

US EPA ARCHIVE DOCUMENT



Could your family be affected?

The Merit Partnership is a joint venture between U.S. EPA Region 9, state, and local regulatory agencies, private sector industries, and community representatives. The partnership was created to promote pollution prevention, identify pollution prevention technology needs, and accelerate pollution prevention technology transfer within various industries, including metal finishing.

The Merit Partnership Pollution Prevention Project for Metal Finishers involves implementing pollution prevention techniques and technologies at metal finishing facilities in southern California. Participants document and share their results. For more information, see the website under the "For Further Information" section.

— U.S. EPA



Reducing Air Pollution from: Electroplating Operations

Why do electroplating shops need to reduce air pollution?

People who are exposed to toxic air pollutants at sufficient concentrations, for sufficient durations, may increase their chances of getting cancer or experiencing other serious health effects, such as reproductive problems, birth defects, and aggravated asthma.

Pollution prevention can reduce the impact of air pollution by using materials, processes, or practices that reduce or eliminate air pollution at the source.

Electroplating is a type of metal finishing operation that changes the surface properties of a metal part to make it stronger, shinier, and corrosion-resistant. Activities at electroplating shops include surface preparation, surface treatment, and post-plating treatment, all of which may release pollutants into the air and may contribute to health concerns in the shop and in the community.

The best electroplating shops implement pollution prevention strategies not only to comply with federal, state, local, and Tribal laws but also to further minimize impacts on human health and the environment. Check with your state, local, and Tribal agencies for existing regulations.

What kinds of air pollutants may come from electroplating shops?

- Electroplating operations can produce emissions of toxic air pollutants, including heavy metals and cyanide.
- Degreasing and cleaning solutions can release toxic air pollutants and volatile organic compounds (VOC).

Chemicals in these substances can react in the air to form ground-level ozone (smog), which has been linked to a number of respiratory effects.

- Plating processes generate heavy metals such as hexavalent chromium and cadmium. While federal, state, local, and Tribal regulations limit the amount of emissions from electroplating shops, dangerous releases of toxic air pollutants can occur if an electroplating shop is not in compliance with regulations.
- Cyanide has been a key component of plating solutions for years. It can impact the nervous system, heart, and lungs.

How can electroplating shops reduce air pollution?

Making changes in shop work practices can stop pollutants at the source and increase production efficiency. By evaluating and improving work practices, shops can decrease emissions, reduce production costs, and protect employee and public health.

Examples of changes in work practices that help reduce air pollution include:

Substituting Materials

- Use cleaners with low toxic air pollutant and VOC content.
- For chromium electroplaters, switch from hexavalent chromium solutions, which can cause cancer, to trivalent chromium ones, which do not.
- Replace cyanide in plating solutions with less toxic compounds like zinc chloride and pyro-phosphate copper.

Switching to a water-based cleaning solution can reduce air emissions, reduce air permit fees, and create a more pleasant work environment. One company saved \$8,440 per year.

— Kansas Small Business Environmental Assistance Program

COMMUNITY INFORMATION SHEET

Electroplating Operations

Changing Cleaning Procedures

- Use cleaning procedures that reduce the amount of solvent needed.

Recycling Materials

- Use an on-site distillation unit to recycle solvents.
- Use old solvent for cleaning very dirty parts.
- Reuse plating bath solution and rinse water.

Changing Processes

- Use alternative metal deposition technologies to reduce or eliminate toxic air pollutant emissions.
- Reduce the chemical concentration of the plating bath without compromising quality.
- Use mechanical scraping instead of a chemical solution to remove buildup on the part.

As a community, what can you do to help reduce air pollution from electroplating shops?

Make Connections

- Get to know local electroplating shop owners and operators because they know best about the materials and processes used in their business and the regulations with which they must comply.
- Keep local media aware of progress by sending them updates. Publicity can reward success and attract more public involvement.

Make a Plan

- One idea is to form a work group that includes local owners and operators to develop and implement workable pollution reduction plans.

Locate Resources

- Use the “For Further Information” list below to find governmental and nonprofit contacts who can provide help with analysis, technical information, equipment, and funding.

Encourage Pollution Prevention

- Work with pollution prevention organizations to educate metal electroplating shop owners and operators about ways to prevent pollution.
- Help sponsor trade show exhibits and training workshops to show the latest pollution prevention technologies.

Reward Shops

- Use media connections to provide coverage for successful efforts. Positive publicity can mean increased business.
- Visibly displayed awards or certificates may also increase business.

For Further Information

- National Association of Metal Finishers: www.namf.org, (407) 281-6445
- National Emission Standards for Hazardous Air Pollutants: Chromium Electroplating: www.epa.gov/ttn/atw/chrome/chrome.html
- Community Information Sheet for Metal Operations.
- EPA’s Sector Strategies Partnership Program for the Metal Finishing Sector: www.epa.gov/sectors/metalfinishing/index.html
- Training opportunities: Local electroplating operations trade associations, area electroplating schools
- Community-Based Projects: www.epa.gov/air/toxicair/community.html
- Community information, regional, state contacts: www.epa.gov/epahome/wherelive.htm
- Pollution prevention awards: State, local, and Tribal government agencies, universities
- Toxicity of Solvents: Integrated Risk Information Systems (IRIS) (www.epa.gov/iris), Air Toxics Health Effects Notebooks (www.epa.gov/ttn/atw/hapindex.html)
- Solvent Alternatives Guide: www.sage.rti.org
- Merit Partnership: www.sectorstar.org/sector/MetalFinishing/showProgram.cfm?pid=130
- For more information, please see the Resources section of the Owner/Operator Information Sheet.

