Metal Finishing Application

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Metal Finishing (40 CFR Part 433)

Six Core Operations

1. Electroplating
2. Electroless Plating
3. Anodizing
4. Coating (chromating, phosphating, and coloring)
5. Chemical Etching and Milling
6. Printed Circuit Board Manufacturing
40 Ancillary Metal Finishing Operations

- Cleaning
- Machining
- Grinding
- Polishing
- Barrel Finishing (or tumbling)
- Burnishing
- Impact Deformation
- Pressure Deformation
40 Ancillary Metal Finishing Operations (continued)

- Shearing
- *Heat Treating*
- *Thermal Cutting*
- Welding
- *Brazing*
- *Soldering*
- Flame Spraying
- Sand Blasting
- Abrasive Jet Machining
- Electrical Discharge Machining
- *Electrochemical Machining*
- Electron Beam Machining
- Laser Beam Machining
- Plasma Arc Machining
- Ultrasonic Machining
- *Sintering*
- Laminating
40 Ancillary Metal Finishing Operations (continued)

- Hot Dip Coating
- Sputtering
- Vapor Plating
- Thermal Infusion
- Salt Bath Descaling
- Solvent Degreasing
- Paint Stripping
- Painting
40 Ancillary Metal Finishing Operations (continued)

- Electrostatic Painting
- Electropainting
- Vacuum Metalizing
- Assembly
- Calibration
- Testing
- Mechanical Plating
Metal Finishing: Application

- A facility is subject to 40 CFR Part 433 if it performs one of the 6 core process.

- In addition, if the facility also performs any of the 40 ancillary processes in addition to any of the core processes, then the wastewaters from the core process(es) and the ancillary process(es) are also subject to 40 CFR Part 433.
Metal Finishing: Special Monitoring Allowances

- In lieu of the required TTO monitoring, dischargers may be allowed to submit a TOMP and certification statements.

- If TTO monitoring is necessary, only those TTO pollutants expected to be present need to be analyzed.

- If a facility has cyanide treatment, it is allowed to comply with an amenable cyanide limit.
Exceptions From 40 CFR Part 433 Coverage

- All existing indirect discharging job shop electroplaters
- Independent printed circuit board manufacturers
- Metallic platemaking
- Gravure cylinder preparation
Exceptions From 40 CFR Part 433 Coverage (continued)

- Nonferrous Smelting and Refining (Part 421)
- Coil Coating (Part 465)
- Porcelain Enameling (Part 466)
- Battery Manufacturing (Part 461)
- Iron and Steel Manufacturing (Part 420)
- Metal Casting Foundries (Part 464)
- Aluminum Forming (Part 467)
- Copper Forming (Part 468)
- Plastic Molding and Forming (Part 463)
- Electrical and Electronic Components (Part 469)
- Nonferrous Forming (Part 471)
Major Pollutants at Metal Finishing Industries

- Acids
- Heavy metals
- Cyanide
- Alkaline cleaners
- Oil and grease
Types of Metal Finishing Wastes

- Rinsewater/Wastewaters
- Plating bath sludge
- Spent filters
- Dust from grinding and/or polishing operations
- Spent anodes
- Spent plating baths
- Off specification, or chemicals that exceed their shelf life
Types of Metal Finishing Wastes (cont.)

- Spent acids or bases
- Spent or used stripping bath solutions
- Etching solution wastes
- Spent degreasing solvents
- Spent fluorescent lamps, high intensity discharge, neon, mercury vapor, high pressure sodium and metal halide lamps
Types of Metal Finishing Wastes (cont.)

- Wastewater treatment filter cake
- Spill residue (i.e., kitty litter, soils, liquids, etc.)
- Maintenance tools (i.e., mops, brooms, etc.)
- Used Oil
- Spent Personal Protective Equipment
- Paint related waste (i.e., rags, thinners, etc.)
Metal Finishing Treatment Technology Options

- **Chemical Precipitation**
  - Hydroxide Precipitation
  - With final pH adjustment

- **Preliminary Treatment Options**
  - Chromium Reduction
  - Cyanide Destruction
  - Oil/Water Separation
Classification Scenarios
Scenario 1

- Facility started its copper plating operations in June 1972.  
  - average categorical wastewater discharge flow is 9,000 gallons per day.

- In 1994, the facility added an additional anodizing line.

- Wastewater for anodizing line is combined with the existing wastewater from the copper plating line; wastewaters are then treated and discharged through a common outfall.  
  - The new combined wastewater flow rate is 14,000 gallons per day.
Potential Classifications

A. Noncategorical SI U

B. CI U subject to 40 CFR Part 413 for flow **over** 10,000 gallons per day and 40 CFR Part 433, PSNS

C. CI U subject to 40 CFR Part 413 for flow **under** 10,000 gallons per day and 40 CFR Part 433, PSNS
Rationale for Classification

The answer is C.

CIU subject to 40 CFR Part 413 for flow under 10,000 gallons per day and 40 CFR Part 433, PSNS
Key Factors

- Originally classified as subject to 40 CFR Part 413 (startup in June 1972).
  - <10,000 gpd (avg. discharge 9,000 gpd)

- Added anodizing line in 1994
  - 433.17 (new source since after July 15, 1983)

- Facility is still subject to 40 CFR Part 413 for flow under 10,000 gallons
  - because new anodizing line contributed 5,000 gpd of wastewater to the combined flow.
Scenario 2

Golf club manufacturer began operations in July 1992. Operations include cleaning (alkaline wash and acid dip), coating, 2-stage rinse, and a tumbling operation for deburring purposes.

There is no discharge form the plating operation or rinse tanks (uses countercurrent rinses disposes of off-site).

Only discharge is from tumbling operation and rinse that follows (350 gpd).
Potential Classifications

A. Non-significant Industrial User

B. NSCI U

C. Electroplating New Source
   A. 40 CFR 413 (< 10,000 gpd)

D. Metal Finishing New Source
   A. 40 CFR 433.17
Rationale for Classification

The answer is D.

CIU subject to 40 CFR Part 433, Pretreatment Standards for New Sources.
Any Question???