



NETWORKING

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METAL FABRICATION AND MACHINING

A quick guide to essential pollution prevention (P2) information on metal fabrication and machining, with a compilation of the best available on-line resources.

Why P2 for Metal Fabrication Processes?

“Metal fabrication” and “machining” are synonyms that refer to the activities and processes that change the shape of a metal by deforming or removing metal from it. There are many processes involved in the manufacture of complex metal parts. The metal stock is cut, shaped, and then worked to the desired specifications, all the while being cooled, joined together, and treated. However, many of these processes have an environmental impact. The significant volumes of spent metal working fluid and scrap metal contain toxic and hazardous constituents that can end up in wastewater, solid and hazardous waste, and air emissions.

How Can Metal Fabrication Facilities Prevent Pollution?

Fluid substitutions, such as vegetable-based fluid; process modifications, such as low-volume applicators; and operation and maintenance changes, including the use of filters, sumps, and disinfectants, can all reduce the generation of waste from metal working fluids.

“Dry Machining” eliminates fluid management issues altogether. Process changes such as employing an air compressor, and using alternative tool materials, such as low friction coatings and high-temperature wear resistant materials make dry machining easy and cost effective.

Best P2 Resources at Your Fingertips

Topic Hubs are peer-reviewed on-line primers that include background and operational information plus specific opportunities for pollution prevention. They include an extensive list of links for the “best of the best” on-line resources: manuals, checklists, fact sheets, case studies, etc. The Metal Fabrication Topic Hub also contains a database link to environmental assistance programs and initiatives in the Northeast as well as a list of national programs.

Topic Hubs are valuable resources for P2 programs, regulators, environmental managers, and industry. P2Rx Centers have more than 60 Topic Hubs available on a wide range of issues covering many industrial sectors and topics. Check them out at www.p2rx.org/hubs.

Did You Know?

- Metal Working Fluids (MWFs) can contain a variety of substances that are harmful to your health. Some of these substances are present in the original fluid formulation, some are additives that are used to control the growth of microorganisms or prevent corrosion, and others are contaminants that are introduced into the MWF while it is being used.
- In 1998, the National Institute for Occupational Safety and Health (NIOSH) recommended a new standard specifically for metalworking fluid aerosols. The standard was proposed because workers currently exposed to metalworking fluid aerosols at current limits have an increased risk of nonmalignant respiratory disease and skin disease.

View the complete
Metal Fabrication
and Machining Topic
Hub at p2rx.org/hubs



The Metal Fabrication & Machining Topic Hub was written by NEWMOA.

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How to Use the Topic Hub™ Web Resource

Access Any Topic Hub

Search Hub by Keywords

Navigate to all Subsections

Read an overview of the issues

Key References

Current Topic Hubs

Aerospace	Green Procurement	P2 for Hospital Sterilizers
Agricultural Teaching Labs	Hospitality	P2 and Environmental Security
Auto Body	Household Hazardous Materials	Paint and Coating Manufacturing
Auto Repair	Industrial Composting	Pollution Prevention (P2)
Auto Salvage—Great Lakes	Integrated Pest Management (IPM) for Schools	Pollution Prevention for Arts Education
Biotechnology Labs	Landscaping	Pork Production
Clean Snowmobiles	Lead	Printing-Flexography
Community Growth	Lean Manufacturing	Printing-Lithography
Construction Science Education	Marinas and Small Boat Harbors	Product Stewardship
Consumer P2	Meat Processing	Public Lands
Dioxin	Mercury	Publicly Owned Treatment Works
Dry Cleaning	Mercury-Automotive	Regulatory Integration
Economic Incentives	Mercury-Dental	Residential Construction
Electric Utilities	Mercury-Health Care	School Chemistry Laboratories and Education Facilities
Electronic Waste	Mercury-Schools	Semiconductor Manufacturing
EMS	Mercury-Thermometers	Ship Building and Repair
EMS in Government	Mercury-Thermostats	Ski Areas
Environmental Management Accounting	Metal Fabrication and Machining	Technology Diffusion
Environmental Measurement	Metal Finishing	Textiles
Environmental Mentoring	Oil and Gas	Wood Furniture Manufacturing
Fiberglass Fabrication	P2 for Area Source Categories	Youth Education
Food Service	P2 for Consumers	

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