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Waste Management for Engine Repair Shops in Alaska

Best practices to protect workers,
your community,
and the environment



Training Overview

- Introduction
- Hazardous waste identification
- Waste generator classification
 - Large, small, and conditionally exempt
 - Storage, accumulation, and treatment
- Special shop waste
 - Aerosol cans
 - Antifreeze
 - Lead /acid batteries
- Used oil
 - Burning at your shop
 - Burning at another location
 - Recycling
- Universal waste
 - Bulb crushers
- Tires
- Recycling
- Recordkeeping
- Tips to reduce waste
- Backhaul programs
- Contact information
- Green Star resources

Resource Conservation and Recovery Act (RCRA)

- National hazardous waste law
- Passed by Congress in 1976
- Was established to prevent contaminated sites
- It set standards for management of all waste and used oil



Role of the EPA

EPA Region 10:

- Administers the RCRA hazardous waste program in the State of Alaska and on tribal lands
- Oversees state RCRA programs in Idaho, Oregon, and Washington
- Is based in Seattle, WA
- Has operations office located in Anchorage, AK



Why should I care about hazardous waste?

- Hazardous waste in your shop can be harmful to you and your environment
 - Perchloroethylene and other solvents may cause cancer and lung disease
 - Metals bioaccumulate. Low exposure over time can poison you and they are deadly to fish



Motor oil from one oil change dumped in a drain or on the ground can contaminate a million gallons of fresh water



Cost of Waste Management

\$1200 to ship a 55 gallon drum

Over \$100 a month for
containers, labels, and time
to manage shop waste

Less waste = cost savings

Proper management =
cost savings



Set Up a Good Waste Management System

1. Identify all wastes generated
 - Determine which ones are hazardous waste
2. Determine pounds of HW per month
 - Keep records
3. Identify options for getting rid of waste including used oil
4. Identify HW management standards
5. Train staff on waste management
6. Minimize waste/recycle

What is a Hazardous Waste?

- Anything you can no longer use or are throwing away that has any of the hazardous characteristics identified by EPA



Hazardous Waste

TRIC Characteristics

- **T**oxic – Harmful to living things
 - Examples: Lead, mercury, cadmium, chromium, benzene, methyl ethyl ketone, perchlorethylene
- **R**eactive – Explode or react violently with water
 - Examples: Aerosol cans, dynamite, sodium metal, cyanides
- **I**gnitable – Flash point less than 140F, compressed gases
 - Examples: Cleaning solvents, paint thinner, waste gasoline, acetylene tanks(welding gas)
- **C**orrosive – pH 2.0 or less or 12.5 or more
 - Examples: Battery acid, corrosive cleaners (such as caustic radiator cleaner)

EPA gives characteristic TRIC wastes a “D” waste code
Ignitable waste = D001

Listed Hazardous Waste

EPA has made lists of wastes that will always exhibit one or more of the four **TRIC** characteristics:

- The most common listed shop wastes come from cleaning products containing certain halogenated solvents, xylene, toluene, methyl ethyl ketone (MEK), or methanol. These are on the F list.

Examples:

Halogen containing parts washer solvents, carburetor cleaner, brake cleaner



How to ID Hazardous Waste

- Look at the product's Material Safety Data Sheet (MSDS) and look for:
 - a **waste code**
 - material characteristics (such as a **flash point, pH**)
 - a chemical name that may be listed on one of EPA's lists of waste (such as the F-Listed solvents)
- The MSDS can be found on the manufacturer's website
 - **Note that the waste may change through use, so don't rely on the MSDS as your only source of info**
- You may also send a sample of the waste to a lab to determine if it is hazardous waste
- Talk to your hazardous waste collection vendor

Reclaiming Product From Waste

- If you reclaim product from a hazardous waste, the waste from the reclamation process is a hazardous waste



F-Listed
Waste Solvent



Distillation



Sludge is
F-listed waste

Mixture Rule

- Don't mix hazardous waste with other wastes
- One drop of F-listed carburetor cleaner in your drum of used oil = whole drum is F-listed hazardous waste

Best Practice:

Don't spray break cleaner or carburetor cleaner over your used oil drum or parts washer



Non-Hazardous
Waste



Listed Waste



Listed Waste

Identify Hazardous Waste by “Generator Knowledge”

- A shop can use their knowledge of the waste to determine if it is hazardous waste.
- Knowledge must be based on some waste analysis:
 - MSDS for the product
 - Prior waste analysis
 - Product labels
 - Knowledge of use of product (metals in radiator fluid)
- If you know your waste is a hazardous waste, document your knowledge and keep a record of it (a note on letterhead will suffice)

Hazardous Waste Generators

- A hazardous waste generator is the person (you and your shop) who creates the waste
- There are 3 classes of generators based on the amount of hazardous waste generated in a month

Generator Class	Amount Generated in One Month
Conditionally Exempt Small Quantity Generators (CESQG)	220 pounds or less
Small Quantity Generators (SQG)	between 220 and 2,200 pounds
Large Quantity Generators (LQG)	2,200 pounds or more

How Many lbs of Hazardous Waste Do You Generate?

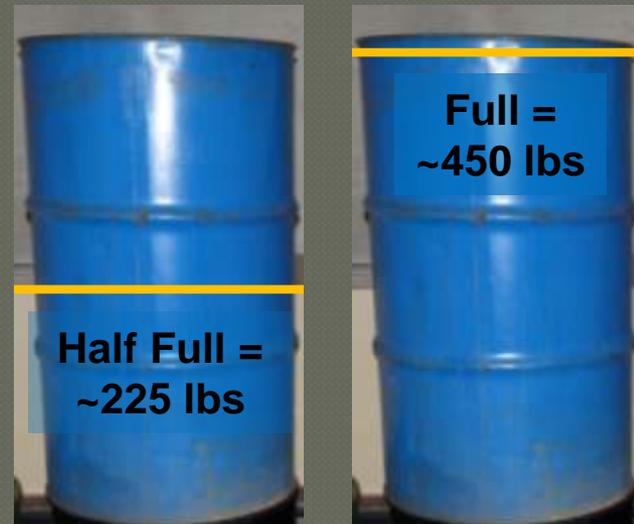
- Hazardous waste in liquid form:
 - Weigh the container of waste and subtract the weight of the empty container, or
 - Convert gallons to pounds, by multiplying the volume of the waste with the specific gravity of the waste
- Hazardous waste in solid form:
 - Weigh the container of waste and subtract the weight of the empty container

55 Gal Drum:

Full = ~450 lbs

Half Full = ~225 lbs

(based on the weight of water)



Conditionally Exempt Small Quantity Generator (CESQG)

CESQG = 220 lbs or less per month

CESQGs must:

- Properly determine if your waste is hazardous waste and how much hazardous waste you generate in a month – keep records
- Send waste to:
 - Solid waste landfill that accepts hazardous waste (In Alaska several municipalities have programs to collect these wastes)
 - Hazardous waste facility, or
 - Recycler
- Do not accumulate more than 2,200 pounds of hazardous waste (~5 full drums) on site at any one time

Small Quantity Generator (SQG)

SQG = 220 lbs to 2,200 lbs per month

SQGs must:

- Notify EPA
- Obtain a RCRA ID number
- Properly identify and determine the amount of hazardous waste generated each month – keep records
- Manifest waste shipments and send waste to permitted disposal facility or recycler
- Accumulate no more than 13,200 pounds (~25 drums) of hazardous waste for up to 270 days* without a storage permit (if you meet certain conditions)
- *Generally shops are required to store waste no longer than 180 days, but since all of Alaska is more than 200 miles from a permitted disposal facility, you can accumulate waste up to 270 days.

Large Quantity Generator (LQG)

LQG = 2,200 lbs or more per month

LQGs must:

- Notify EPA
- Obtain a RCRA ID number
- Properly identify and determine the amount of hazardous waste generated each month – keep records
- Manifest waste shipments and send waste to permitted disposal facility or recycler
- Accumulate hazardous waste for no more than 90 days without a storage permit (if you meet certain conditions)
- File biennial report with EPA for waste generated



Storing Waste Without a Permit

LQGs or SQGs have to (CESQGs are recommended to):

- Collect waste in tanks or containers
- Label each tank or container with the words “hazardous waste” and an accumulation start date
- Ship waste according to DOT regulations to a permitted hazardous waste facility or recycler - keep records
- Keep containers closed except when adding waste
- Keep tanks or containers in good condition`
- Inspect regularly – keep records
- Prevent leaks and spills

Hazardous Waste	
FEDERAL LAW PROHIBITS IMPROPER DISPOSAL.	
If leaked, contact the nearest police or public safety authority and the Washington State Department of Ecology or the Environmental Protection Agency.	
Accumulation Start Date:	Generation Name:
Responsible Quantity (RQ): <small>40 CFR Subpart G, Part 302, Table 302.4</small>	Address:
Manifest Document #:	City:
Emergency Response Guide #:	State:
SPH Waste Codes (and/or Characteristics)	Zip:
	SPH ID #:
EPA/DOT Shipping Name:	
Hazard Class:	
UNTA #:	
Packaging Group (PG):	
In the event of a spill or release of EPA hazardous waste, contact the US Coast Guard National Response Center at 1-800-424-9802 for information and assistance.	

Storing Waste Best Practice

Keep containers of waste indoors
Drums exposed to extreme weather conditions
may freeze, expand and burst or draw in rain
water sitting on the lids



Satellite Accumulation

- For slowly generated waste, you can create a satellite accumulation area to collect waste with no time limit until your container is full. Full container is moved to waste storage area.
- The Satellite Accumulation Area is:
 - Limited to 55 gallons of hazardous waste in labeled, closed containers
 - Located near where the waste is generated
 - Not mixing waste



Hazardous Waste Treatment

- A generator without a permit may treat hazardous waste on site in a tank or container
- If a CESQG treats hazardous waste, the waste must be managed to SQG standards
- Typical generator treatment in shops includes:
 - Solvent reclamation by distillation
 - Acid/base neutralization
 - Separation by settling
 - Crushing fluorescent tubes/lamps



Hazardous Waste Best Practices

- ⦿ Do not mix hazardous waste with other wastes
- ⦿ Take time to **identify** all waste
- ⦿ **Count** waste to figure out your generator class
- ⦿ Keep waste in **containers**
- ⦿ **Label** containers of hazardous waste with the words “hazardous waste” and include the **date** that you started accumulating the waste
- ⦿ Make sure that the waste you **ship** goes to a proper hazardous waste facility
- ⦿ Look for ways to **recycle** hazardous waste at your shop

Key words to remember:
identify, count, contain, label, date, ship, recycle

Aerosol Cans

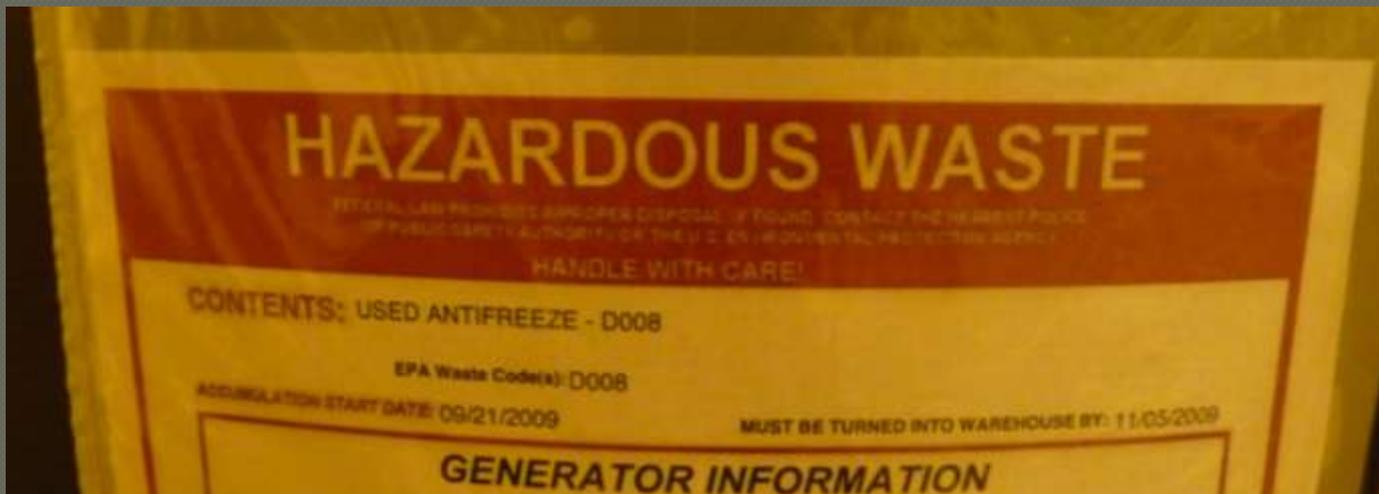
- If your can is partially full and/or pressurized = hazardous waste
- Depressurize your aerosol cans with a can puncture unit
- If the product is a hazardous waste then empty contents into a hazardous waste container
- Recycle empty cans as scrap metal

Do not put pressurized aerosol cans in the trash



Antifreeze

- Used antifreeze that picks up lead and other metals from the cooling system = hazardous waste
- Recycle your antifreeze onsite or send it offsite for recycling



Lead Acid Batteries

- Lead acid batteries = hazardous waste
- What do you do with them?
 - Return to vendor to be reconditioned
 - Managed them as hazardous waste and send them to a permitted hazardous waste facility
 - Manage them as universal waste batteries (to be discussed soon)



Used Oil Definition

Used oil is NOT “hazardous waste” if it is sent for recycling or burned to heat your shop (or other energy recovery)

Includes:

- Used crank case oil
- Used oil rags that are not laundered
- Used oil filters that are not drained
- Dripping oil spill absorbent material
- Used transmission fluid
- Used brake fluid
- Hydraulic oil
- Vacuum pump oil



Used oil cannot be mixed with hazardous waste

Do-it-Yourself Used Oil

- Used oil rules do not apply to individuals who change their own oil from their personal vehicles
- Auto and aircraft repair shops can collect and recycle or burn used oil from do-it-yourselfers
- The used oil cannot be mixed with any other waste

How to Manage Used Oil

Burn it for energy recovery or Recycle it
Disposal is prohibited!

- Label tanks and containers with the words “Used Oil” (not “waste oil”)
- Don’t transport more than 55 gallons offsite yourself (unless you are a used oil transporter with a RCRA ID#)
- Keep records of your offsite shipments
- Use absorbents to clean up spills as soon as possible
- Don’t mix other waste with used oil



Oil Spills Happen!

- Clean up spilled oil **immediately** with absorbents
- Stop the leak or spill from getting worse
- Use enough absorbents to absorb all liquid oil
- Scoop up the used absorbent and as long as it's not dripping with oil, dispose of it in the trash
- If hazardous waste also spilled, treat the absorbent material as hazardous waste



Oil Filters, Oily Rags, and Absorbents

Filters

- Punctured and hot drained filters = scrap metal
- Terne plated filters (that contain lead) = hazardous waste



Rags

- Dripping with oil – wring them out into container
- Not dripping with oil - send to industrial laundry and reuse



Absorbent material for a used oil spill

- If it's sopping wet – add more absorbents
- If it's not dripping – throw it in the trash
- If hazardous waste was also spilled – absorbents are hazardous waste

Burning Used Oil for Heat In Your Shop

You can burn used oil **in your shop** without a permit if:

1. It is generated in your shop or collected from do-it-yourselfers, and
2. It is burned in a space heater that is less than 500,000 BTUs and vented to the ambient air

You cannot burn used oil in your shop if it contains hazardous waste

Used oil can only be burned in the shop where it is generated, unless.....



Burning Your Oil at Another Shop

If you want to send your used oil to another shop for burning, your used oil has to meet these specifications (be “on spec”) for burning without a permit:

Constituent or Property	Allowable level for burning without a permit
Arsenic	5 ppm maximum
Cadmium	2 ppm maximum
Chromium	10 ppm maximum
Lead	100 ppm maximum
Flash point	100 F minimum
Total halogens (F, Cl, Br, and/or I)	4,000 ppm maximum

If exceeded, the used oil is likely Hazardous Waste

Burning Your Oil at Another Shop

- ◉ Used oil from your shop can be burned at another location **only** if it is determined to be “**on spec**”
- ◉ The simplest and most sure way to determine if your oil is “on spec” is to send a sample to a lab
- ◉ The rules don't specify who is responsible to make the “on spec” determination. Someone must do it and the person who does it is a “**used oil marketer**” and needs to get an EPA ID number.

Used oil cannot be burned at another shop without making the “on spec” determination

Burning “Off Spec” Used Oil at Another Location

- Can only be burned in industrial furnaces and boilers
- Need a permit:
 - RCRA Hazardous Waste Incinerator Permit, and/or
 - Clean Air Act Permit



Recycling Used Oil

Used oil that is not burned in your shop or at another location **must be recycled**

- Send it to a recycler (Recyclers typically remove water and contaminants from oil and blend it into fuels)
- Send it to a re-refiner to be processed into lubricating oil



Halogens in Used Oil

It may be illegal to burn used oil if it contains halogens

Some shop solvents and cleaners contain fluorine, chlorine or bromine (halogens)

Over 1,000 ppm halogens in your used oil = hazardous waste

Halogens can come from non-hazardous waste sources

Are halogens from non-hazardous waste sources (like salt water in a seaplane engine)? If yes:

- recycle the used oil, or
- burn it for heat (if less than 4,000 ppm)

Constituent or Property	Allowable level for burning without a permit
Arsenic	5 ppm maximum
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Chromium	10 ppm maximum
Lead	100 ppm maximum
Flash point	100 F minimum
Total halogens (F, Cl, Br, and/or I)	4,000 ppm maximum



Universal Waste

EPA created “Universal Waste” to encourage recycling of frequently generated lower hazard waste

Includes:

- Batteries –including lead acid batteries
- Pesticides
 - Suspended and canceled subject to a recall
 - Collected as part of a collection program
- Mercury containing equipment
 - Switches & thermostats
- Hazardous waste lamps



How to Manage Universal Waste

- Store in closed containers
- Label containers with the words “universal waste” and the type of waste (i.e. universal waste – batteries)
- Store universal waste for no more than one year
- Record the date when storage began
- Use a universal waste transporter for off-site shipment. The universal waste must be shipped to a hazardous waste recycler or a permitted hazardous waste facility
- Train staff handling universal waste on these requirements
- Don't throw universal waste in the trash



Bulb Crushers

- Bulbs may contain mercury
- If you crush your bulbs they are not universal waste. Crushing is considered treatment of waste
- Most bulb crushing units leak which potentially emits mercury into the air
- Sampling crushed glass in drums under crusher units is not adequate for determining if the bulbs were hazardous waste prior to crushing



Bulb Best Practices

- Collect bulbs in a container made for a bulb
- Don't break bulbs
- Send bulbs to a recycler
- If you must crush:
 - Determine if it's hazardous waste
 - If yes, manage the waste as if you were a SQG or LQG



Tires

- Tires are not hazardous waste
- Tire piles can be a problem
 - Outdoor tire piles collect rainwater that can breed mosquitoes and disease
 - Tires are a fire hazard (fires are hard to put out)
- Tires can be recycled into building materials



Best Practice:
Do not keep piles of old tires at your shop

Recycling Hazardous Waste at Your Shop

You can recycle the following wastes

- Used oil
- Non-terne plated Oil filters
- Antifreeze
- Solvents (in a still)
- Aerosol cans that are empty and have been de-pressurized
- Shop rags



Recordkeeping

- Shops must be able to prove that you're following waste management rules
- Keep records of:
 - Waste designation (which wastes are hazardous, used oil, universal waste, etc.)
 - Waste generation amounts per month
 - Shipping records for off site shipments for waste or used oil
 - Training records
 - Inspection logs
 - Waste accumulation start dates (can be kept on the container label)

Tips to Reduce Waste

- The easiest way to simplify hazardous waste management is to not generate it in the first place
- **Don't mix wastes** – a small amount of hazardous waste mixed with a non-hazardous waste makes it all hazardous waste
 - **Recycle or reuse** material as much as possible – some recycled wastes are exempt from hazardous waste rules
 - **Change your process** or materials to use less hazardous products
 - **Don't buy more than you need**
 - Store hazardous materials to **minimize the potential for spills**

Back Haul Programs

- Designed to remove hazardous materials and waste from remote Alaska villages via air, barge, or rail
- May include electronic waste, lead acid batteries, fluorescent lights, motorized vehicles, and white goods
- Two primary programs in place:
 - Yukon River Intertribal Watershed Council (YRITWC) – 57 communities
 - Kawerak, Inc. – 20 communities
- For more information contact EPA Anchorage office, YRITWC, or Kawerak, Inc.

Next Steps

- Inventory waste in your shop and identify the hazardous waste, universal waste, and used oil
- Weigh your hazardous waste and count the amount each month to determine your generator class
- Figure out how to get rid of your waste:
 - Local hazardous waste collection program
 - Commercial waste management company
 - Recycler
- Look for non-hazardous substitutes
- Train everyone on your team on how to manage waste

Learn More

- EPA contact info:

- Jack Boller, EPA in Seattle: 206-553-2953
- Jon Jones, EPA in Anchorage: 907-271-6329

- EPA website:

www.epa.gov/region10/engine_repair_waste.html

- CCAR Compliance Assistance Center:

<http://ccar-greenlink.org>



Green Star Resources

Waste Reduction Assistance, Tip Sheets, and Resources

- <http://www.greenstarinc.org/files/PDFs/Alaska%20Recycling%20Resources%20for%20Businesses%20March%202013.pdf>
- <http://www.greenstarinc.org/html/resources/recycling-resources.php>
- <http://www.greenstarinc.org/html/resources/waste-reduction-guide.php>

Questions?

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