



Metal Finishing Industries Contaminants of Concern (COCs)

Office of Land Quality

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The metal finishing industry uses a wide variety of materials and processes to clean, etch, and plate metallic and nonmetallic surfaces. Electrochemical, chemical, and physical processes are all used to finish metal surfaces. The metal finishing industry uses solutions of metal salts and other compounds to plate a finish onto a substrate, solvents and surfactants for cleaning, and acids and bases for etching.

The following table summarizes the most common COCs for the metal finishing industry and the analytical methods that should be utilized.

Table 1: Contaminants of Concern for Metal Finishing Industries

Contaminants of Concern	Analytical Methods (SW-846 methods unless otherwise noted)
Metals (aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, manganese, nickel, potassium, selenium, silver, sodium, thallium, tin, zinc, and mercury) ⁵	6010, 6020, 7000 methods
pH	9040 or 9045
Cyanide (Total, Free ¹ , Amenable)	9012, 9010 (or 9013), 9014 or 9213
Nitrates (Nitrogen-Ammonia ² , Nitrogen-Nitrate/Nitrite) ⁵	9056, 353.1 ³ , 353.2 ³ , 353.3 ³ , 1685 ⁴ , 1686 ⁴
Sulfate ⁵	9056, 9035, 9036, 9038
Chloride ⁵	9056, 9121, 9250, 9251, 9253
Fluoride ⁵	9056, 9214, 340.1 ³ , 340.2 ³ , 340.3 ³
Volatile Organic Compounds (VOCs)	8260
Semivolatile Organic Compounds (SVOCs)	8270

¹ Free Cyanide must be analyzed using 9014 or 9213.

² Nitrogen-Ammonia cannot be analyzed using 9056.

³ U.S. EPA Methods for Chemical Analysis of Water and Wastes

⁴ USEPA Office of Water “stand alone methods”

⁵ Iron, potassium, sodium, manganese, zinc, sulfate, chloride, fluoride, and nitrates are for groundwater only.

Notes:

- Follow the Remediation Closure Guide (RCG) to develop a site-specific list of COCs.
- These requirements may be modified dependent upon historical site conditions and the type and nature of the release.
- Use the most updated analytical method available.

References:

IDEM Remediation Closure Guide (RCG)
http://www.in.gov/idem/files/remediation_closure_guide.pdf

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846)

<http://www.epa.gov/epawaste/hazard/testmethods/index.htm>

EPA Guides to Pollution Prevention, the Metal Finishing Industry (EPA/625/R-92/011)

<http://www.p2pays.org/ref/01/00739.pdf>

EPA National Center for Environmental Research Publications, "Characterizing Risk at Metal Finishing Facilities"

<http://epa.gov/ncer/publications/archive/csidoc.html>