

Checklist for Metal Fabrication and Machining Departments

Items/Processes of Concern	Toxic Metal	Dangerous Waste	Preferred Alternatives and Best Management Practices ¹
Metal-working fluid	X	X	<ul style="list-style-type: none"> • Use non-chlorinated metal-working fluids. • Use sulfur-free metal-working fluids. • Use dry machining. • Monitor and log metal-working fluid concentration, odor, turbidity, refractive index, alkalinity, conductivity, emulsion stability, or pH to avoid excess concentrate and biological growth. • Keep pH above 8.5. • Periodically clean and disinfect metal-working fluid sumps and trenches. • Consider tramp oil skimmers to keep metal-working fluid aerated and free of biological organisms. • Use pumps, spigots and funnels to transfer metal-working fluids. • Use distilled or de-ionized water to keep the concentration of dissolved minerals low in metal-working fluids.
Welding	X	X	<ul style="list-style-type: none"> • Use lead-free solders. • Use cadmium-free filler metals when fluxing. • Use alternative fluxes to reduce volatile organic compound (VOC) emissions or avoid post cleaning. • Optimize flux delivery. • Optimize heating of filler metal.
Metal scrap and chips	X		<ul style="list-style-type: none"> • Filter chips to prevent contamination of the metal-working fluid. • Drain chips of metal-working fluid before disposal. • Store chips and scrap metal under cover. • Recycle chips and scrap metal. • If chips and scrap metal are not recycled, manage as dangerous waste.
Cleaning solvents		X	<ul style="list-style-type: none"> • Use non-chlorinated solvents and thinners. • Use methyl alcohol (methanol) for paint stripping. • Use a spray bottle or plunger can to deliver solvents where they are needed. • Segregate solvent wastes, distill, reuse, or dispose as dangerous waste. • Use solvents until they lose their effectiveness, as opposed to when they look dirty. • Extend solvent life by filtering solids.
Glues, epoxies, adhesives		X	<ul style="list-style-type: none"> • Use low or no-solvent adhesives, such as hot melt, heat seal, aqueous-based or polyvinyl alcohol adhesives. • Evaluate your gluing operations to determine if too much is being mixed.

¹ Preferred alternatives are shown in **bold font**.

Items/Processes of Concern	Toxic Metal	Dangerous Waste	Preferred Alternatives and Best Management Practices ¹
Floor cleaning	X	X	<ul style="list-style-type: none"> • Use biodegradable or water-based floor cleaning detergents with a pH of 6.0 to 10.5 at point of use. • Avoid the use of detergents with emulsifying agents that reduce the effectiveness of the oil/water separator. • Avoid the use of detergents that could cause waste cleaning water to designate as dangerous waste (e.g., detergents with halogenated or aromatic compounds). • Use absorbent pads or trays to catch leaks or clean up spills to prevent waste from going down the drain. • Use oil/water separators to prevent oily wastes from being discharged down the drain. • Request approval from the local waste water treatment facility before discharging waste water down the drain.
Parts washer	X	X	<ul style="list-style-type: none"> • Use an aqueous parts cleaner. See Automotive and Equipment Repair Department. • Use non-halogenated organic solvent. • Recycle spent solvent cleaner. • Operate solvent sinks properly, use drip trays, and allow more drainage time. • Contract with a service company to maintain solvent sink.
Shop towels		X	<ul style="list-style-type: none"> • Use cloth towels that can be laundered and reused. • Keep used wipes and towels in closed containers and label appropriately. • Reduce the size of the shop towel or wipe to reduce the amount of solvent used at the same time. • Reuse shop towels or wipes for repetitive tasks. • Don't dip shop towels or wipes in open solvent containers. • Limit the amount of solvent available for use each day. • Towels that are not laundered should be managed as the material they were used to absorb.
General			
General inventory			<ul style="list-style-type: none"> • Use Environmentally Preferable Purchasing. • Review Material Safety Data Sheets (MSDSs) for hazardous substance information. • Properly store hazardous substances. • Review curriculum for potential hazardous substance reductions.
All generated waste streams Spilled products Unused and expired products	X	X	<ul style="list-style-type: none"> • Use chemical inventory and tracking software to centralize product ordering, improve product tracking, storage requirement, waste management, reduce disposal of expired product, and minimize duplicate orders to prevent unnecessary disposal. • Identify all potential waste streams and establish designation procedures to determine if a hazardous waste or non-hazardous waste. • Implement dangerous waste designation, collection, accumulation, and disposal procedures for all waste streams. • See Common Dangerous Waste Compliance Issues.

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Batteries Fluorescent lamps Mercury-containing equipment	X	X	<ul style="list-style-type: none"> • Use rechargeable batteries. • Use LED lamps when appropriate. • Use low-mercury fluorescent lamps. • Remove and/or replace mercury-containing equipment and recycle as Universal Waste. • Implement a battery recycling program and recycle as Universal Waste. • Implement a whole-lamp recycling program and recycle as Universal Waste. • If not recycled as Universal Waste: collect, manage, and dispose of as dangerous waste.
Computer and electronic equipment, and appliances	X	X	<ul style="list-style-type: none"> • Use rechargeable batteries. • Use LED lamps when appropriate. • Use low-mercury fluorescent lamps. • Remove and/or replace mercury-containing equipment and recycle as Universal Waste. • Implement a battery recycling program and recycle as Universal Waste. • Implement a whole-lamp recycling program and recycle as Universal Waste. • If not recycled as Universal Waste: collect, manage, and dispose of as dangerous waste.
Other:			
Other:			

Notes, Comments, Follow-up

Resources

Common Dangerous Waste Compliance Issues: http://www.ecy.wa.gov/programs/hwtr/P2/schoolsAndLabs/tool/dw_issues.html

Dangerous Waste Basics: http://www.ecy.wa.gov/programs/hwtr/manage_waste/DangerousWasteBasics.html

Find a Hazardous Waste Service Provider: <http://www.ecy.wa.gov/programs/hwtr/hwsd/index.html>

Local Source Control Technical Assistance Manual - Auto Body Pilot <https://fortress.wa.gov/ecy/publications/SummaryPages/0804017.html>

Pollution Prevention for Metal Fabricators: <http://www.ecy.wa.gov/programs/hwtr/p2/sectors/fabsect1.html>

Shop Guide for Dangerous Waste Management, Ecology publication #09-04-015, <https://fortress.wa.gov/ecy/publications/SummaryPages/0904015.html>

Treatment by Generator: <http://www.ecy.wa.gov/programs/hwtr/P2/schoolsAndLabs/tool/TBG.html>

Universal Waste Rule for Batteries, WAC 173-303-573(2): <https://fortress.wa.gov/ecy/publications/SummaryPages/98407a.html>

Universal Waste Rule for Lamps, WAC 173-303-573(5): <https://fortress.wa.gov/ecy/publications/SummaryPages/98407c.html>

Universal Waste Rule for Mercury-containing Equipment, WAC 173-303-573(3,4): <https://fortress.wa.gov/ecy/publications/SummaryPages/98407b.html>