

# Pretreatment Standards

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- ❖ General and specific prohibitions
- ❖ **Categorical standards**
- ❖ Local limits

# General Prohibitions [40 CFR § 403.5(a)(1)]

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A user may not introduce into a POTW any pollutant(s) which cause Pass Through or Interference.

# Specific Prohibitions [40 CFR § 403.5(b)]

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- Pollutant(s) creating a fire or explosion hazard
- Pollutants causing corrosive structural damage
- Solid/viscous pollutants causing obstruction
- Pollutants released at a flow rate or concentration causing Interference

# Specific Prohibitions, cont.

[40 CFR § 403.5(b)]

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- Heat in amounts causing interference
- Certain oils in amounts causing interference or pass through
- Pollutants resulting in the presence of toxic gases, vapors or fumes above acute worker exposure levels
- Trucked or hauled pollutants

# Applicability of Pretreatment Standards

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|         | General and Specific Prohibitions | Categorical and Pretreatment Standards | Local Limits  |
|---------|-----------------------------------|--|---|
| All IUs | X                                 |  | May apply; depends on ordinance and permit provisions |
| SIUs    | X                                 |  | Generally apply                                       |
| CIUs    | X                                 | X                                      | Generally apply                                       |

# National Effluent Limitation Guidelines (ELGs) Categorical Standards are a Subset

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- Applicable to specific industry categories
- Arose from 1976 EPA/NRDC agreement.
- More than 50 categories.
- Found in 40 CFR Parts 405-471.
- Applicable to direct & indirect dischargers.
- The CWA(304(m)) requires that every two years EPA develop and publish plans for effluent guidelines, review, revision, development, and adoption.

# ELGs and Categorical Standards

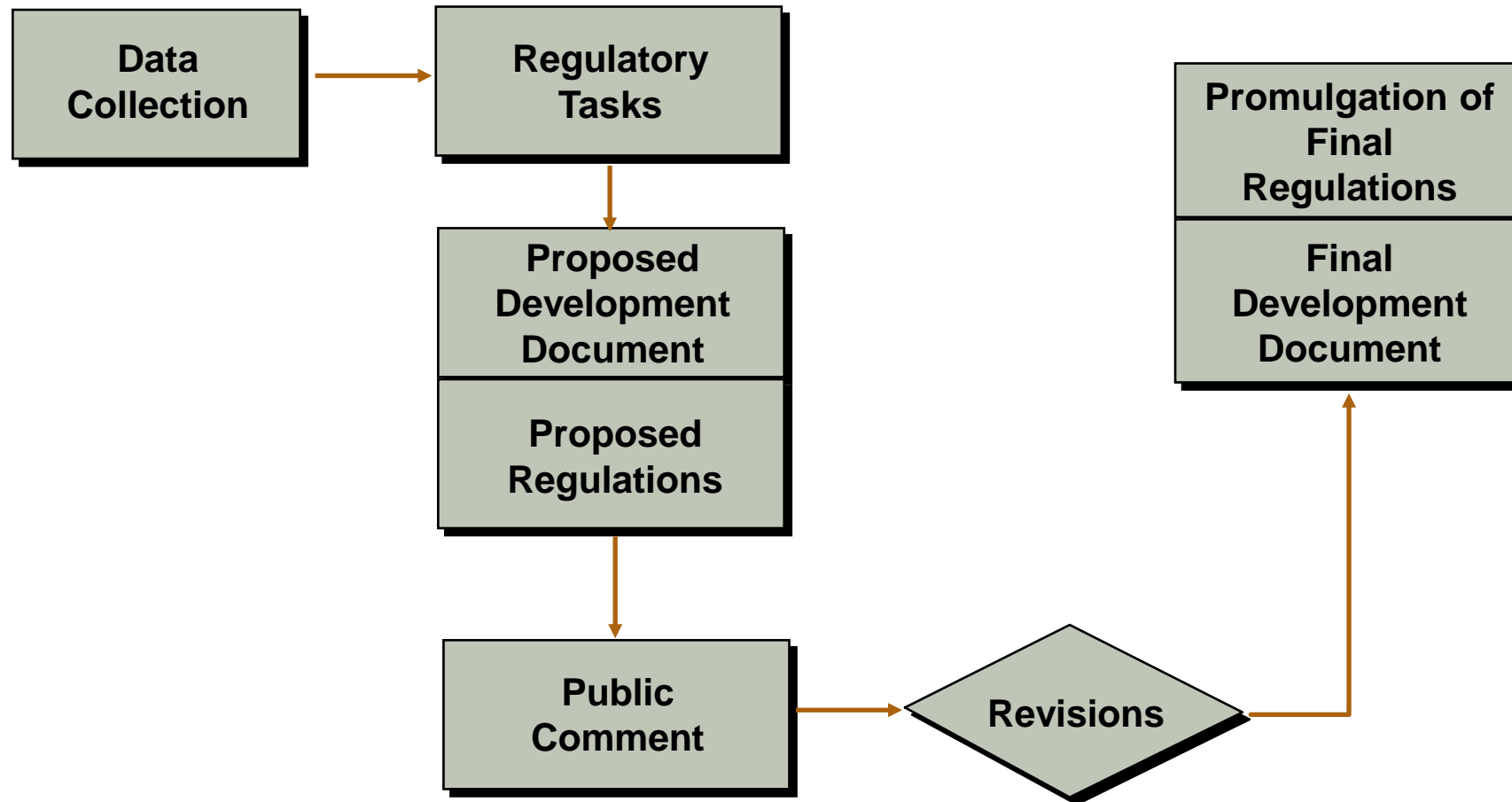
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- National standards
  - technology available
  - economic impacts
  - processes performed
- Apply to regulated process flow only
- Concentration or mass based limits
- Daily maximum and long term averages
- Developed for new and existing sources



# Flow Chart of Development Process

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# What do the Guidelines Contain?

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- General Provisions:

- Applicability
- Definitions
- Monitoring and Reporting Requirements
- Compliance Dates

- Subparts:

- Special Definitions
- Standards
  - Direct Discharge Standards vs. Pretreatment Standards
  - Categorical Standards - Normally do not regulate conventional pollutants – focus on toxic and non-conventional pollutants

# Example

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## Subpart E—Thermosetting Resins

- 414.50 Applicability; description of the thermosetting resins subcategory.
- 414.51 Effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT).
- 414.52 Effluent limitations representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology (BCT). [Reserved]
- 414.53 Effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable (BAT).
- 414.54 New source performance standards (NSPS).
- 414.55 Pretreatment standards for existing sources (PSES).
- 414.56 Pretreatment standards for new sources (PSNS).

# Categorical Standards

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## **For Indirect Dischargers –Categorical Pretreatment Standards “CIUs”**

- **PSES –Pretreatment Standards for Existing Sources**
- **PSNS –Pretreatment Standards for New Sources**

# CIU Determination –Exception to the Rule

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An IU which is regulated in a category with promulgated effluent guidelines and standards that do not contain PSES or PSNS but provides a reference only to 40 CFR 403 or Part 128 (prohibited discharge standards)

Would not be considered a CIU due to the absence of PSES or PSNS requirements

**\*This does not mean they are not a SIU!**

# Exception to the rule - example

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## **PART 460—HOSPITAL POINT SOURCE CATEGORY**

### **Subpart A—Hospital Category**

Sec.

460.10 Applicability; description of the hospital category.

460.11 Specialized definitions.

460.12 Effluent limitations and guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

# Why is Existing/New Source Determination So Important?

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- New source standards most times are more stringent
- New sources required to be in compliance upon commencement of discharge
- Existing sources can have up to three years after the effective date of the standard to achieve compliance

# Determining PSES vs PSNS

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- Check PSES compliance date
- Check new source definition in 40 CFR 403.3(m)
- Questions to ask-Construction after PSES compliance date?-  
Total replacement of processes or equipment?-Wastewater  
generating processes are substantially independent from  
previous operations?
- Get a determination from the state



# What is a Categorical Industrial User (CIU)?

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An industrial user (IU) whose industrial processes meets the applicability requirements for a specific category in 40 CFR Parts 405-471 and is subject to pretreatment standards for existing sources (PSES) or pretreatment standards for new sources (PSNS).

# The Difference between an CIU and SIU

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A SIU is a facility that:

- Discharges 25,000 gpd of process wastewater –this DOES NOT INCLUDE sanitary, boiler blowdown, non-contact cooling or heating
- Contributes 5% of the daily dry weather hydraulic flow or loading to the treatment plant
- Is subject to categorical pretreatment standards by the EPA or
- May have a potential impact on the POTW

**\*\*A CIU is a SIU unless designated by the POTW to be nonsignificant, but not all SIUs are a CIU**

# Categorical Determinations

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- Look at applicability section of standard
- Look at each subpart applicability
- Note exceptions, exemptions, other standards that apply
- Multiple categorical standards may apply at one facility

# Categorical Determination (cont.)

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Read the regulations (40 CFR 405-471)

- Read guidance documents of specific regulations to assist in making a decision
- Relevant knowledge of industrial processes will help in identifying potential categorical processes
- Search of promulgation dates to determine new or existing source

# How to Determine if IU is Categorical (cont'd)

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- Identify processes that may be subject to categorical regulations
- Inspect the facility to verify processes –ALL OF THEM
- Note raw materials, solvents and chemicals used
- Waste streams generated from the process
- Wastewater flow schematic
- Waste streams discharged to the sewer –rate and frequency of all discharges continuous and batch
- What is the finished product?
- Identify relevant regulations by comparing the industrial processes and the applicability section of the regulation

# Wastestream Types

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- Regulated process wastestreams
- Unregulated process wastestreams
- Dilute wastestreams

# Categorical Standards

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- Self implementing
- Enforced via permits issued by the Control Authority
- Typically applied at “end of process”
- If standards cannot be applied at “end of process” - combined waste stream formula must be used to establish limits.

# How are Effluent Limit Guidelines Expressed?

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- Numeric values for specific pollutants-Concentration limits (mg/L)
  - EX: Metal Finishing 40 CFR 433.17
- Mass limits based on production rates (kg/1000 kkg or pounds per million pounds )
  - EX: Metal Molding and Casting Subpart A –Aluminum Casting 40 CFR 464.15
- Mass limits based on a concentration standard (multiplied by industry's process wastewater flow)
  - EX: Organic Chemicals and Synthetic Fibers 40 CFR 414.24 and 40 CFR 414.26
- Best Management Practices
- Prohibitions –including No discharge



# Concentration-based

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## PSES FOR ALL PLANTS EXCEPT JOB SHOPS AND INDEPENDENT PRINTED CIRCUIT BOARD MANUFACTURERS

| Pollutant or pollutant property | Maximum for any 1 day       | Monthly average shall not exceed |
|---------------------------------|-----------------------------|----------------------------------|
|                                 | Milligrams per liter (mg/l) |                                  |
| Cadmium (T) .....               | 0.69                        | 0.26                             |
| Chromium (T) .....              | 2.77                        | 1.71                             |
| Copper (T) .....                | 3.38                        | 2.07                             |
| Lead (T) .....                  | 0.69                        | 0.43                             |
| Nickel (T) .....                | 3.98                        | 2.38                             |
| Silver (T) .....                | 0.43                        | 0.24                             |
| Zinc (T) .....                  | 2.61                        | 1.48                             |
| Cyanide (T) .....               | 1.20                        | 0.65                             |
| TTO .....                       | 2.13                        | .....                            |

# Production Based Standards

## SUBPART D—PSES

| Pollutant or pollutant property      | Maximum for any 1 day               | Maximum for monthly average |
|--------------------------------------|-------------------------------------|-----------------------------|
|                                      | g (lbs)/1,000,000 cans manufactured |                             |
| Cr .....                             | 36.92 (0.081)                       | 15.10 (0.033)               |
| Cu .....                             | 159.41 (0.351)                      | 83.90 (0.185)               |
| Zn .....                             | 122.49 (0.270)                      | 51.18 (0.113)               |
| F .....                              | 4992.05 (11.001)                    | 2214.96 (4.883)             |
| P .....                              | 1401.13 (3.089)                     | 573.04 (1.263)              |
| Mn .....                             | 57.05 (0.126)                       | 24.33 (0.053)               |
| TTO .....                            | 26.85 (0.059)                       | 12.59 (0.028)               |
| O&G (for alternate monitoring) ..... | 1678.00 (3.699)                     | 1006.80 (2.220)             |

- Equivalents
  - mass based limitations
  - concentration based limitation

[48 FR 52399, Nov. 17, 1983; 49 FR 14105, Apr. 10, 1984]

# OCPSF

## § 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 . . .

| Effluent characteristics          | PSES and PSNS <sup>1</sup> |                                 |
|-----------------------------------|----------------------------|---------------------------------|
|                                   | 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 <sup>2</sup> .....     | 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                              |

<sup>1</sup> All units are micrograms per liter.  
<sup>2</sup> 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.

# Best Management Practices as Categorical Standards

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- Certification in place of monitoring
- Specified pollutants
- Management plan must be approved and implemented
- Main one typically seen is Toxic Organic Management Plan for Electroplating (40 CFR 413.03) and Metal Finishing (40 CFR 433.12)

# Total Toxic Organics(“TTOs”)

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- Defined in categorical regulation
- Toxic Organic Management Plan(“TOMP”)
  - toxic organic compounds used
  - method of disposal
  - spill prevention/control
- Certification in lieu of self-monitoring
- Oil and grease

# Prohibitions -Examples

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- 40 CFR 415.36 –Inorganic chemicals manufacturing, Subpart C calcium carbide production subcategory, PSNS*There shall be no discharge of process wastewater pollutants to navigable waters.*
- 40 CFR 423.16(a) –Steam electric power generating, PSE*There shall be no discharge of polychlorinated biphenol compounds such as those used for transformer fluid.*
- 40 CFR 461.14(b) –Battery manufacturing, Subpart A cadmium subcategory, PSE*There shall be no discharge allowance for process wastewater pollutants from any battery manufacturing operation other than those battery manufacturing operations listed above.*
- 40 CFR 435.33(a)(1) and 435.34(a)(1) Oil and Gas Extraction, Subpart A, Onshore subcategory, PSES and PSNS*There shall be no discharge of wastewater pollutants associated with production, field exploration, drilling, well completion, or well treatment for unconventional oil and gas extraction (including, but not limited to, drilling muds, drill cuttings, produced sand, produced water) into publicly owned treatment works.*

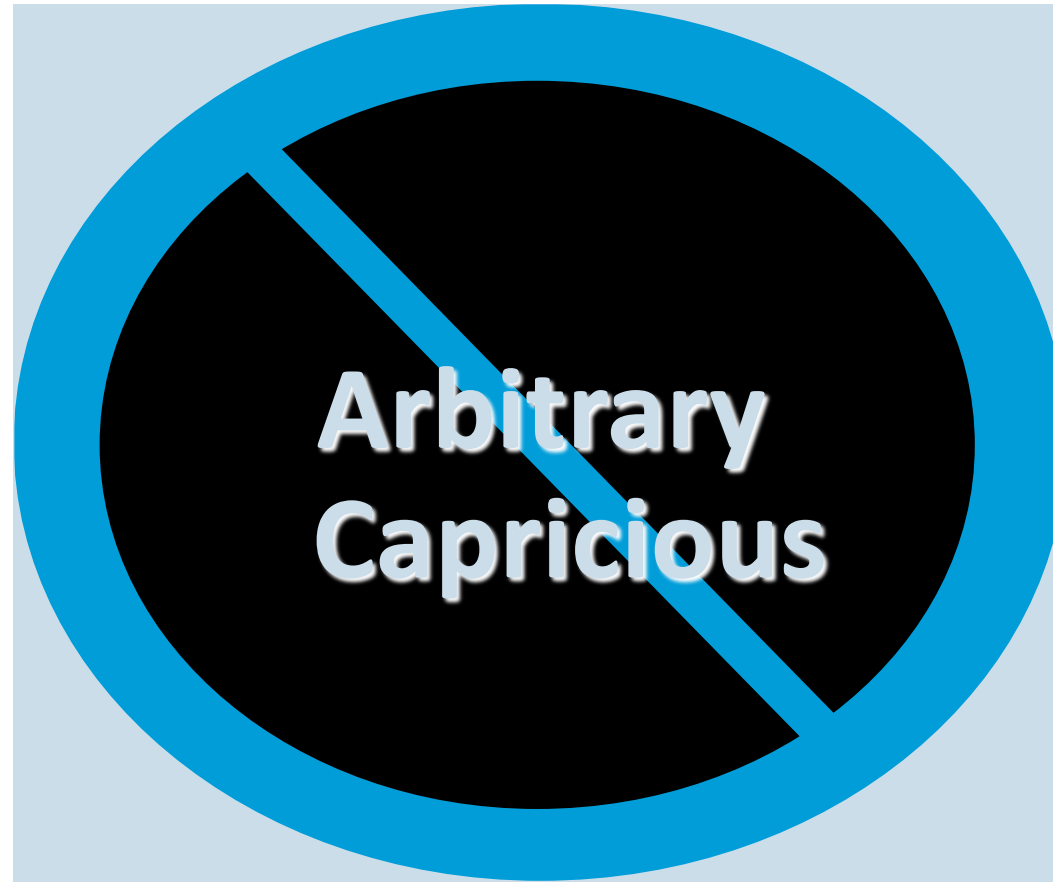
# Examples Industrial Categories Subject to Pretreatment Standards

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- Metal Finishing -including, but not limited to: Electroplating Coating (chromating, phosphating, and coloring), Electroless Plating Anodizing, Chemical Etching and Milling Printed Circuit Board Manufacturing Manufacturing
- Organic Chemicals, Plastics & Synthetic Fibers
- Inorganic Chemicals
- Soap and Detergent
- Semiconductor Manufacturing -including, but not limited to: Cathode Ray Tube manufacturing Electronic Crystals production Luminescent materials manufacturing Phosphorescent coatings
- Pharmaceuticals
- Pesticides Production -including, but not limited to: Manufacturing Packing and repackaging Formulation
- Porcelain Enameling
- Transportation Equipment Cleaning -Including, but not limited to: Tank truck cleaning, Railcar tank cleaning
- Centralized Waste Treatment Metals Treatment and recovery Oils Treatment and recovery Organics Treatment and recovery Multiple waste streams

# Application of Categorical Pretreatment Standards

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# Other Things to Consider...

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- **Dilution prohibition** - [40 CFR § 403.6(d)]
- **Removal credits** - [40 CFR § 403.7]
- **Fundamentally different factors** - [40 CFR § 403.13]
- **Net/Gross calculation** - [40 CFR § 403.15]

# Question

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A plating shop has been in business since 1980. In 1990, it was bought out by Such N Such Metal Finishing. Is Such N Such Metal Finishing, a new source?

# Any Final Questions?

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