

§414.110

Subpart K—Indirect Discharge Point Sources

SOURCE: 58 FR 36893, July 9, 1993, unless otherwise noted.

§ 414.110 Applicability; description of the subcategory of indirect discharge point sources.

The provisions of this subpart are applicable to the process wastewater discharges resulting from the manufacture of the OCPSF products and product groups defined by § 414.11 from any indirect discharge point source.

§ 414.111 Toxic pollutant standards for indirect discharge point sources.

(a) Any point source subject to this subpart must achieve discharges not exceeding the quantity (mass) determined by multiplying the process wastewater flow subject to this subpart times the concentration listed in the following table.

(b) In the case of lead, zinc, and total cyanide the discharge quantity (mass) shall be determined by multiplying the concentrations listed in the following table for these pollutants times the flow from metal-bearing waste streams for metals and times the flow from the cyanide-bearing waste streams for total cyanide. The metal-bearing waste streams and cyanide-bearing waste streams are defined as those waste streams listed in Appendix A of this part, plus any additional OCPSF process wastewater streams identified by the control authority on a case-by-case basis as metal or cyanide bearing based upon a determination that such streams contain significant amounts of the pollutants identified above. Any such streams designated as metal or cyanide bearing must be treated independently of other metal or cyanide bearing waste streams unless the control authority determines that the combination of such streams, prior to treatment, with the Appendix A waste streams will result in substantial reduction of these pollutants. This determination must be based upon a review of relevant engineering, production, and sampling and analysis information.

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Effluent characteristics	PSES and PSNS ¹	
	Maximum for any one day	Maximum for any monthly average
Acenaphthene	47	19
Anthracene	47	19
Benzene	134	57
Bis(2-ethylhexyl) phthalate	258	95
Carbon Tetrachloride	380	142
Chlorobenzene	380	142
Chloroethane	295	110
Chloroform	325	111
Di-n-butyl phthalate	43	20
1,2-Dichlorobenzene	794	196
1,3-Dichlorobenzene	380	142
1,4-Dichlorobenzene	380	142
1,1-Dichloroethane	59	22
1,2-Dichloroethane	574	180
1,1-Dichloroethylene	60	22
1,2-trans-Dichloroethylene	66	25
1,2-Dichloropropane	794	196
1,3-Dichloropropylene	794	196
Diethyl phthalate	113	46
Dimethyl phthalate	47	19
4,6-Dinitro-o-cresol	277	78
Ethylbenzene	380	142
Fluoranthene	54	22
Fluorene	47	19
Hexachlorobenzene	794	196
Hexachlorobutadiene	380	142
Hexachloroethane	794	196
Methyl Chloride	295	110
Methylene Chloride	170	36
Naphthalene	47	19
Nitrobenzene	6,402	2,237
2-Nitrophenol	231	65
4-Nitrophenol	576	162
Phenanthrene	47	19
Pyrene	48	20
Tetrachloroethylene	164	52
Toluene	74	28
Total Cyanide	1,200	420
Total Lead	690	320
Total Zinc ²	2,610	1,050
1,2,4-Trichlorobenzene	794	196
1,1,1-Trichloroethane	59	22
1,1,2-Trichloroethane	127	32
Trichloroethylene	69	26
Vinyl Chloride	172	97

¹ All units are micrograms per liter.

² Total Zinc for Rayon Fiber Manufacture that uses the viscose process and Acrylic Fiber Manufacture that uses the zinc chloride/solvent process is 6,796 µg/l and 3,325 µg/l for maximum for any one day and maximum for monthly average, respectively.

APPENDIX A TO PART 414—NON-COMPLEXED METAL-BEARING WASTE STREAMS AND CYANIDE-BEARING WASTE STREAMS

Chromium

Methylhydroabietate/Esterification of hydroabietic acid (rosin) with methanol
Acrylic acid/Oxidation of propylene via acrolein
N-butyl alcohol/Hydrogenation of n-Butyraldehyde, Oxo process
Cyclohexanone/From phenol via cyclohexanol by hydrogenation-dehydrogenation

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Fatty amines/Hydrogenation of fatty nitriles (batch)	Fatty amines/Hydrogenation of fatty nitriles (batch)	
Heliotropin/Oxidation of isosafrole, chromium catalyst	Geraniol/B-Myrcene + Hydrogen chloride, esterification of geranyl chloride, hydrolysis of geranyl acetate	
Isobutanol/Hydrogenation of isobutyraldehyde, Oxo process	Furfuryl alcohol/Hydrogenation of furfural	
Cyclohexyl Mercaptan/Cyclohexanol + Hydrogen sulfide	Geranal (Citral)/Oxidation of geraniol (copper catalyst)	
Ethyl Mercaptan/Ethanol + Hydrogen sulfide	Glyoxal/Oxidation of ethylene glycol	
Methanol/H.P. Synthesis from natural gas via synthetic gas	Isobutanol/Hydrogenation of isobutyraldehyde, Oxo process	
Oxo Alcohols, C7-C11/Carbonation & hydrogenation of C6-C10 Olefins	Isopropanol/Catalytic hydrogenation of acetone	
Polyoxypolypropylene diamine/Polypropylene glycol + Ammonia	2-Mercaptobenzothiazoles, copper salt/2-Mercaptobenzothiazole + copper salt	
n-Propyl alcohol/Hydrogenation of propionaldehyde, Oxo process	Methanol/High pressure synthesis from natural gas via synthetic gas	
SAN resin/Suspension polymerization	Methanol/Low pressure synthesis from natural gas via synthetic gas	
Styrene/Dehydrogenation of ethylbenzene	Methyl ethyl ketone/Dehydrogenation of sec-Butanol	
Styrene/Dehydration of methyl benzyl alcohol (coproduct of propylene oxide)	Oxo alcohols, C7-C11/Carbonation & hydrogenation of C6-C10 olefins	
1-Tetralol, 1-Tetralone mix/Oxidation of tetralin (1,2,3,4-Tetrahydronaphthalene)	Phenol/Liquid phase oxidation of benzoic acid	
3,3,3-Trifluoropropene/Catalyzed hydrogen fluoride exchange with chlorinated propane	Polyoxyalkylene amines/Polyoxyalkylene glycol + ammonia	
Vinyl toluene/Dehydrogenation (thermal) of ethyltoluene	Polyphenylene oxide/Solution polymerization of 2,6-xylenol by oxidative coupling (cuprous salt catalyst)	
<i>Copper</i>		
Methylhydroabietate/Esterification of hydroabietic acid (rosin) with methanol	Polyoxypolypropylene diamine/Polypropylene glycol + Ammonia	
Acetaldehyde/Oxidation of ethylene with cupric chloride catalyst	Quinaldine (dye intermediate)/Skoora reaction of aniline + crotonaldehyde	
Acetic acid/Catalytic oxidation of butane	Silicones, silicone fluids/Hydrolysis and condensation of chlorosilanes	
Acetone/Dehydrogenation of isopropanol	Silicones, silicone rubbers/Hydrolysis and condensation of chlorosilanes	
Acrylamide/Catalytic hydration of acrylonitrile	Silicones, silicone specialties (grease, dispersion agents, defoamers & other products)	
Acrylic acid/Oxidation of propylene via acrolein	Silicones: Silicone resins/Hydrolysis & condensation of methyl, phenyl & vinyl chlorosilanes	
Acrylonitrile/Propylene ammonoxidation	Silicones: Silicone fluids/Hydrolysis of chlorosilanes to acyclic & cyclic organosiloxanes	
Adipic acid/Oxidation of cyclohexanol-cyclohexanone mixture	Styrene/Dehydration of a-Methylbenzyl alcohol (coproduct of propylene oxide)	
Adipic acid/Oxidation of cyclohexane via cyclohexanol-cyclohexanone mixture	Tetrachloroethylene (perchloroethylene)/Oxyhydrochlorination of tetrachloroethane	
Allynitrile/Allylchloride + sodium cyanide	Tris(anilino)s-triazine/Cyanuric chloride + aniline + co-generators	
Aniline/Hydrogenation of nitrobenzene	Unsaturated polyester resin/Reaction of maleic anhydride + phthalic anhydride + propylene glycol polyester with styrene or methyl methacrylate	
Benzofurans, 2,3-Dihydro-2,2-dimethyl-7-benzofuranol/ from o-Nitrophenol + Methylallyl chloride	<i>Lead</i>	
n-Butyl alcohol/Hydrogenation of n-Butyraldehyde, Oxo process	Alkyd resin/Condensation polymerization	
1,4-Butanediol/Hydrogenation of 1,4-butynediol	Alkyd resins/Condensation polymerization of phthalic anhydride + glycerin + vegetable oil esters	
Butyrolactone/Dehydrogenation of 1,4-butanediol	Dialkyldithiocarbamates, metal salts/Dialkylamines + carbon disulfide	
Caprolactam/From cyclohexane via cyclohexanone and its oxime		
Lilian (hydroxydihydrocitronellal)/Hydration and oxidation of citronellol		
1,2-Dichloroethane/Oxyhydrochlorination of ethylene		
Dialkyldithiocarbamates, metal salts/ Dialkylamines + carbon disulfide		
2-Ethylhexanol/from n-Butyraldehyde by Aldo condensation and hydrogenation		

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Thiuram (dimethyldithiocarbamate) hexasulfide/Dimethyldithiocarbamate + sulfur
 Triphenylmethane dyes (methyl violet)/Condensation of Formaldehyde + N-Methylaniline + N,N-dimethylaniline, oxidation of reaction product
 4,4'-Bis-(N,N-dimethylaniline) carbinol, Michler's hydrol/Oxidation of 4,4'-Methylene-bis(N,N-dimethylaniline) with lead oxide
 Naphthenic acid salts
 Stearic acid, metal salts/Neutralization with a metallic base

Nickel

Acetates, 7,11-Hexadecadien-1-ol (gossypure)/Coupling reactions, low pressure hydrogenation, esterification
 Acetates, 9-dodecen-1-ol (pheromone)/Coupling reactions, low pressure hydrogenation, esterification
 Acrylic acid/oxidation of propylene via acrolein
 Acrylonitrile/Propylene ammonoxidation
 n-Alkanes/Hydrogenation of C6-C22 alpha olefins (ethylene oligomers)
 Adiponitrile/Direct cyanation of butadiene
 Alkyl amines/Amination of alcohols
 4-Aminoacetanilide/Hydrogenation of 4-Nitroacetanilide
 BTX/Hydrogenation of olefins (cyclohexenes)
 Terphenyls, hydrogenated/Nickel catalyst, hydrogenation of terphenyl
 Bisphenol-A, hydrogenated (Biscyclohexanol-A)/Hydrogenation of Bisphenol-A
 Butadiene (1,3)/Extractive distillation of C-4 pyrolyzates
 n-Butanol/Hydrogenation of n-Butyraldehyde, Oxo process
 1,3-Butylene glycol/Hydrogenation of acetaldol
 1,4-Butanediol/Hydrogenation of 1,4-butyne diol
 Butylenes (mixed)/Distillation pf C4 pyrolyzates
 4-Chloro-2-aminophenol/Hydrogenation of 4-Chloro-2-nitrophenol
 Lilial (hydroxydihydrocitronellal)/Hydration and oxidation of citronellol
 Cycloparaffins/Catalytic hydrogenation of aromatics in kerosene solvent
 Cyclohexanol/Hydrogenation of phenol, distillation
 Cyclohexanone/From phenol via cyclohexanol by hydrogenation-dehydrogenation
 Dialkyldithiocarbamates, metal salts/ Dialkylamines + carbon disulfide
 Ethylamine/Reductive amination of ethanol
 Ethylamines (mono, di, tri)/Reductive amination (ammonia + hydrogen) of ethanol
 Isoeugenol, high % trans/Separation of mixed cis & trans isoeugenols

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2-Ethylhexanol/from n-Butyraldehyde by Aldol condensation and hydrogenation
 Fatty acids, hydrogenated/tallow & coco acids + Hydrogen
 Fatty amines/Hydrogenation of fatty nitriles (batch)
 Fatty amines/Hydrogenation of tallow & coco nitriles
 Glyoxal-urea formaldehyde textile resin/condensation to N-bis(hydroxymethyl) ureas & N,N'-(dihydroxyethyl) ureas
 11-hexadecenal/Coupling rxns, low pressure hydrogenation
 Hexahydrophthalic anhydride/Condensation of butadiene & maleic anhydride (Diels-Alder reaction) + hydrogenation
 Isobutanol/Hydrogenation of isobutyraldehyde, Oxo process
 Diisobutyl amine/Ammonolysis of isobutanol
 Isopropyl amines (mono, di)/Reductive amination (Ammonia + Hydrogen) of isopropanol
 Linalool/Pyrolysis of 2-Pinanol
 Methanol/High pressure synthesis from natural gas via synthetic gas
 Methanol/Low pressure synthesis from natural gas via synthetic gas
 Methanol/Butane oxidation
 Tris(hydroxymethyl) methyl amine/Hydrogenation of tris(hydroxymethyl) nitromethane
 N-Methyl morpholine/Morpholine + Methanol
 N-Ethyl morpholine/Morpholine + Ethanol
 2-Methyl-7,8-epoxy octadecane/Coupling reactions, low pressure hydrogenation, epoxidation
 Alpha-Olefins/Ethylene oligomer, & Zeigler Cat.
 Petroleum hydrocarbon resins, hydrogenated/Hydrogenation of petroleum hydrocarbon resin products
 Pinane/Hydrogenation of A-Pinene
 2-Pinanol/Reduction of pinane hydroperoxide
 Bis-(p-Octylphenol) sulfide, Nickel salt/p-Octylphenol + sulfur chloride (S2C12), neutralize with Nickel base
 Piperazine/Reductive amination of ethanol amine (ammonia & hydrogenation, metal catalyst)
 N,N-Dimethylpiperazine/Condensation piperazine + formaldehyde, hydrogenation
 Polyoxylalkylene amines/Polyoxylalkylene glycol + Ammonia
 Polyoxypropylene diamine/Polypropylene glycol + Ammonia
 2-Amino-2-methyl-1-propanol/Hydrogenation of 2-Nitro 2-methyl-1-propanol
 3-Methoxypropyl amine/Reductive amination of acrylamide with methanol & hydrogen
 N-Propylamine/Reductive amination (ammonia + hydrogen) of n-propanol
 Sorbitol/Hydrogenation of sugars
 Sulfolane/Condensation butadiene + sulfur dioxide, Hydrogenation
 Thionocarbamates, N-Ethyl-o-isopropyl/Iso-propyl xanthate + Ethylamine

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Toluene diamine (mixture)/Catalytic hydrogenation of dinitrotoluene	Nylon 6 & 66 copolymers/Polycondensation of Nylon salt + Caprolatam
Methylated urea-formaldehyde resins (textile)/Methylation of urea-formaldehyde adduct	Nylon 6 fiber/Extrusion (melt spinning)
Methylated urea-formaldehyde glyoxal (textile resin)/Reaction of methylated urea-formaldehyde + glyoxal	Oxo alcohols, C12-C15/Hydroformylation & hydrogenation of C11-C14 olefins
Zinc	Phenolic urethan resins/Phenol + excess formaldehyde + Methylene aniline diisocyanate
Methylhydroabietate, diels-alder adducts/Derivatives of abietic esters from rosin	Polystyrene (crystal) modified/Polystyrene + sulfonation, chloromethylation and/or amination
Acrylic resins/Emulsion or solution polymerization to coatings	Rayon/Viscose process
Acrylic resins (latex)/Emulsion polymerization of acrylonitrile with polybutadiene	SAN resin/Emulsion polymerization
Acrylic fibers (85% polyacrylonitrile) by solution polymerization/Wet spinning	Silicones: Silicone rubbers/Hydrolysis and condensation of chlorosilanes
Alkyd Resins/Condensation polymerization of phthalic anhydride + glycerin + vegetable oil esters	Silicones: Silicone specialties (grease, dispersion agents, defoamers & other products)
Benzene/By-product of styrene by ethylbenzene dehydrogenation	Silicones: Silicone resins/Hydrolysis & condensation of methyl, phenyl & vinyl chlorosilanes
Benzene/By-product of vinyl toluene (from ethyltoluene)	Silicones: Silicone fluids/Hydrolysis of chlorosilanes to acyclic & cyclic organosiloxanes
n-butyl alcohol/Hydrogenation of n-Butyraldehyde, Oxo process	Stearic acid, metal salts/Neutralization with a metallic base
Coumarin (benz-a-pyrone)/Salicylaldehyde, Oxo process	Styrene/Dehydrogenation of ethylbenzene
Cyclopentaffins/Catalytic hydrogenation of aromatics in kerosene solvent	Styrene-butadiene resin/Emulsion polymerization
Dithiocarbamates, zinc salt/Reaction of zinc oxide + Sodium dithiocarbamates	Vinyl acetate/Reduction of acetylene + acetic acid
Dialkyldithiocarbamates, metal salts/ Diakylamines + Carbon disulfide	Vinyl toluene/Dehydrogenation (thermal) of ethyltoluene
Dithiocarbamates, metal salts/ Dithiocarbamic acid + metal oxide	Xylenes, mixed/By-product vinyl toluene (from ethyltoluene)
Thiuram (dimethyldithiocarbamate) hexasulfide/Dimethyldithiocarbamate + sulfur	<i>Cyanide</i>
Fluorescent brighteners/Coumarin based	Acetone cyanohydrin/Acetone + Hydrogen cyanide
Ethyl acetate/Redox reaction (Tschenko) of acetaldehyde	Acetonitrile/By-product of acrylonitrile from propylene by ammonoxidation
Ethylbenzene/Benzene alkylation in liquid phase	Acrylic resins/Solution polymerization
Ethylbenzyl chloride/Chloromethylation (Hydrogen chloride + formaldehyde, zinc chloride) of ethylbenzene	Acrylic fiber (85% acrylonitrile)/Suspension polymerization, and wet spinning
2-Ethyl hexanol/Aldol condensation-hydrogenation of n-Butyraldehyde	Acrylic fiber (85% acrylonitrile)/Solution polymerization, and wet spinning
Glyoxal-urea formaldehyde textile resin/Condensation to N-bis (hydroxymethyl) ureas + N,N'-(Dihydroxyethyl) ureas	Acrylonitrile/Ammoxidation of propylene
Isobutanol/Hydrogenation of isobutyraldehyde, Oxo process	Adiponitrile/Butadiene + Hydrogen cyanide (direct cyanation)
Isopropanol/Catalytic hydrogenation of acetone	Allylnitrile/Allyl chloride + Sodium cyanide
Methylallylidene diacetate/Condensation of 2-Methylpropenal + acetic anhydride	Dimethoxybenzaldehyde/Hydroquinone dimethyl ether + Hydrogen cyanide, hydrolysis
Methanol/Low pressure synthesis from natural gas via synthetic gas	Benzyl cyanide/Benzyl chloride + Sodium cyanide
Methyl chloride/Hydrochlorination of methanol	Coal tar products/Distillation of coal tar condensate
Methylethyl ketone/Dehydrogenation of sec-Butanol	Cyanoacetic acid/Chloracetic acid + sodium cyanide
Naphthalenic acid salts	Cyanuric chloride/Catalyzed trimerization of cyanogen chloride
Nylon	Vat dyes, Indigo paste as Vat Blue 1/Sodium ide + potassium N-Phenylglycine, fused with caustic/N-phenylglycine + Aniline + Formaldehyde + Sodium bisulfite, sodium cyanide, hydrolysis with potassium hydroxide

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Disperse dyes, Azo and Vat	Vat dyes
Ethylenediamine tetraacetic acid/Ethylene-diamine + Formaldehyde + Sodium cyanide	Acid dyes
Diethylenetriamine pentaacetic acid	Azo dyes, metallized/Azo dye + metal acetate
Diethylenetriamine + Formaldehyde + Sodium cyanide	Acid dyes, Azo (including metallized)
N,N'-bis(o-	Organic pigments, miscellaneous lakes and toners
Acetamidophenol)ethylenediamine, ferric complex/ Salicylaldehyde + Ethylenediamine + Hydrogen cyanide, hydrolysis to amide	<i>Copper</i>
Diethylenetriamine pentaacetic acid, pentasodium salt/Diethylenetriamine pentaacetic acid + caustic	Disperse dyes
Ethylenediamine tetraacetic acid, metal salts/Ethylenediamine tetraacetic acid + metal bases	Acid dyes
Hydroxyethyl ethylenediamine triacetic acid, trisodium salt/ Ethylenediamine + Ethylene oxide + Formaldehyde + Sodium cyanide, hydrolysis	Direct dyes
5,5-Dimethyl hyantoin/Acetone + ammonia + carbon dioxide + hydrogen cyanide	Vat dyes
Hydrogen cyanide/By-product of acrylonitrile by ammoniation of propylene	Sulfur dyes
Iminodiacetic acid/Hexamethylene tetraamine + Hydrogen cyanide, hydrolysis of iminoacetonitrile salt	Disperse dye coupler/N-substitution of 2-Amino-4-acetamidoanisole
Methionine/Acrolein + Methyl mercaptan, with hydrogen cyanide and ammonium carbonate	Azo dyes, metallized/Azo dye + metal acetate
Nitrilotriacetic acid/Hexamethylene tetraamine + Hydrogen cyanide, hydrolysis of nitrilotriacetonitrile salt	Direct dyes, Azo
Picolines, mixed/Condensation of acetaldehyde + formaldehyde + ammonia	Disperse dyes, Azo and Vat
Organic pigments, Azo/Diazotization of aniline cogeners, coupling to B-Naphthol	Organic pigment Green 7/Copper phthalocyanine
Pyrimidines, 2-Isopropyl-4-methoxy-/Isobutyronitrile + methanol, ammonia and methylacetacetate (ring closure)	Organic pigments
Pyridine (synthetic)/Condensation of acetaldehyde + ammonia + formaldehyde	Organic pigments/Phthalocyanine pigments
Cyanopyridine/Ammoxidation of picoline	Organic pigments/Copper phthalocyanine (Blue Crude)
Sarcosine (N-Methyl glycine), sodium salt/ Hexamethylene tetraamine + Sodium cyanide, hydrolysis	Organic pigments, miscellaneous lakes and toners
Thiophene acetic acid/Chloromethylation (Hydrogen chloride + Formaldehyde) + Sodium cyanide, hydrolysis	<i>Lead</i>
Tris(anilino)S-triazine/Cyanuric chloride + Aniline and its cogeners	Organic pigments, Quinacridines
Triethylorthoformate/Ethanol + Hydrogen cyanide	Organic pigments, Thioindigoids
Trimethylorthoformate/Methanol + Hydrogen cyanide	Tetraethyl lead/Alkyl halide + sodium-lead alloy
[52 FR 42568, Nov. 5, 1987, as amended at 54 FR 27352, June 29, 1989; 55 FR 26692, June 29, 1990; 57 FR 41844, Sept. 11, 1992]	Tetramethyl lead/Alkyl halide + sodium-lead alloy
APPENDIX B TO PART 414—COMPLEXED METAL-BEARING WASTE STREAMS	<i>Nickel</i>
<i>Chromium</i>	Azo dyes, metallized/Azo dye + metal acetate
Azo dye intermediates/Substituted diazonium salts + coupling compounds	<i>Zinc</i>
	Organic pigments/Azo pigments by diazotization and coupling
	[52 FR 42568, Nov. 5, 1987, as amended at 54 FR 27352, June 29, 1989; 55 FR 26692, June 29, 1990; 57 FR 41844, Sept. 11, 1992]

PART 415—INORGANIC CHEMICALS MANUFACTURING POINT SOURCE CATEGORY**Subpart A—Aluminum Chloride Production Subcategory**

Sec.

- 415.01 Compliance dates for pretreatment standards for existing sources.
- 415.10 Applicability; description of the aluminum chloride production subcategory.
- 415.11 Specialized definitions. [Reserved]
- 415.12-415.13 [Reserved]
- 415.14 Pretreatment standards for existing sources (PSES).
- 415.15 [Reserved]