

Hazardous Waste Generation and Management in the Automotive Industry

Presented by:

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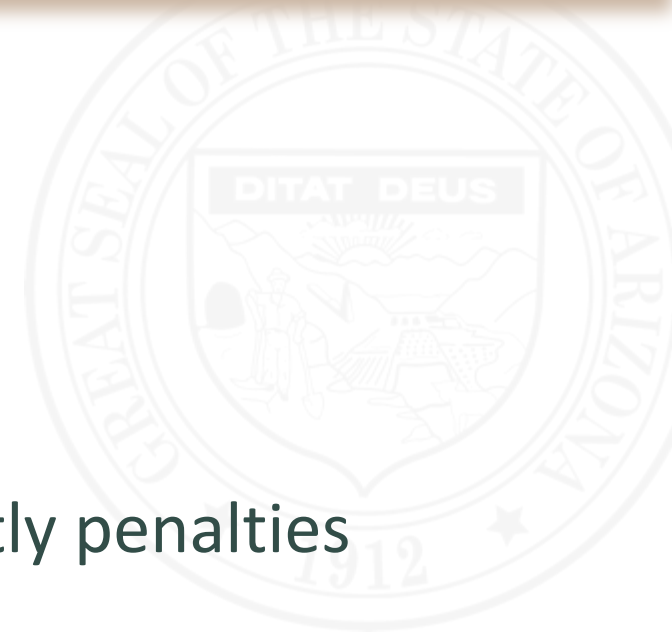
Clean Air, Safe Water,
Healthy Land for Everyone



- What is RCRA?
- How are hazardous wastes identified?
- How do you (the generator) determine your generator status?
- What are the common waste streams generated in the automotive industry?
- Once waste streams are identified, what are the remaining steps in responsible hazardous waste management?
- Summary of shop management practices
- What solid wastes are often generated in the automotive industry?

Benefits of Proper Hazardous Waste Management

- Reduces potential for environmental degradation
- Provides safer working environments for staff
- Saves money with waste minimization efforts
- Regulatory compliance ensures the avoidance of costly penalties
- Builds customer confidence

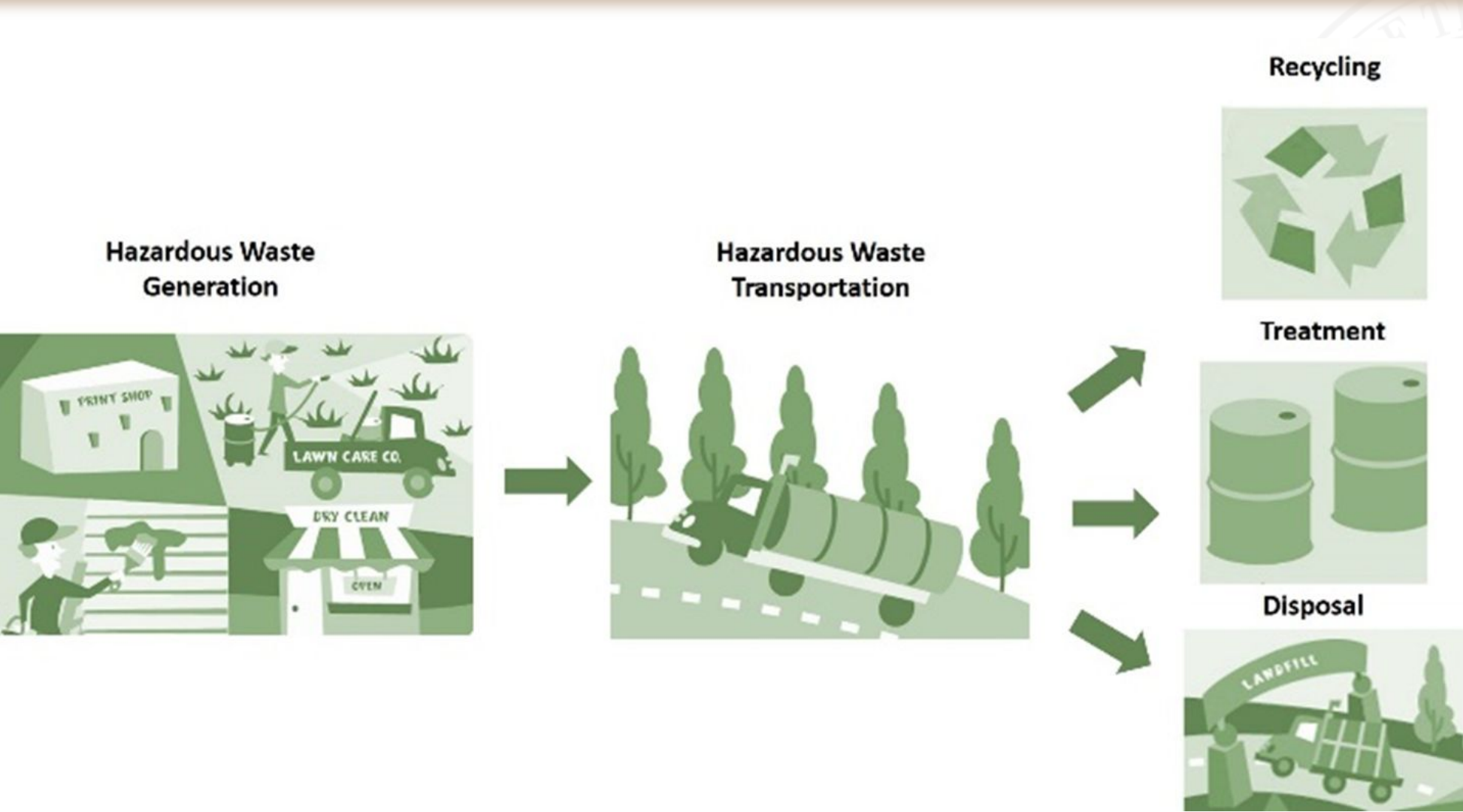


Resource Conservation and Recovery Act (RCRA)

- Federal law enacted to provide EPA authority to regulate management of hazardous waste (1976)
- Identifies regulated listed and characteristic hazardous wastes
- Defines three tiers of generator status
- Generator status determines applicable regulations a facility must adhere to



Cradle to Grave Management Responsibility



Is my waste hazardous?

- Is it a solid waste? (40 CFR § 261.2)
 - Solid waste: any material which is abandoned, recycled or considered inherently waste-like
- Is the waste specifically excluded from RCRA regulations? (40 CFR § 261.4)
 - Scrap metal (regulations apply)
 - Legitimately recycled, reused, or reclaimed hazardous materials known as “hazardous secondary materials” (HSM)
 - Used oil (unless hazardous due to introduced constituent)
 - Solvent contaminated wipes (regulations apply)
- Is the waste a “listed” hazardous waste?
 - F-listed and K-listed wastes : derived from manufacturing and industrial processes
 - P-listed and U-listed wastes: listed **pure** commercial grade formulations of unused chemicals
- Does the waste exhibit a characteristic of hazardous waste?
 - Ignitability, Corrosivity, Reactivity, Toxicity

Listed wastes: specific manufacturing processes and industries and discarded chemical products.

- F Listed Wastes (40 CFR section 261.31): wastes from industrial and manufacturing processes
 - Spent solvent wastes can be F-listed due to their ignitability
 - F001-F005
- P and U Listed Wastes (40 CFR section 261.33): unused pure commercial chemical products



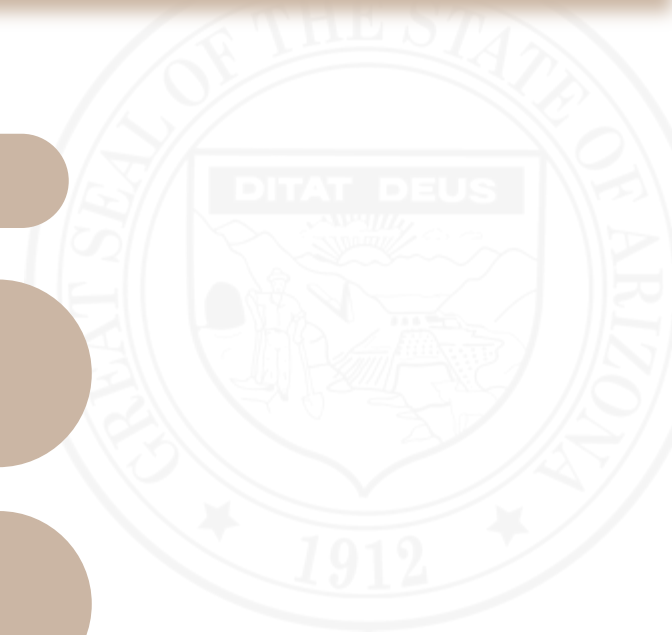
Characteristic Wastes

- **Ignitability (D001):** flashpoint below 140 degrees Fahrenheit
- **Corrosive (D002):** pH < 2 or > 12.5
- **Reactive (D003):** unstable under normal conditions
- **Toxic (D004-D043):** regulated in mg/L
 - Toxic contaminants listed in 40 CFR § 261.24(b)



Toxic Hazardous Wastes You May See

HW No.	Hazardous Waste	Regulatory Level (mg/L)
D008	Lead	5.0
D035	Methyl Ethyl Ketone (MEK)	200.0
D007	Chromium	5.0
D018	Benzene	0.5



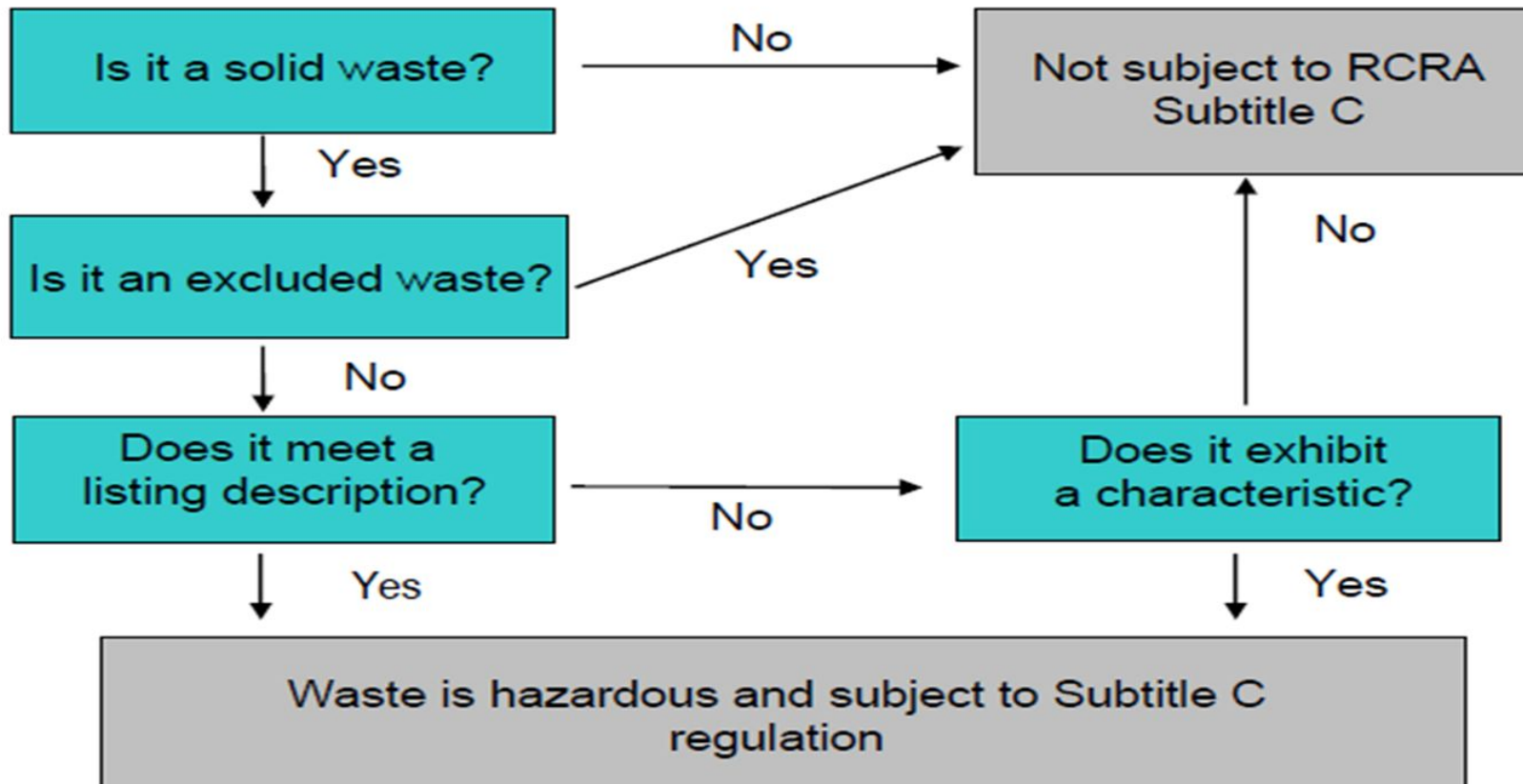
Generator Status Categories

- Very Small Quantity Generator (VSQG)
 - ≤ 220 lbs generated per month
- Small Quantity Generator (SQG)
 - >220 lbs and $<2,200$ lbs generated per month
- Large Quantity Generator (LQG)
 - $\geq 2,200$ lbs generated per month



Waste Determinations

- First Step: Identify your wastes
 - SDS, Generator knowledge, process knowledge, analytical testing
 - Identify every waste stream generated by the facility



Paint Thinner

SECTION 1. IDENTIFICATION

Product Identifier	Paint Thinner
Other Means of Identification	13-221, 13-224, 13-228, 13-321, 13-324, 13-324HD,, 13-324TAR, 13-325, 13-328, 13-341, 13-344, 13-371, 13-374, 13-374HD, 13-375, 14-534, 14-534IMDG, 14-535, 14-538, 14-538UN, 14-573, 23-229, 23-329, 23-329UN, 23-379, 23-379-M, 24-539, 24-539-1000, 33-319UFA, 33-321ACE, 33-321D, 33-321FSEXP, 33-321H, 33-321PAEXP, 33-321PLYEXP, 33-321PP, 33-321RONA, 33-324ACE, 33-324CL, 33-324D, 33-324FSEXP-PRO, 33-324H, 33-324PAEXP-PRO, 33-324PLYX-PRO, 33-324PP, 33-324RONA, 33-324TH, 33-325FSEXP-PRO, 33-325PAEXP-PRO, 33-325PP, 33-326PLYX-PRO, 33-328FSEXP-PRO, 33-328PAEXP-PRO, 33-328PLYX-PRO, 33-328UNI, 33-371H, 33-374H, 33-375H, 34-531C, 34-531FSEXP, 34-531H, 34-531PAEXP, 34-531WDS, 34-534C, 34-534FSEXP-PRO, 34-534H, 34-534PAEXP-PRO, 34-534PLYX-PRO, 34-534RONA, 34-534WDS, 34-535C, 34-535FSEXP-PRO, 34-535H, 34-535PAEXP-PRO, 34-535PLYX-PRO, 34-535RONA, 34-535STE, 34-535WDS, 34-538FSEXP-PRO, 34-538H, 34-538PAEXP, 34-538PAEXP-PRO, 34-538PLYX-PRO, 34-539UFA, 34-573C-CL, 34-573H, 34-574HH, 83-228, 83-229, 83-321, 83-324, 83-326, 83-328, 83-341, 83-344, 84-534, 84-535, 84-538, 84-539, 14-802, 14-804, 34-802SI, 84-802, 84-802ISR, 84-804ISR, 34-803WDS, 34-802WDS, 34-804WDS, 34-802SIEXP, 13-348LAU, 14-402, 14-535UFA, 14-802EXP, 34-802SIB40, 24-539LAU, 24-539UN, 33-228FN, 33-324ZIPEXP, 34-573WDS-CL, 83-229-40, 83-329SHER, 83-329DU, 84-538-40, 84-539-40, 84-531, 53-325, 53-344, 53-371, 53-374HD, 53-375, 53-324HD, 53-341, 53-328, 53-321, 53-471
Other Identification	Solvent, Varsol, Citronella, Charcoal Lighter Fluid, Kerosene, Lamp Oil, Mineral Spirits
Recommended Use	Please refer to Product label.
Restrictions on Use	None known.
Manufacturer/Supplier Identifier	Recochem Inc., 850 Montee de Liesse, Montreal, QC, H4T 1P4, Compliance and Regulatory Department, 905-878-5544, www.recochem.com
Emergency Phone No.	CANUTEC, 613-996-6666, 24 Hours
SDS No.	1777

SECTION 2. HAZARD IDENTIFICATION

Classification

Flammable liquid - Category 3; Skin irritation - Category 2; Eye irritation - Category 2A; Germ cell mutagenicity - Category 1B; Carcinogenicity - Category 1B; Specific target organ toxicity (single exposure) - Category 3; Specific target organ toxicity (repeated exposure) - Category 2; Aspiration hazard - Category 1; Aquatic hazard (Chronic) - Category 2

Label Elements



Signal Word:
Danger

Product Identifier:	Paint Thinner - Ver. 1	SDS No.:	1777
Date of Preparation:	August 21, 2017		
Date of Last Revision:	June 06, 2019	Page	01 of 11



Super Solvent Safety Data Sheet

according to the Hazardous Products Regulation (February 11, 2015)
Date of Issue: 06/09/2017 Revision date: 06/09/2017 Version: 1.0

SECTION 1: Identification

1.1. Product Identifier	Product name : Super Solvent
1.2. Recommended use and restrictions on use	Recommended use : Solvent
1.3. Supplier	Distributor
Supplier	Satellite City Instant Glues 3130 Regional Parkway Unit B Santa Rosa, CA 95403 - USA T : 1-800-766-0062 (Mon-Fri, 9am to 5pm PT)
1.4. Emergency telephone number	Emergency number : (860) 571-5100

SECTION 2: Hazard identification

2.1. Classification of the substance or mixture	
Classification (GHS-CA)	
Flam. Liq. 3	H226
Acute Tox. 4 (Oral)	H302
Acute Tox. 4 (Inhalation:vapour)	H332
Carc. 2	H351
STOT RE 2	H373
PHNOC 1	PHNOC
2.2. GHS Label elements, including precautionary statements	
GHS-CA labelling	
Hazard pictograms (GHS-CA)	
Signal word (GHS-CA)	: Danger
Hazard statements (GHS-CA)	: H226 - Flammable liquid and vapour H302+H332 - Harmful if swallowed or if inhaled H351 - Suspected of causing cancer H373 - May cause damage to organs through prolonged or repeated exposure PHNOC - May cause an explosion under conditions of shock and/or friction
Precautionary statements (GHS-CA)	: P201 - Obtain special instructions before use P202 - Do not handle until all safety precautions have been read and understood. P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking P233 - Keep container tightly closed P240 - Ground/bond container and receiving equipment P241 - Use explosion-proof electrical/ventilating/lighting equipment P242 - Use only non-sparking tools P243 - Take action to prevent static discharges P260 - Do not breathe dust/fume/gas/mist/vapours/spray P264 - Wash hands, forearms and face thoroughly after handling P270 - Do not eat, drink or smoke when using this product P271 - Use only outdoors or in a well-ventilated area P280 - Wear protective gloves/protective clothing/eye protection/face protection P308+P313 - IF exposed or concerned: Get medical advice/attention P301+P312 - IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell P330 - Rinse mouth P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing P312 - Call a POISON CENTER or doctor if you feel unwell P403+P235 - Store in a well-ventilated place. Keep cool P405 - Store locked up P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation

Is it hazardous?

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Basic Physical and Chemical Properties

Appearance	Available in these colours: Clear, Yellow, Gold, Red, Blue, Green, Amber, Pink, Orange, Purple, White, Brown, Grey, Teal.
Odour	Hydrocarbon
Odour Threshold	Not available
pH	Not available
Melting Point/Freezing Point	-76 °C (-105 °F) (melting); -76 °C (-105 °F) (freezing)
Initial Boiling Point/Range	159 - 195 °C (318 - 383 °F)
Flash Point	43 °C (109 °F) (closed cup)
Evaporation Rate	0.1 (n-butyl acetate = 1)
Flammability (solid, gas)	Not applicable
Upper/Lower Flammability or Explosive Limit	5.6% (upper); 0.8% (lower)
Vapour Pressure	3.98 - 4.50 mm Hg (0.53 - 0.60 kPa) at 25 °C
Vapour Density (air = 1)	5
Relative Density (water = 1)	0.788 at 15 °C
Solubility	Insoluble in water; Not available (in other liquids)
Partition Coefficient, n-Octanol/Water (Log Kow)	Not available
Auto-ignition Temperature	260 °C (500 °F)
Decomposition Temperature	Not available



Section 3. Composition/information on ingredients

Substance/mixture : Substance

Other means of identification : Not available.

CAS number/other identifiers

CAS number : 78-93-3

Ingredient name	% by weight	CAS number
Methyl Ethyl Ketone	100	78-93-3

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

Date of issue/*Date of revision* : 9/7/2017 *Date of previous issue* : 4/24/2017 *Version* : 3 2/13

Common Ways Hazardous Waste is Generated

- Spills
- Expired chemicals
- Waste fluids
- Contaminated materials used in daily processes or spill clean up material



Any questions so far?





Specific Processes

Key functions of the automotive industry where hazardous waste generation is possible

Rustproofing and Paint Removal

Spent solvents are commonly used in the rustproofing process.

- Look for solvents such as:

- Toluene
- Acetone
- Benzene (D018)
- Xylene
- Isopropyl Alcohol
- Methanol
- MEK (D035)
- Methylene chloride

- **Do NOT mix hazardous wastes with non-hazardous wastes**

- **Collect run-off and dripped liquids from rustproofing.**



Autobody Painting

- Expired/off-spec paints
 - Metals such as chromium and lead
 - Words such as acrylic, epoxy, polyurethane and polytetrafluoroethylene
- **Paint booth filters collect overspray**
- Spent solvents used for cleaning equipment used in the paint application process
- **Never dispose of liquid paint with your solid waste collection service provider.**

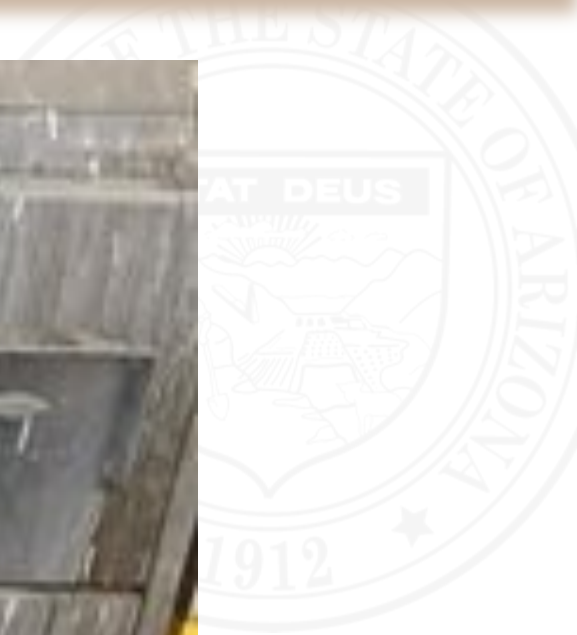


Parts Washing

- Often utilizes solvents
- Ignitable
- Spent solvents may contain hazardous constituents
- Generation amounts can vary



Parts Washing Central Accumulation Area (CAA)



Parts Washing

- Use as little solvent as necessary and consider using aqueous or alkaline cleaners
- Confine and collect dripped solvent
- Do not conduct parts washing over porous surfaces
- Consider self-contained recirculating solvent sinks
 - Spent solvents can be replaced by contracted service company



Air Conditioner Maintenance

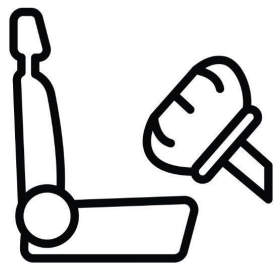


- Dichlorodifluoromethane (CFC-12) : Used in vehicle a/c units until mid-1990s. Unused CFC-12 from a/c repair/replacement is a listed hazardous waste (U075).
- EPA Guidance for a/c Removal: Choosing and Using a Retrofit Refrigerant for a CFC-12 MVAC.



Airbag Removal and Replacement

- Undeployed airbag inflators and modules
- Ignitable and reactive
- Airbag waste exemption available if specific conditions are met (40 CFR section 261.4(j))



Battery Replacement

- Lead-acid Batteries
- Electric Vehicle Batteries
- Safe storage
- Secondary containment
- Cracked or leaking batteries = hazardous waste
- Universal Waste Management under the “Universal Waste” rule in 40 CFR part 273 or under the requirements of 40 CFR part 266 subpart G



Flushing, rinsing and testing solutions may contain lead contaminants which can be harmful to the public and environment.

- Look for:
 - lead solder
 - caustic-tank and test-tank solutions (may be corrosive or contain heavy metals)
- Employ lead-free solder.
- Reclaim solvents when possible.
- Collect spent solvents and store them with compatible wastes.
- Collect flushing fluid for reuse.
- Do not perform soldering over drip tanks.

Scrap Metal

Scrap metals have the potential to be hazardous due to high levels of cadmium, chromium and lead.

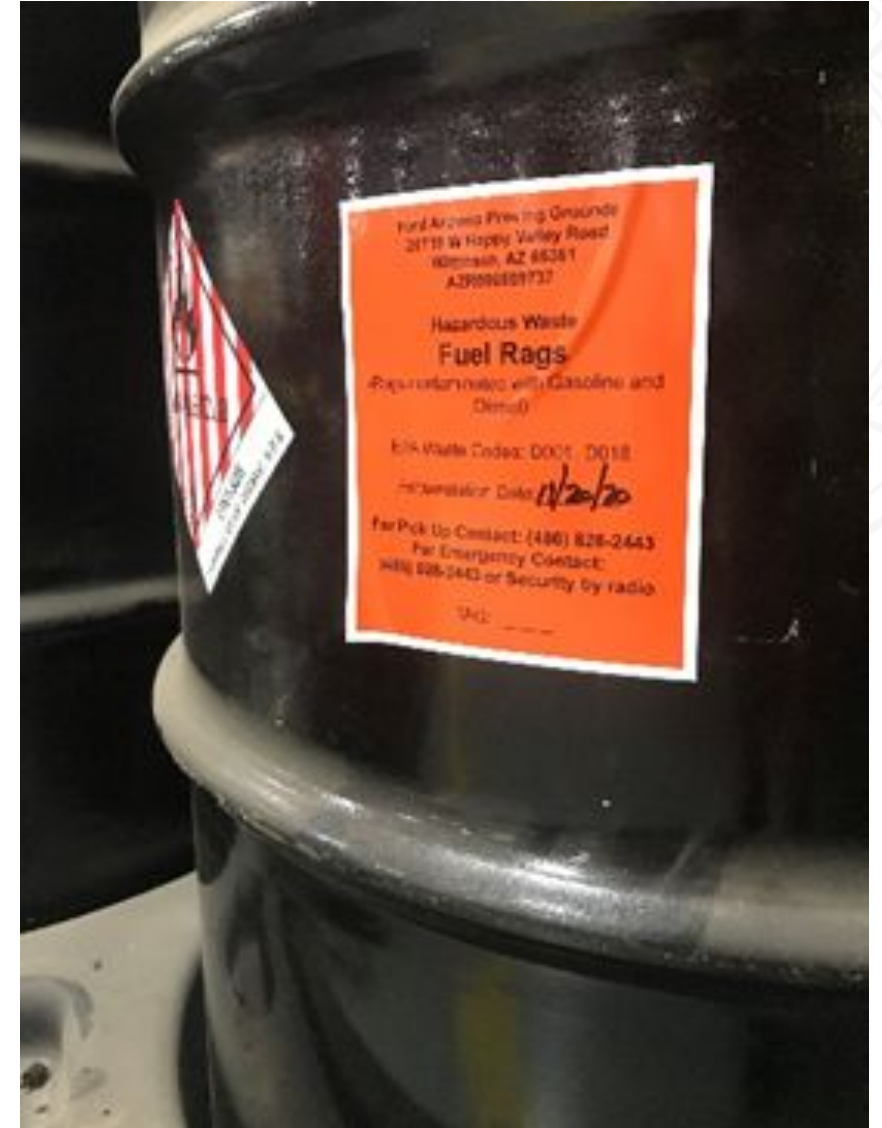
- Dust and metal shavings
- Scrap metals should not be disposed of as non-hazardous waste.
- Scrap metal can be recycled or disposed of as hazardous waste.



Spent Fuel

Ignitability (D001) characteristic

- Always for gasoline
- Possible for other fuels
- Do not mix spent fuels with any other wastes.
- Exemptions may apply (reclamation, used for its intended purpose)
- Not listed, but may be characteristic



Oil and Fluid Replacement

- Used oil
 - Ethylene glycol (antifreeze)
 - Consider potential contamination from cadmium, chromium, lead and gasoline
-
- Never change fluids over porous surfaces
 - Utilize drip pads and transfer fluids to secure storage areas after each shift/day
 - Do NOT mix fluids or dispose of them down the drain
 - Do not mix potentially hazardous wastes

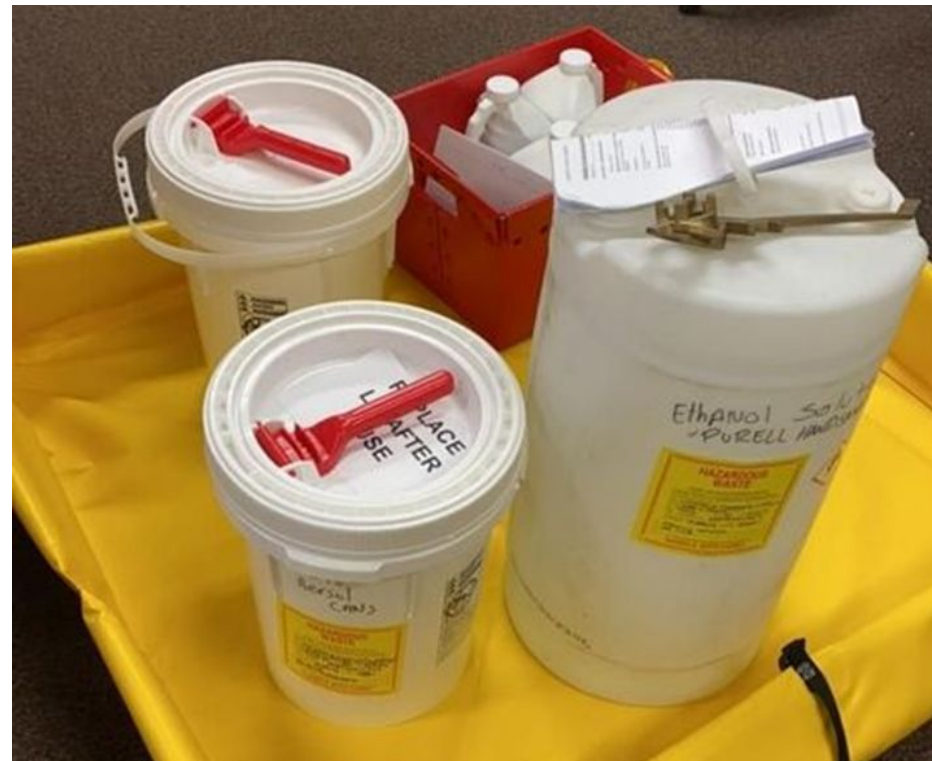


Universal Waste: Batteries



Universal Waste: Aerosol Cans

Aerosol cans may be managed as universal waste or hazardous waste.



Aerosol Can Fact Sheet <https://www.azdeq.gov/hazwaste-resources>

- **1-year** accumulation
- Must be properly containerized
- Containers must have the proper labels
- Must maintain a method of tracking accumulation times
- Damaged batteries and broken mercury containing bulbs must be separately managed as **hazardous waste**.
- See <https://www.epa.gov/hw/universal-waste>
- See [Universal Waste Management Fact Sheet](#) [FACT SHEET - ADEQ](#)

Solvent Contaminated Wipes Exclusion

Wipe: a woven or non-woven shop towel, rag, pad, or swab made of wood pulp, fabric, cotton, polyester blends, or other material. (40 CFR section 260.10)

- May be reusable or disposable

What solvents qualify for exclusion?

- Solvents listed under F001-F005, excluding trichloroethylene
- Non-listed solvents which are hazardous only for ignitability

What wipes do NOT apply?

- Wipes which are hazardous for any reason other than ignitability
- Wipes that contain listed hazardous wastes other than solvents

EPA guidance on the Solvent-Contaminated Wipe Ruling may be found [here](#).

Solvent Contaminated Wipes Storage Requirements

- Container must remain closed at all times, except when rags are being added
- Labeled as ‘Excluded Solvent Contaminated Wipes’
- Container must be able to hold “free liquids”
- Wipes may be accumulated for up to 180 days from the start of accumulation

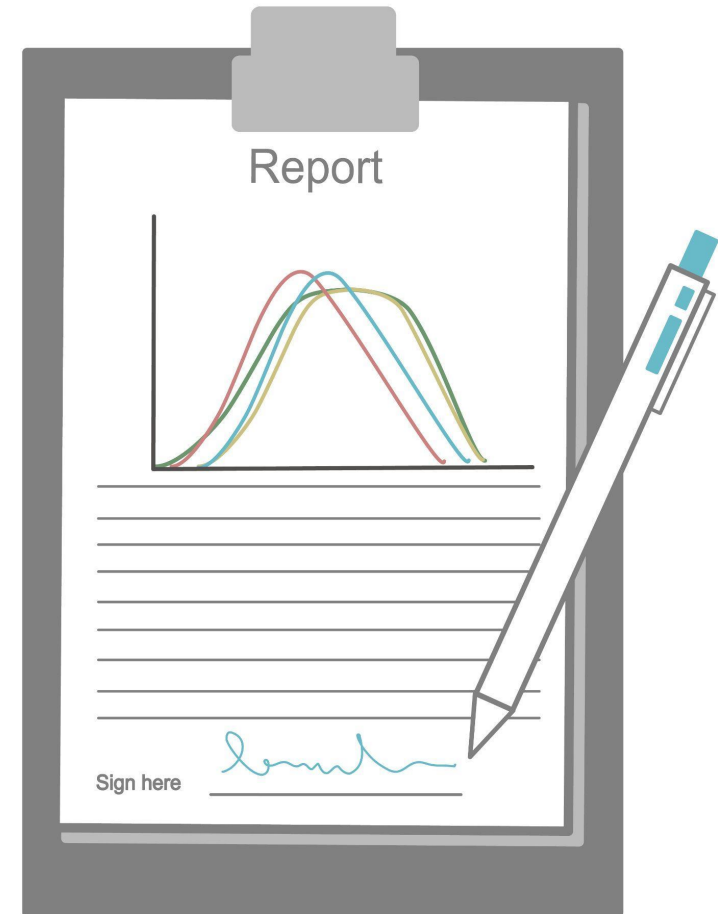


Responsible Hazardous Waste Management Steps



Step 1: Identify Your Waste Streams

- SDS: Online or print versions are provided by most chemical manufacturers
- Generator Knowledge: Waste Determination Report
- Analytical Testing



Step 2: Count your Waste Generated

- **Determine your facility's generator status from monthly hazardous waste generation levels (LQG, SQG, VSQG).**
- **Most automotive industry businesses oftentimes qualify as VSQGs or SQGs, but LQG generation is possible.**
- **Regulatory requirements depend on a facility's generator status.**
- **A facility's generator status may change from year to year and it is the responsibility of the generator to properly report changes in generator status.**

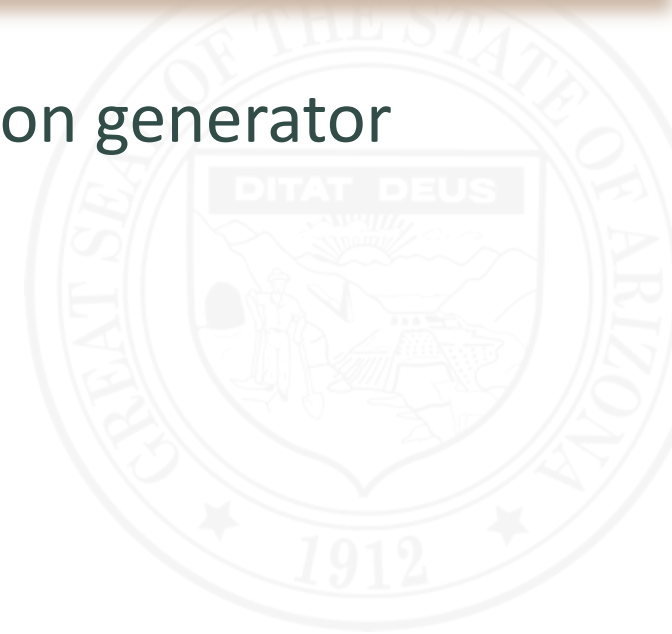
Register and Report Generated Waste

- EPA ID#s are required for SQGs and LQGs.
- Use myDEQ to register with the correct generator status.
- Stay up to date on registration fees and generation reporting.
- Contact Hazwastedata@azdeq.gov with generation and reporting questions.



Implement Emergency Planning

- Emergency planning requirements are dependent upon generator status.
- LQGs
 - Implement Contingency Plan and Quick Reference Guide
 - Annually train employees on emergency procedures
 - Attempt to make arrangements with local authorities
- SQGs
 - Annually train employees on emergency procedures
 - Attempt to make arrangements with local authorities
 - Post information including emergency contacts and spill kit and equipment locations anywhere hazardous waste is stored



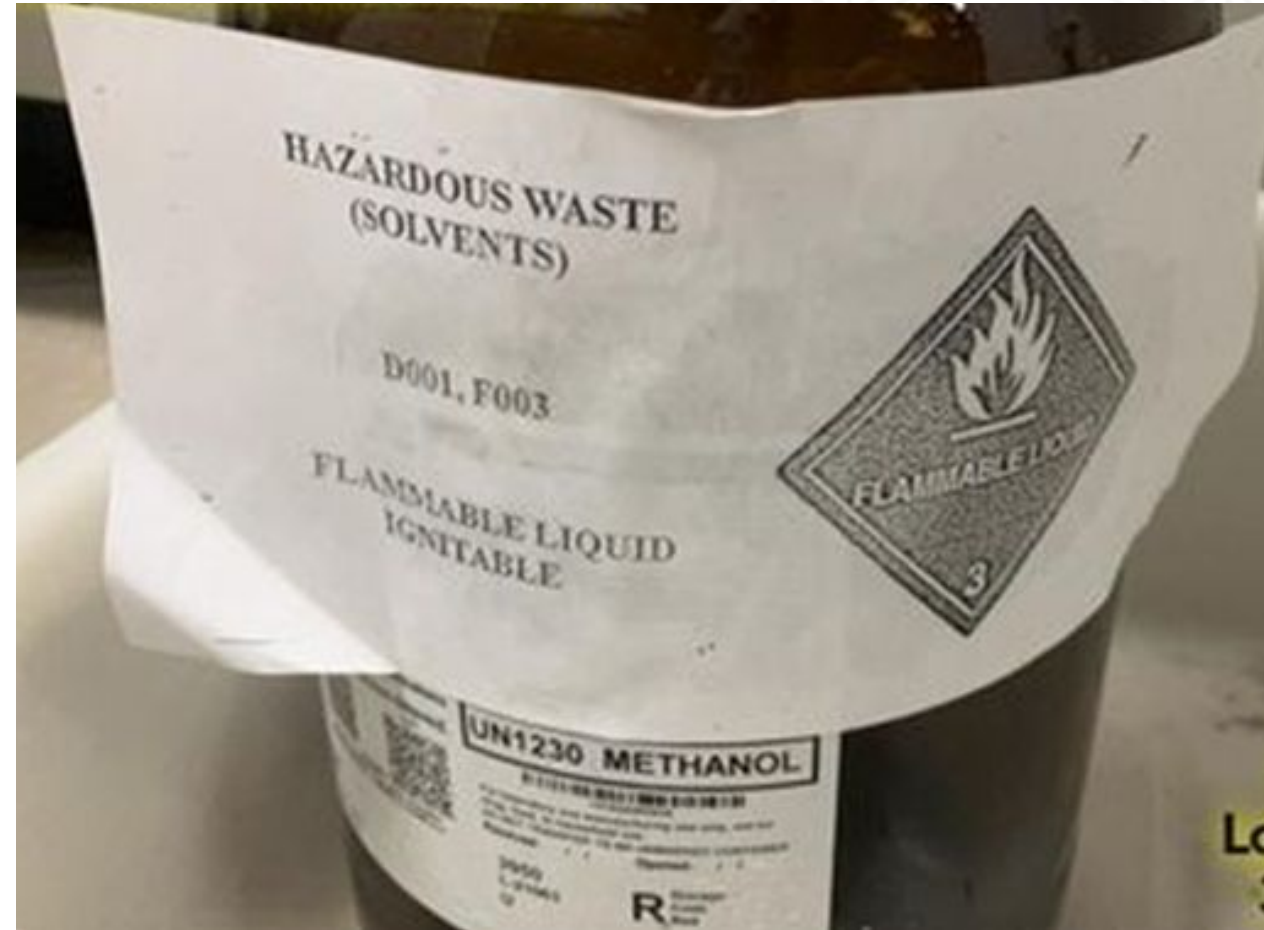
Properly Train Staff

- HAZMAT DOT - employees signing manifests
- Emergency Training
- RCRA Training
- Hazardous waste training - all employees operating around hazardous material/waste



Correctly Store Waste

- Satellite Accumulation Areas (SAAs)
 - At/near point of generation
 - Labeled as “hazardous waste”
 - Indication of the hazard of the contents
 - 55 gal max. capacity
- Central Accumulation Area (CAAs)
 - Accumulation start date + SAA label requirements



Establish Transporters and Properly Manifest Waste

- Employees signing manifests must have completed HazMat DOT training within the last 3-years.
- The generator is responsible for the delivery of your waste to final destination.
- Accumulation and shipping timelines apply.
- If a shipment is nearing the delivery deadline, contact the transporter and/or destination facility.
- Save all final manifests with the destination facility's signature for 3-years.

- Store wastes in compatible containers.
- Label containers as “hazardous waste” with an indication of the hazard of the contents.
- Keep all containers sealed except when immediately in use.
- Routinely check storage cabinets for expired products eligible for proper disposal.



Shop Management Practices: Solvents

- Increase drainage time after washing or applying solvents.
- Do not use solvents for cleaning floors.
- Consider non-hazardous cleaners and degreasers.



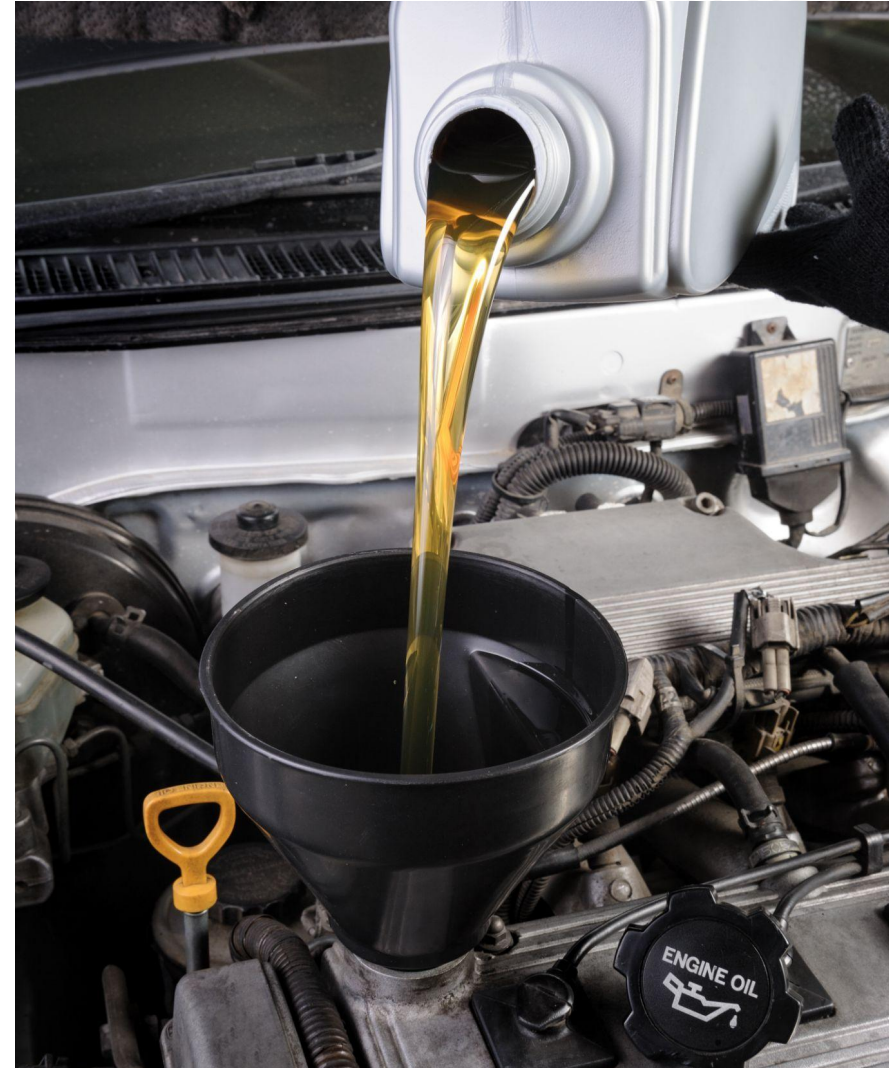
Shop Management Practices: Pollution Prevention

- Use liquids over non porous surfaces and collect drippings.
- Empty day cans and drip pans at the end of each shift.
- Utilize grit and oil separators before discharging wastewaters.



Shop Management Practices: Waste Minimization

- Use long lasting oils to reduce replacement frequency.
- Collect radiator flushing fluid for reuse when possible.



Questions and Further Resources



- EPA Small Business Hazardous Waste Management Guide
 - [Managing Your Hazardous Waste: A Guide for Small Businesses | US EPA](#)
- Haz Waste Questions?
 - hazardouswasteicu@azdeq.gov
- Solid Waste Questions?
 - swcompliance@azdeq.gov
- MyDEQ Access
 - <https://azdeq.gov/mydeq>



Thank you!

Haz Waste Questions?

hazardouswasteicu@azdeq.gov



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Healthy Land for Everyone**
