

Machine shops, metal stamping facilities, and other small metalworking businesses from the metal fabricating and machining industry generate different types of waste. Following is a brief discussion of proper waste characterization, waste disposal, waste minimization, and pollution prevention. This document does not discuss all of the environmental regulations this industry may be subject to.

In Michigan, various Parts of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), and applicable administrative rules may apply to waste generated by the metalworking industry. The various Parts include:

- Part 111 Hazardous Waste Management (solid and liquid hazardous waste, including used oil)
- Part 121 Liquid Industrial Wastes (management of liquid wastes that are not considered hazardous)
- Part 31 Water Resources Protection (pollution prevention of groundwater and surface water)
- Part 115 Solid Waste Management (non-hazardous solid waste management)
- Part 201 Environmental Response (reporting releases and cleaning up contamination)

In addition, federal regulations may also apply. These include Subtitle C of the Federal Resource Conservation and Recovery Act of 1976, as amended (RCRA) and the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA).

### What Makes Metalworking Waste a Hazardous Waste?

All generators of waste, except households, are responsible for determining if their waste is a hazardous waste. This is called waste characterization. Hazardous waste can either be included on specific lists (F listed, K listed, P listed, and U listed waste) or exhibit hazardous characteristics such as ignitability (waste number D001), corrosivity (waste number D002), reactivity (waste number D003), or toxicity (waste numbers D004-D043). Hazardous waste characteristic determinations can be performed by using knowledge of the waste or by testing the waste. Knowledge includes using information about the products from Material Safety Data Sheets, documentation from manufacturers or other sources, and knowing the process generating the waste. The Toxicity Characteristic Leaching Procedure (TCLP) is the laboratory test used to determine if a waste exhibits a toxicity characteristic.

Some typical wastes generated by metalworking businesses that are, or may be, hazardous waste include: solvents and degreasers (many are F listed), metalworking fluids or “coolants” (could be TCLP hazardous), lubricants (if not recycled, could be TCLP hazardous), paint waste (F listed if mixed with solvents, D001, or could be TCLP hazardous), wastewater pretreatment sludges (could be TCLP hazardous), rags (could be TCLP hazardous), and spent lamps (could be TCLP hazardous). Grinding fines, swarf, shavings, and other metal waste could be TCLP hazardous depending on the metal constituents, such as cadmium and other heavy metals, and cooling lubricants used in the manufacturing process.

### How Must Metalworking Waste Be Managed That Is Hazardous Waste?

Waste found to be hazardous is subject to the Part 111 and RCRA hazardous waste management regulations and must be handled and disposed of in accordance with those regulations. The specific management requirements will depend on a facility’s hazardous waste generator status — large quantity generator (LQG), small quantity generator (SQG), or conditionally exempt small quantity generator (CESQG). See the *Michigan Guide to Understanding Hazardous Waste Management* and other waste management guidance for more information on those requirements.

#### Hazardous Waste Generator Status Categories

In ONE month, the total amount of ALL NONACUTE hazardous waste is generated at the following volumes:

**LQG:** 1,000 kg (2,200 pounds) or more [and/or 1.0 kg (2.2 pounds) or more of acutely and severely toxic hazardous waste is generated.]

**SQG:** 100 kg (220 pounds) to less than 1,000 kg (2,200 pounds). Accumulation amount never meets or exceeds 6,000 kg (13,200 pounds).

**CESQG:** less than 100 kg (220 pounds). Accumulation amount never meets or exceeds 1,000 kg (2,200 pounds).

There are also storage time limits.

## How Must Metalworking Waste Be Managed That Is Not Hazardous Waste?

Many of the wastes generated in the metal-working industry are not hazardous wastes but are regulated as either non-hazardous solid waste (Part 115) or non-hazardous liquid industrial waste (Part 121). It is recommended that metals and other waste be reused. If possible, send metal swarf and shavings off as scrap metal. Non-hazardous solid waste that cannot be recycled must be properly disposed at a licensed solid waste disposal facility such as a landfill or waste-to-energy facility. Check with your local sewer authority to determine if any of your liquid waste can be discharged to their system and any pretreatment requirements you will need to meet. Liquid industrial waste that cannot be discharged to a publicly owned treatment works and is non-hazardous must be accumulated on-site in closed containers and accumulated in an area where the containers are protected from weather, fire, physical damage, and vandals. Secondary containment is recommended because liquid industrial waste must be accumulated in a manner that prevents a release into the soil, surface water, groundwater, or into drains and sewers. See the *Guide to Understanding Secondary Containment Requirements in Michigan* for more information. Label the containers with the name of the contents.

When a generator contracts for the transportation of non-hazardous liquid industrial waste to a designated facility for recycling or disposal, a manifest and a registered and permitted transporter must be used. Used oil that is being sent off-site for recycling is regulated by unique used oil management requirements. See the *Used Oil and Spent Filters* publication for details. Generators shipping only liquid industrial waste are required to obtain a Michigan identification number before they ship the waste if they do not have an EPA identification number. Call the Waste Management Division at 517-373-7314 to obtain a Michigan number.

## What Are Some Pollution Prevention and Waste Minimization Tips?

A common problem in the metalworking industry is liquid runoff from scrap metal containers stored outside that contaminates soils or surface waters. The metal turnings or scrap metal parts usually contain an oily film that, when exposed to precipitation, leak to the environment. This is in violation of Act 451 and can easily be prevented instead of risking a facility's compliance status. Also, prevention is usually less expensive than cleanup costs. Having a storage area with a roof and secondary containment, such as a concrete pad and gutter trench, would prevent this type of contamination from occurring. Consider developing a spill prevention plan if one is not already prepared and required under other regulations. See the *Pollution Incident Prevention Plan (PIPP) Informational Packet and Spill Reporting Requirements* for more information.

Other wastes generated at a facility can be reduced or eliminated by:

1. Segregating waste streams.
  - ✓ Keep non-hazardous liquid or solid waste separate from hazardous waste. This prevents non-hazardous waste from becoming a hazardous waste because it "picked up" or became contaminated with hazardous constituents.
  - ✓ Keep swarf (fine particles) separate from shavings (chips or turnings). This lets the scrap dealer/recycler blend for specific needs of metal smelter or foundry. Discuss with your scrap metal dealer.
  - ✓ Keep steel and cast iron waste separate.
  - ✓ Keep non-metallic waste out of metal waste.
2. Extending the life of metalworking fluids by filtering, centrifuging, skimming oils, and adding biocides. Contact the Michigan Department of Agriculture at 517-373-1087 if using biocides. Or visit their Internet site at [www.mda.state.mi.us](http://www.mda.state.mi.us) regarding microbial pest management.
3. Switching from solvent-based cleaners that generate hazardous waste to non-hazardous, water-based cleaners. Aqueous cleaners are also easier to remove from finer metal particles if metal waste is centrifuged before sent to a smelter or foundry.
4. Using a stamping lubricant that can remain on the piece until the annealing or metal strengthening process, where it is burned off. This eliminates the need for hazardous solvents and alkali cleaners.
5. Improving casting operation to reduce amount of metal waste generated. If using suppliers for parts, get them involved in improving quality and reducing waste.

## Where Can You Get More Information?

The state waste regulations and corresponding waste management guidance publications can be downloaded off the Internet at [www.deq.state.mi.us/wmd](http://www.deq.state.mi.us/wmd) or [www.deq.state.mi.us/ead](http://www.deq.state.mi.us/ead). If you do not have Internet access, call 800-662-9278 for information on how to order the regulations or to obtain publication copies. Discuss your specific requirements with Waste Management Division staff at your DEQ District Office.

- ✓ Direct questions about pollution prevention (P2) to the Environmental Assistance Division.
- ✓ Direct questions about spill reporting and cleanups to the Environmental Response Division.
- ✓ See more metal machining P2 and best management practices at [www.waynecounty.com/rougeriver/techtopy/nonpoint/bmps/metal.pdf](http://www.waynecounty.com/rougeriver/techtopy/nonpoint/bmps/metal.pdf).
- ✓ See the U.S. EPA "Profile of the Fabricated Metal Products Industry" notebook for compliance assistance and P2 ideas at [es.epa.gov/oeca/sector/index.html](http://es.epa.gov/oeca/sector/index.html).

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