PCB-1221 (Arochlor 1221)

PCB-1232 (Arochlor 1232)

PCB-1248 (Arochlor 1248)

PCB-1260 (Arochlor 1260)

PCB-1016 (Arochlor 1016)

Toxaphene

2,3,7,8-tetrachlorodibenzo-

p-dioxin (TCDD)

(Secs. 301, 304, 306, 307, 308, and 501 of the Clean Water Act (the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1251 et. seq., as amended by the Clean Water Act of 1977, Pub. L. 95-217))

[46 FR 9467, Jan. 28, 1981, as amended at 48 FR 32483, July 15, 1983; 48 FR 43681, Sept. 26, 1983; 51 FR 40421, Nov. 7, 1986]

§ 413.03 Monitoring requirements.

- (a) In lieu of monitoring for TTO, the control authority may allow industrial users of POTWs to make the following certification as a comment to the periodic reports required by § 403.12(e): "Based on my inquiry of the person or persons directly responsible for managing compliance with the pretreatment standard for total toxic organics (TTO), I certify that, to the best of my knowledge and belief, no dumping of concentrated toxic organics into the wastewaters has occurred since filing the last discharge monitoring report. I further certify that this facility is implementing the toxic organic management plan submitted to the control authority."
- (b) In requesting that no monitoring be required industrial users of POTWs shall submit a toxic organic management plan that specifies to the control authority's satisfaction the toxic organic compounds used; the method of disposal used instead of dumping, such as reclamation, contract hauling, or incineration; and procedures for assuring that toxic organics do not routinely spill or leak into the wastewater.
- (c) If monitoring is necessary to measure compliance with the TTO standard the industrial user need analyze only for those pollutants which would reasonably be expected to be present.

(Approved by the Office of Management and Budget under control number 2040-0074)

(Secs. 301, 304, 306, 307, 308, and 501 of the Clean Water Act (the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1251 et. seq., as amended by the Clean Water Act of 1977, Pub. L. 95-217))

[48 FR 32483, July 15, 1983; 48 FR 43681, Sept. 26, 1983, as amended at 49 FR 34823, Sept. 4, 1984]

§ 413.04 Standards for integrated facilities.

Pretreatment standards for integrated facilities shall be computed as required by § 403.6(e) of EPA's General Pretreatment Regulations. In cases where electroplating process wastewaters are combined with regulated wastewaters which have 30 days average standards, the corresponding 30 day average standard for the electroplating wastewaters must be used. The 30 day average shall be determined for pollutants in the relevant subcategory from the corresponding daily and 4 day average values listed in the table below.

If the maximum for any 1 day is	And the 4 day average is	Then the 30 day average is
0.6	0.4	0.3
1.2	.7	.5
1.9	1	.55
4.1	2.6	1.8
4.2	2.6	1.8

If the maximum for any 1 day is	And the 4 day average is	Then the 30 day average is
4.5	2.7	1.8
5.0	2.7	1.5
7.0	4	2.5
10.5	6.8	5
20.0	13.4	10
23	16	12
47	29	20
53	36	27
74	39	21
107	65	45
169	89	49
160	100	70
164	102	70
176	105	70
273	156	98
365	229	160
374	232	160
401	241	160
410	267	195
623	257	223
935	609	445

Subpart A - Electroplating of Common Metals Subcategory

§ 413.10 Applicability: Description of the electroplating of common metals subcategory.

The provisions of this subpart apply to dischargers of pollutants in process wastewaters resulting from the process in which a ferrous or nonferrous basis material is electroplated with copper, nickel, chromium, zinc, tin, lead, cadmium, iron, aluminum, or any combination thereof.

§ 413.11 Specialized definitions.

For the purpose of this subpart:

- (a) The term *sq m* ["sq ft"] shall mean the area plated expressed in square meters [square feet].

- (b) The term *operation* shall mean any step in the electroplating process in which a metal is electrodeposited on a basis material and which is followed by a rinse; this includes the related operations of alkaline cleaning, acid pickle, stripping, and coloring when each operation is followed by a rinse.

§§ 413.12-413.13 [Reserved]

§ 413.14 Pretreatment standards for existing sources.

Except as provided in §§ 403.7 and 403.13 of this title, any existing source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR part 403 and achieve the following pretreatment standards for existing sources (PSES):

- (a) No user introducing wastewater pollutants into a publicly owned treatment works under the provisions of this subpart shall augment the use of process wastewater or otherwise dilute the wastewater as a partial or total substitute for adequate treatment to achieve compliance with this standard.
- (b) For a source discharging less than 38,000 liters (10,000 gal.) per calendar day of electroplating process wastewater the following limitations shall apply:

Subpart A - Common Metals Facilities Discharging Less Than 38,000 Liters Per Day PSES Limitations (mg/l)

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 4 consecutive monitoring days shall not exceed
CN, A	5.0	2.7
Pb	.6	.4
Cd	1.2	.7

- (c) For plants discharging 38,000 liters (10,000 gal) or more per calendar day of electroplating process wastewater the following limitations shall apply:

Subpart A - Common Metals Facilities Discharging 38,000 Liters or More Per Day PSES Limitations (mg/l)

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 4 consecutive monitoring days shall not exceed
CN, T	1.9	1.0
Cu	4.5	2.7
Ni	4.1	2.6
Cr	7.0	4.0
Zn	4.2	2.6
Pb	.6	.4
Cd	1.2	.7
Total metals	10.5	6.8

- (d) Alternatively, the following mass-based standards are equivalent to and may be applied in place of those limitations specified under paragraph (c) of this section upon prior agreement between a source subject to these standards and the publicly owned treatment works receiving such regulated wastes:

**Subpart A - Common Metals Facilities Discharging 38,000 Liters or More Per Day PSES
Limitations (mg/sq m-Operation)**

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 4 consecutive monitoring days shall not exceed
CN, T	74	39
Cu	176	105
Ni	160	100
Cr	273	156
Zn	164	102
Pb	23	16
Cd	47	29
Total metals	410	267

- (e) For wastewater sources regulated under paragraph (c) of this section, the following optional control program may be elected by the source introducing treated process wastewater into a publicly owned treatment works with the concurrence of the control authority. These optional pollutant parameters are not eligible for allowance for removal achieved by the publicly owned treatment works under 40 CFR 403.7. In the absence of strong chelating agents, after reduction of hexavalent chromium wastes, and after neutralization using calcium oxide (or hydroxide) the following limitations shall apply:

**Subpart A - Common Metals Facilities Discharging 38,000 Liters or More Per Day PSES
Limitations (mg/l)**

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 4 consecutive monitoring days shall not exceed
CN, T	1.9	1.0
Pb	.6	.4
Cd	1.2	.7
TSS	20.0	13.4
pH	1	1

¹Within the range 7.5 to 10.0.

- (f) In addition to paragraphs (a) and (b) the following limitation shall apply for plants discharging less than 38,000 l (10,000 gal) per calendar day of electroplating process wastewater:

Pollutant or pollutant property	Maximum for any 1 day
----------------------------------------	------------------------------

Pollutant or pollutant property	Maximum for any 1 day
	Milligrams per liter (mg/l)
TTO	4.57

- (g) In addition to paragraphs (a), (c), (d), and (e) the following limitation shall apply for plants discharging 38,000 l (10,000 gal) or more per calendar day of electroplating process wastewater:

Pollutant or pollutant property	Maximum for any 1 day
	Milligrams per liter (mg/l)
TTO	2.13

- (h) In addition to paragraphs (a), (b), (c), (d), (e), (f), and (g) the following shall apply: An existing source submitting a certification in lieu of monitoring pursuant to § 413.03 of this regulation must implement the toxic organic management plan approved by the control authority.

(Secs. 301, 304, 306, 307, 308, and 501 of the Clean Water Act (the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1251 et. seq., as amended by the Clean Water Act of 1977, Pub. L. 95-217))

[46 FR 9467, Jan. 28, 1981; 46 FR 30626, June 10, 1981, as amended at 48 FR 32483, July 15, 1983; 48 FR 43681, Sept. 26, 1983]

Subpart B - Electroplating of Precious Metals Subcategory

§ 413.20 Applicability: Description of the electroplating of precious metals subcategory.

The provisions of this subpart apply to discharges of process wastewaters resulting from the process in which a ferrous or nonferrous basis material is plated with gold, silver, iridium, palladium, platinum, rhodium, ruthenium, or any combination of these.

§ 413.21 Specialized definitions.

For the purpose of this subpart:

- (a) The term *sq m* ("sq ft") shall mean the area plated expressed in square meters (square feet).
- (b) The term *operation* shall mean any step in the electroplating process in which a metal is electrodeposited on a basis material and which is followed by a rinse: This includes the related operations of alkaline cleaning, acid pickle, stripping, and coloring when each operation is followed by a rinse.

§§ 413.22-413.23 [Reserved]

§ 413.24 Pretreatment standards for existing sources.

Except as provided in 40 CFR §§ 403.7 and 403.13, any existing source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR part 403 and achieve the following pretreatment standards for existing sources (PSES):

- (a) No user introducing wastewater pollutants into a publicly owned treatment works under the provisions of this subpart shall augment the use of process wastewater or otherwise dilute the wastewater as a partial or total substitute for adequate treatment to achieve compliance with this standard.
- (b) For a source discharging less than 38,000 liters (10,000 gal) per calendar day of electroplating process wastewater the following limitations shall apply:

**Subpart B - Precious Metals Facilities Discharging Less Than 38,000 Liters Per Day
PSES Limitations (mg/l)**

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 4 consecutive monitoring days shall not exceed
CN, A	5.0	2.7
Pb	.6	.4
Cd	1.2	.7

- (c) For plants discharging 38,000 liters (10,000 gal) or more per calendar day of electroplating process wastewater the following limitations shall apply:

**Subpart B - Precious Metals Facilities Discharging 38,000 Liters or More Per Day PSES
Limitations (mg/l)**

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 4 consecutive monitoring days shall not exceed
Ag	1.2	0.7
CN, T	1.9	1.0
Cu	4.5	2.7
Ni	4.1	2.6
Cr	7.0	4.0
Zn	4.2	2.6
Pb	.6	.4
Cd	1.2	.7
Total metals	10.5	6.8

- (d) Alternatively, the following mass-based standards are equivalent to and may apply in place of those limitations specified under paragraph (c) of this section upon prior agreement between a source subject to these standards and the publicly owned treatment works receiving such regulated wastes:

**Subpart B - Precious Metals Facilities Discharging 38,000 Liters or More Per Day PSES
Limitations (mg/sq m-Operation)**

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 4 consecutive monitoring days shall not exceed
Ag	47	29
CN, T	74	39
Cu	176	105

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 4 consecutive monitoring days shall not exceed
Ni	160	100
Cr	273	156
Zn	164	102
Pb	23	16
Cd	47	29
Total metals	410	267

- (e) For wastewater sources regulated under paragraph (c) of this section, the following optional control program may be elected by the source introducing treated process wastewater into a publicly owned treatment works with the concurrence of the control authority. These optional pollutant parameters are not eligible for allowance for removal achieved by the publicly owned treatment works under 40 CFR 403.7. In the absence of strong chelating agents, after reduction of hexavalent chromium wastes, and after neutralization using calcium oxide (or hydroxide) the following limitations shall apply:

**Subpart B - Precious Metals Facilities Discharging 38,000 Liters or More Per Day PSES
Limitations (mg/l)**

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 4 consecutive monitoring days shall not exceed
CN, T	1.9	1.0
Pb	.6	.4
Cd	1.2	.7
TSS	20.0	13.4
pH	1	1

¹ Within the range 7.5 to 10.0.

- (f) In addition to paragraphs (a) and (b) the following limitation shall apply for plants discharging less than 38,000 l (10,000 gal) per calendar day of electroplating process wastewater:

Pollutant or pollutant property	Maximum for any 1 day
	Milligrams per liter (mg/l)
TTO	4.57

- (g) In addition to paragraphs (a), (c), (d), and (e) the following limitation shall apply for plants discharging 38,000 l (10,000 gal) or more per calendar day of electroplating process wastewater:

Pollutant or pollutant property	Maximum for any 1 day
	Milligrams per liter (mg/l)

Pollutant or pollutant property	Maximum for any 1 day
TTO	2.13

- (h) In addition to paragraphs (a), (b), (c), (d), (e), (f), and (g) the following shall apply: An existing source submitting a certification in lieu of monitoring pursuant to § 413.03 of this regulation must implement the toxic organic management plan approved by the control authority.

(Secs. 301, 304, 306, 307, 308, and 501 of the Clean Water Act (the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1251 *et. seq.*, as amended by the Clean Water Act of 1977, Pub. L. 95-217))

[46 FR 9467, Jan. 28, 1981, as amended at 48 FR 32484, July 15, 1983; 48 FR 43681, Sept. 26, 1983]

Subpart C - Electroplating of Speciality Metals Subcategory [Reserved]

Subpart D - Anodizing Subcategory

§ 413.40 Applicability: Description of the anodizing subcategory.

The provisions of this subpart apply to discharges of process wastewater resulting from the anodizing of ferrous or nonferrous materials.

§ 413.41 Specialized definitions.

For the purpose of this subpart:

- (a) The term *sq m* ("sq ft") shall mean the area plated expressed in square meters (square feet).
- (b) The term *operation* shall mean any step in the anodizing process in which a metal is cleaned, anodized, or colored when each such step is followed by a rinse.

§§ 413.42-413.43 [Reserved]

§ 413.44 Pretreatment standards for existing sources.

Except as provided in 40 CFR 403.7 and 403.13, any existing source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR part 403 and achieve the following pretreatment standards for existing sources (PSES):

- (a) No user introducing wastewater pollutants into a publicly owned treatment works under the provisions of this subpart shall augment the use of process wastewater or otherwise dilute the wastewater as a partial or total substitute for adequate treatment to achieve compliance with this standard.
- (b) For a source discharging less than 38,000 liters (10,000 gal) per calendar day of electroplating process wastewater the following limitations shall apply:

Subpart D - Anodizing Facilities Discharging Less Than 38,000 Liters Per Day PSES Limitations (mg/l)

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 4 consecutive monitoring days shall not exceed
CN, A	5.0	2.7
Pb	0.6	0.4

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 4 consecutive monitoring days shall not exceed
Cd	1.2	0.7

- (c) For plants discharging 38,000 liters (10,000 gal) or more per calendar day of electroplating process wastewater the following limitations shall apply:

**Subpart D - Anodizing Facilities Discharging 38,000 Liters or More Per Day PSES
Limitations (mg/l)**

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 4 consecutive monitoring days shall not exceed
CN, T	1.9	1.0
Cu	4.5	2.7
Ni	4.1	2.6
Cr	7.0	4.0
Zn	4.2	2.6
Pb	0.6	0.4
Cd	1.2	0.7
Total metals	10.5	6.8

- (d) Alternatively, the following mass-based standards are equivalent to and may apply in place of those limitations specified under paragraph (c) of this section upon prior agreement between a source subject to these standards and the publicly owned treatment works receiving such regulated wastes:

**Subpart D - Anodizing Facilities Discharging 38,000 Liters or More Per Day PSES
Limitations (mg/sq m-operation)**

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 4 consecutive monitoring days shall not exceed
CN, T	74	39
Cu	176	105
Ni	160	100
Cr	273	156
Zn	164	102
Pb	23	16
Cd	47	29
Total metals	410	267

- (e) For wastewater sources regulated under paragraph (c) of this section, the following optional control program may be elected by the source introducing treated process wastewater into a publicly owned treatment works with the concurrence of the control authority. These optional pollutant parameters are not eligible for allowance for removal achieved by the publicly owned treatment works under 40 CFR 403.7. In the absence of strong chelating agents, after reduction of hexavalent chromium wastes, and after neutralization using calcium oxide (or hydroxide) the following limitations shall apply:

**Subpart D - Anodizing Facilities Discharging 38,000 Liters or More Per Day PSES
Limitations (mg/l)**

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 4 consecutive monitoring days shall not exceed
CN,T	1.9	1.0
Pb	0.6	0.4
Cd	1.2	0.7
TSS	20.0	13.4
pH	(¹)	(¹)

¹ Within the range 7.5 to 10.000.

- (f) In addition to paragraphs (a) and (b) the following limitation shall apply for plants discharging less than 38,000 l (10,000 gal) per calendar day of electroplating process wastewater:

Pollutant or pollutant property	Maximum for any 1 day
	Milligrams per liter (mg/l)
TTO	4.57

- (g) In addition to paragraphs (a), (c), (d), and (e) the following limitation shall apply for plants discharging 38,000 l (10,000 gal) or more per calendar day of electroplating process wastewater:

Pollutant or pollutant property	Maximum for any 1 day
	Milligrams per liter (mg/l)
TTO	2.13

- (h) In addition to paragraphs (a), (b), (c), (d), (e), (f), and (g) the following shall apply: An existing source submitting a certification in lieu of monitoring pursuant to § 413.03 of this regulation must implement the toxic organic management plan approved by the control authority.

(Secs. 301, 304, 306, 307, 308, and 501 of the Clean Water Act (the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1251 et. seq., as amended by the Clean Water Act of 1977, Pub. L. 95-217))

[46 FR 9467, Jan. 28, 1981, as amended at 48 FR 32484, July 15, 1983; 48 FR 43681, Sept. 26, 1983]

Subpart E - Coatings Subcategory

§ 413.50 Applicability: Description of the coatings subcategory.

The provisions of this subpart apply to discharges resulting from the chromating, phosphating or immersion plating on ferrous or nonferrous materials.

§ 413.51 Specialized definitions.

For the purpose of this subpart;

- (a) The term *sq m* ("sq ft") shall mean the area processed expressed in square meters (square feet).
- (b) The term *operation* shall mean any step in the coating process in which a basis material surface is acted upon by a process solution and which is followed by a rinse; plus the related operations of alkaline cleaning, acid pickle, and sealing, when each operation is followed by a rinse.

§§ 413.52-413.53 [Reserved]

§ 413.54 Pretreatment standards for existing sources.

Except as provided in 40 CFR 403.7 and 403.13, any existing source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR part 403 and achieve the following pretreatment standards for existing sources (PSES):

- (a) No user introducing wastewater pollutants into a publicly owned treatment works under the provisions of this subpart shall augment the use of process wastewater or otherwise dilute the wastewater as a partial or total substitute for adequate treatment to achieve compliance with this standard.
- (b) For a source discharging less than 38,000 liters (10,000 gal) per calendar day of electroplating process wastewater the following limitations shall apply:

Subpart E - Coatings Facilities Discharging Less Than 38,000 Liters Per Day PSES Limitations (mg/l)

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 4 consecutive monitoring days shall not exceed
CN, A	5.0	2.7
Pb	0.6	0.4
Cd	1.2	0.7

- (c) For plants discharging 38,000 liters (10,000 gal) or more per calendar day of electroplating process wastewater the following limitations shall apply:

Subpart E - Coatings Facilities Discharging 38,000 Liters or More Per Day PSES Limitations (mg/l)

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 4 consecutive monitoring days shall not exceed
CN,T	1.9	1.0
Cu	4.5	2.7
Ni	4.1	2.6
Cr	7.0	4.0

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 4 consecutive monitoring days shall not exceed
Zn	4.2	2.6
Pb	0.6	0.4
Cd	1.2	0.7
Total metals	10.5	6.8

- (d) Alternatively, the following mass-based standards are equivalent to and may apply in place of those limitations specified under paragraph (c) of this section upon prior agreement between a source subject to these standards and the publicly owned treatment works receiving such regulated wastes:

**Subpart E - Coatings Facilities Discharging 38,000 Liters or More Per Day PSES
Limitations (mg/sq m-operation)**

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 4 consecutive monitoring days shall not exceed
CN, T	74	39
Cu	176	105
Ni	160	100
Cr	273	156
Zn	164	102
Pb	23	16
Cd	47	29
Total metals	410	267

- (e) For wastewater sources regulated under paragraph (c) of this section, the following optional control program may be elected by the source introducing treated process wastewater into a publicly owned treatment works with the concurrence of the control authority. These optional pollutant parameters are not eligible for allowance for removal achieved by the publicly owned treatment works under 40 CFR 403.7. In the absence of strong chelating agents, after reduction of hexavalent chromium wastes, and after neutralization using calcium oxide (or hydroxide) the following limitations shall apply:

**Subpart E - Coatings Facilities Discharging 38,000 Liters or More Per Day PSES
Limitations (mg/l)**

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 4 consecutive monitoring days shall not exceed
CN, T	1.9	1.0
Pb	0.6	0.4
Cd	1.2	0.7

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 4 consecutive monitoring days shall not exceed
TSS	20.0	13.4
pH	(¹)	(¹)

¹ Within the range 7.5 to 10.0

- (f) In addition to paragraphs (a) and (b) of this section, the following limitation shall apply for plants discharging less than 38,000 l (10,000 gal) per calendar day of electroplating process wastewater:

Pollutant or pollutant property	Maximum for any 1 day
	Milligrams per liter (mg/l)
TTO	4.57

- (g) In addition to paragraphs (a), (c), (d), and (e) of this section, the following limitation shall apply for plants discharging 38,000 l (10,000 gal) or more per calendar day of electroplating process wastewater:

Pollutant or pollutant property	Maximum for any 1 day
	Milligrams per liter (mg/l)
TTO	2.13

- (h) In addition to paragraphs (a), (b), (c), (d), (e), (f), and (g) of this section, the following shall apply: An existing source submitting a certification in lieu of monitoring pursuant to § 413.03 of this regulation must implement the toxic organic management plan approved by the control authority.

(Secs. 301, 304, 306, 307, 308, and 501 of the Clean Water Act (the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1251 *et. seq.*, as amended by the Clean Water Act of 1977, Pub. L. 95-217))

[46 FR 9467, Jan. 28, 1981, as amended at 48 FR 32484, July 15, 1983; 48 FR 43681, Sept. 26, 1983]

Subpart F - Chemical Etching and Milling Subcategory

§ 413.60 Applicability: Description of the chemical etching and milling subcategory.

The provisions of this subpart apply to discharges of process wastewaters resulting from the chemical milling or etching of ferrous or nonferrous materials.

§ 413.61 Specialized definitions.

For the purpose of this subpart:

- (a) The term *sq m* ("sq. ft.") shall mean the area exposed to process chemicals expressed in square meters (square feet).
- (b) The term *operation* shall mean any step in the chemical milling or etching processes in which metal is chemically or electrochemically removed from the work piece and which is followed by a rinse; this includes related metal cleaning operations which preceded chemical milling or etching, when each operation is followed by a rinse.

§§ 413.62-413.63 [Reserved]

§ 413.64 Pretreatment standards for existing sources.

Except as provided in 40 CFR 403.7 and 403.13, any existing source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR part 403 and achieve the following pretreatment standards for existing sources (PSES):

- (a) No User introducing wastewater pollutants into publicly owned treatment works under the provisions of this subpart shall augment the use of process wastewater or otherwise dilute the wastewater as a partial or total substitute for adequate treatment to achieve compliance with this standard.
- (b) For a source discharging less than 38,000 liters (10,000 gal.) per calendar day of electroplating process wastewater the following limitations shall apply:

**Subpart F - Chemical Etching and Milling Facilities Discharging Less Than 38,000 Liters
Per Day PSES Limitations (mg/l)**

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 4 consecutive monitoring days shall not exceed
CN, A	5.0	2.7
Pb	0.6	0.4
Cd	1.2	0.7

- (c) For plants discharging 38,000 liters (10,000 gal.) or more per calendar day of electroplating process wastewater the following limitations shall apply:

**Subpart F - Chemicals Etching and Milling Facilities Discharging 38,000 Liters or More
Per Day PSES Limitations (mg/l)**

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 4 consecutive monitoring days shall not exceed
CN, T	1.9	1.0
Cu	4.5	2.7
Ni	4.1	2.6
Cr	7.0	4.0
Zn	4.2	2.6
Pb	0.6	0.4
Cd	1.2	0.7
Total metals	10.5	6.8

- (d) Alternatively, the following mass-based standards are equivalent to and may apply in place of those limitations specified under paragraph (c) of this section upon prior agreement between a source subject to these standards and the publicly owned treatment works receiving such regulated wastes:

**Subpart F - Chemical Etching and Milling Facilities Discharging 38,000 Liters or More
Per Day PSES Limitations (mg/sq m-operation)**

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 4 consecutive monitoring days shall not exceed
CN, T	74	39
Cu	176	105
Ni	160	100
Cr	273	156
Zn	164	102
Pb	23	16
Cd	47	29
Total metals	410	267

- (e) For wastewater sources regulated under paragraph (c) of this section, the following optional control program may be elected by the source introducing treated process wastewater into a publicly owned treatment works with the concurrence of the control authority. These optional pollutant parameters are not eligible for allowance for removal achieved by the publicly owned treatment works under 40 CFR 403.7. In the absence of strong chelating agents, after reduction of hexavalent chromium wastes, and after neutralization using calcium oxide (or hydroxide) the following limitations shall apply:

**Subpart F - Chemical Etching and Milling Facilities Discharging 38,000 Liters or More
Per Day PSES Limitations (mg/l)**

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 4 consecutive monitoring days shall not exceed
CN, T	1.9	1.0
Pb	0.6	0.4
Cd	1.2	0.7
TSS	20.0	13.4
pH	(¹)	(¹)

¹ Within the range 7.5 to 10.0

- (f) In addition to paragraphs (a) and (b) of this section, the following limitation shall apply for plants discharging less than 38,000 l (10,000 gal) per calendar day of electroplating process wastewater:

Pollutant or pollutant property	Maximum for any 1 day
	Milligrams per liter (mg/l)
TTO	4.57

- (g) In addition to paragraphs (a), (c), (d), and (e) of this section, the following limitation shall apply for plants discharging 38,000 l (10,000 gal) or more per calendar day of electroplating process wastewater:

Pollutant or pollutant property	Maximum for any 1 day
	Milligrams per liter (mg/l)
TTO	2.13

- (h) In addition to paragraphs (a), (b), (c), (d), (e), (f), and (g) of this section, the following shall apply: An existing source submitting a certification in lieu of monitoring pursuant to § 413.03 of this regulation must implement the toxic organic management plan approved by the control authority.

(Secs. 301, 304, 306, 307, 308, and 501 of the Clean Water Act (the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1251 *et. seq.*, as amended by the Clean Water Act of 1977, Pub. L. 95-217))

[46 FR 9467, Jan. 28, 1981, as amended at 48 FR 32484, July 15, 1983; 48 FR 43681, Sept. 26, 1983]

Subpart G - Electroless Plating Subcategory

§ 413.70 Applicability: Description of the electroless plating subcategory.

The provisions of this subpart apply to discharges resulting from the electroless plating of a metallic layer on a metallic or nonmetallic substrate.

§ 413.71 Specialized definitions.

For the purpose of this subpart:

- (a) The term *sq m* ("sq. ft.") shall mean the area plated expressed in square meters (square feet).
- (b) The term *electroless plating* shall mean the deposition of conductive material from an autocatalytic plating solution without application of electrical current.
- (c) The term *operation* shall mean any step in the electroless plating process in which a metal is deposited on a basis material and which is followed by a rinse; this includes the related operations of alkaline cleaning, acid pickle, and stripping, when each operation is followed by a rinse.

§§ 413.72-413.73 [Reserved]

§ 413.74 Pretreatment standards for existing sources.

Except as provided in 40 CFR 403.7 and 403.13, any existing source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR part 403 and achieve the following pretreatment standards for existing sources (PSES):

- (a) No User introducing wastewater pollutants into publicly owned treatment works under the provisions of this subpart shall augment the use of process wastewater or otherwise dilute the wastewater as a partial or total substitute for adequate treatment to achieve compliance with this standard.
- (b) For a source discharging less than 38,000 liters (10,000 gal.) per calendar day of electroplating process wastewater the following limitations shall apply:

Subpart G - Electroless Plating Facilities Discharging Less Than 38,000 Liters Per Day PSES Limitations (mg/l)

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 4 consecutive monitoring days shall not exceed
CN,A	5.0	2.7

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 4 consecutive monitoring days shall not exceed
Pb	0.6	0.4
Cd	1.2	0.7

- (c) For plants discharging 38,000 l (10,000 gal) or more per calendar day of electroplating process wastewater the following limitations shall apply:

**Subpart G - Electroless Plating Facilities Discharging 38,000 Liters or More Per Day
PSES Limitations (mg/l)**

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 4 consecutive monitoring days shall not exceed
CN,T	1.9	1.0
Cu	4.5	2.7
Ni	4.1	2.6
Cr	7.0	4.0
Zn	4.2	2.6
Pb	0.6	0.4
Cd	1.2	0.7
Total metals	10.5	6.8

- (d) Alternatively, the following mass-based standards are equivalent to and may apply in place of those limitations specified under paragraph (c) of this section upon prior agreement between a source subject to these standards and the publicly owned treatment works receiving such regulated wastes:

**Subpart G - Electroless Plating Facilities Discharging 38,000 Liters or More Per Day
PSES Limitations (mg/sq m-operation)**

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 4 consecutive monitoring days shall not exceed
CN,T	74	39
Cu	176	105
Ni	160	100
Cr	273	156
Zn	164	102
Pb	23	16
Cd	47	29

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 4 consecutive monitoring days shall not exceed
Total metals	410	267

- (e) For wastewater sources regulated under paragraph (c) of this section, the following optional control program may be elected by the source introducing treated process wastewater into a publicly owned treatment works with the concurrence of the control authority. These optional pollutant parameters are not eligible for allowance for removal achieved by the publicly owned treatment works under 40 CFR 403.7. In the absence of strong chelating agents, after reduction of hexavalent chromium wastes, and after neutralization using calcium oxide (or hydroxide) the following limitations shall apply:

**Subpart G - Electroless Plating Facilities Discharging 38,000 Liters or More Per Day
PSES Limitations (mg/l)**

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 4 consecutive monitoring days shall not exceed
CN,T	1.9	1.0
Pb	0.6	0.4
Cd	1.2	0.7
TSS	20.0	13.4
pH	(¹)	(¹)

¹ Within the range 7.5 to 10.00

- (f) In addition to paragraphs (a) and (b) of this section, the following limitation shall apply for plants discharging less than 38,000 l (10,000 gal) per calendar day of electroplating process wastewater:

Pollutant or pollutant property	Maximum for any 1 day
	Milligrams per liter (mg/l)
TTO	4.57

- (g) In addition to paragraphs (a), (c), (d), and (e) of this section, the following limitation shall apply for plants discharging 38,000 l (10,000 gal) or more per calendar day of electroplating process wastewater:

Pollutant or pollutant property	Maximum for any 1 day
	Milligrams per liter (mg/l)
TTO	2.13

- (h) In addition to paragraphs (a), (b), (c), (d), (e), (f), and (g) of this section, the following shall apply: An existing source submitting a certification in lieu of monitoring pursuant to § 413.03 of this regulation must implement the toxic organic management plan approved by the control authority.

(Secs. 301, 304, 306, 307, 308, and 501 of the Clean Water Act (the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1251 et. seq., as amended by the Clean Water Act of 1977, Pub. L. 95-217))

[46 FR 9467, Jan. 28, 1981, as amended at 48 FR 32484, July 15, 1983; 48 FR 43681, Sept. 26, 1983]

Subpart H - Printed Circuit Board Subcategory

§ 413.80 Applicability: Description of the printed circuit board subcategory.

The provisions of this subpart apply to the manufacture of printed circuit boards, including all manufacturing operations required or used to convert an insulating substrate to a finished printed circuit board. The provisions set forth in other subparts of this category are not applicable to the manufacture of printed circuit boards.

§ 413.81 Specialized definitions.

For the purpose of this subpart:

- (a) The term *sq ft* ("sq m") shall mean the area of the printed circuit board immersed in an aqueous process bath.
- (b) The term *operation* shall mean any step in the printed circuit board manufacturing process in which the board is immersed in an aqueous process bath which is followed by a rinse.

§§ 413.82-413.83 [Reserved]

§ 413.84 Pretreatment standards for existing sources.

Except as provided in 40 CFR 403.7 and 403.13, any existing source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR part 403 and achieve the following pretreatment standards for existing sources (PSES):

- (a) No user introducing wastewater pollutants into a publicly owned treatment works under the provisions of this subpart shall augment the use of process wastewater or otherwise dilute the wastewater as a partial or total substitute for adequate treatment to achieve compliance with this standard.
- (b) For a source discharging less than 38,000 liters (10,000 gal) per calendar day of electroplating process wastewater the following limitations shall apply:

Subpart H - Printed Circuit Board Facilities Discharging Less Than 38,000 Liters Per Day PSES Limitations (mg/l)

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 4 consecutive monitoring days shall not exceed
CN, A	5.0	2.7
Pb	0.6	0.4
Cd	1.2	0.7

- (c) For plants discharging 38,000 liters (10,000 gal) or more per calendar day of electroplating process wastewater the following limitations shall apply:

Subpart H - Printed Circuit Board Facilities Discharging 38,000 Liters or More Per Day PSES Limitations (mg/l)

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 4 consecutive monitoring days shall not exceed
CN, T	1.9	1.0

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 4 consecutive monitoring days shall not exceed
Cu	4.5	2.7
Ni	4.1	2.6
Cr	7.0	4.0
Zn	4.2	2.6
Pb	0.6	0.4
Cd	1.2	0.7
Total metals	10.5	6.8

- (d) Alternatively, the following mass-based standards are equivalent to and may apply in place of those limitations specified under paragraph (c) of this section upon prior agreement between a source subject to these standards and the publicly owned treatment works receiving such regulated wastes:

**Subpart H - Printed Circuit Board Facilities Discharging 38,000 Liters or More Per Day
PSES Limitations (mg/sq m-operation)**

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 4 consecutive monitoring days shall not exceed
CN, T	169	89
Cu	401	241
Ni	365	229
Cr	623	357
Zn	374	232
Pb	53	36
Cd	107	65
Total metals	935	609

- (e) For wastewater sources regulated under paragraph (c) of this section, the following optional control program may be elected by the source introducing treated process wastewater into a publicly owned treatment works with the concurrence of the control authority. These optional pollutant parameters are not eligible for allowance for removal achieved by the publicly owned treatment works under 40 CFR 403.7. In the absence of strong chelating agents, after reduction of hexavalent chromium wastes, and after neutralization using calcium oxide (or hydroxide) the following limitations shall apply:

**Subpart H - Printed Circuit Board Facilities Discharging 38,000 Liters or More Per Day
PSES Limitations (mg/l)**

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 4 consecutive monitoring days shall not exceed
----------------------------------------	------------------------------	-----------------------------------------------------------------------------------

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 4 consecutive monitoring days shall not exceed
CN, T	1.9	1.0
Pb	0.6	0.4
Cd	1.2	0.7
TSS	20.0	13.4
pH	(¹)	(¹)

¹ Within the range 7.5 to 10.0

- (f) In addition to paragraphs (a) and (b) the following limitation shall apply for plants discharging less than 38,000 l (10,000 gal) per calendar day of electroplating process wastewater:

Pollutant or pollutant property	Maximum for any 1 day
	Milligrams per liter (mg/l)
TTO	4.57

- (g) In addition to paragraphs (a), (c), (d), and (e) the following limitation shall apply for plants discharging 38,000 l (10,000 gal) or more per calendar day of electroplating process wastewater:

Pollutant or pollutant property	Maximum for any 1 day
	Milligrams per liter (mg/l)
TTO	2.13

- (h) In addition to paragraphs (a), (b), (c), (d), (e), (f), and (g) of this section, the following shall apply: An existing source submitting a certification in lieu of monitoring pursuant to § 413.03 of this regulation must implement the toxic organic management plan approved by the control authority.

(Secs. 301, 304, 306, 307, 308, and 501 of the Clean Water Act (the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1251 *et. seq.*, as amended by the Clean Water Act of 1977, Pub. L. 95-217))

[46 FR 9467, Jan. 28, 1981, as amended at 48 FR 32485, July 15, 1983; 48 FR 43681, Sept. 26, 1983]