

Appendix B: Hazardous Waste Management

How to Determine if Your Waste is Hazardous..... 119

Preferred Disposal Options for Potential Hazardous Waste Streams..... 123

How to Determine if Your Waste is Hazardous



State of Oregon
Department of
Environmental
Quality

Background

Federal and State of Oregon hazardous waste regulations are designed to ensure that the generation, transport, treatment, storage and disposal of hazardous wastes are conducted in a manner that protects human health and the environment.

This guidance document will assist you in properly identifying all wastes that you generate, treat, store or send off-site for recycling, energy recovery or disposal as hazardous waste. For a complete description of the waste determination requirements, please refer to the regulations found in Oregon Administrative Rules (OAR) 340-101 and the Code of Federal Regulations (CFR) Title 40 Part 261.

As a waste generator, you must:

- Determine if your waste is a hazardous waste, and then:
- Ensure that your waste is managed properly.

Waste management service companies may offer to perform or assist you, the generator, with your hazardous waste determination. However, the waste generator has the ultimate responsibility for any mismanagement of their hazardous waste. Failure to do an adequate waste determination is the number one violation cited by DEQ hazardous waste inspectors. Failure to perform a proper waste determination can result in mismanagement of your waste, often leading to damage to the environment or human health.

How to perform a hazardous waste determination: A three-step process

Performing a waste determination is a three-step process. An adequate waste determination requires you to know:

- Is the material a solid waste?
- If the material is a solid waste, is it exempted or excluded from management as a hazardous waste?
- Is the waste a listed, characteristic or state-only hazardous waste?

STEP 1: Determine whether the material is a solid waste.

The term "solid waste" can be somewhat misleading. The word "solid" does not refer to the physical state of the waste. Solid waste can be a solid, liquid, or contained gas. Under the Resource Conservation and Recovery Act (RCRA), a solid waste is any material that you will no longer be using for its originally intended purpose and will be discarded or a material that must be reclaimed, or processed, before reuse. For any material to be a hazardous waste, it must first be a solid waste.

STEP 2: Determine whether the waste is exempted or excluded from hazardous waste regulation.

Not all solid wastes are considered hazardous wastes. Certain wastes, such as household wastes or used oil destined for recycling, are exempted or excluded from the hazardous waste definition and regulation. Do not proceed to Step 3, which is evaluating the actual chemical or physical hazard a waste poses, until you've determined the waste is not somehow excluded from hazardous waste regulation. Wastes excluded or exempted can be found in CFR Title 40 Part 261.4 and 261.6 - 261.9 and OAR 340-101-0004.

Note: Even if you've determined your waste is excluded from hazardous waste regulation, you should re-evaluate your status periodically to verify that conditions affecting the composition of your waste have not changed. You also need to document that exemption or exclusion in your files. (See 40 CFR 268.7(a)(7) for these requirements.)

STEP 3: Determine if the waste is hazardous.

This step involves evaluating the waste against the regulatory definition of hazardous waste. There are three possible ways in which your waste can be considered hazardous:

- 1. If you find your waste is not exempted or excluded from hazardous waste regulation,** you must determine if the waste meets *one or more* of the hazardous waste

listing descriptions found in 40 CFR Part 261 Subpart D:

F-listed wastes: 40 CFR 261.31 lists hazardous wastes from non-specific sources (termed "F-listed wastes" after the F prefix in the hazardous waste code). An example would include F002 wastes—spent halogenated solvents (e.g., perchloroethylene, trichloroethylene, methylene chloride).

K-listed wastes: 40 CFR 261.32 lists hazardous wastes from specific sources, such as K062 waste spent pickle liquor generated by steel finishing operations of facilities within the iron and steel industry.

P- and U-listed wastes: 40 CFR 261.33 lists discarded or unused commercial chemical products, off-specification products, container residues and spill residues of such products. Examples of these wastes include the unused commercial chemical products of mercury, potassium cyanide, creosote and phenol.

2. If you determine if the waste is not a listed hazardous waste, you must conduct waste sampling and analysis, or apply generator knowledge of the process of the materials used to produce the waste to determine if it exhibits any of the *four characteristics* of a hazardous waste:

Ignitability: A waste is ignitable if it:

Is a liquid and its flash point is less than 140° F (60°C), or

Is an oxidizer or an ignitable compressed gas as defined by the U.S. Department of Transportation regulations in 49 CFR Part 173, or

It has the potential to ignite under standard temperature and pressure, and burn persistently and vigorously once ignited.

Wastes that are ignitable are classified as EPA Hazardous Waste Code D001.

Examples of ignitable wastes include certain spent solvents, such as mineral spirits.

Corrosivity: A waste is corrosive if it is:

Aqueous and its pH is less than or equal to 2.0 or greater than or equal to 12.5, or

A liquid that corrodes steel at a rate of more than 1/4 inch per year.

Corrosive wastes are designated as EPA Hazardous Waste Code D002. Examples of corrosive wastes include spent sulfuric acid

and concentrated waste sodium hydroxide solutions.

Reactivity: A waste exhibits reactivity if it:

Is normally unstable and readily undergoes a violent change without detonating,

Reacts violently with water,

Forms potentially explosive mixtures with water,

Produces toxic fumes, gases, or vapors when mixed with water in a quantity sufficient to present a danger to the environment,

Is a cyanide or sulfide bearing waste that when exposed to a pH between 2.0 and 12.5, produces toxic fumes, sufficient to present a danger to the environment,

Is capable of detonation or explosive reaction if it is subjected to a strong initiating source or heated under confinement,

Is readily capable of detonation or explosive decomposition or reaction under at standard temperature and pressure, or

Is a forbidden explosive or a Class A or Class B explosive as defined in 49 CFR Part 173.

Wastes that exhibit the characteristic of *reactivity* are classified as EPA Hazardous Waste Code D003. Examples of reactive wastes include pressurized aerosol cans and certain cyanide or sulfide-bearing wastes.

Toxicity: The toxicity characteristic of a waste is determined by having a laboratory analyze an extract of the waste using the Toxicity Characteristic Leaching Procedure (TCLP).

The results of the analysis are compared to the regulatory limits of 40 constituents, primarily heavy metals, organic compounds, and pesticides/herbicides found in 40 CFR 261.24. If the extract from the TCLP contains levels of any of the 40 constituents at or above regulatory limits, the waste is considered a hazardous waste. Wastes that exhibit the toxicity characteristic are classified as EPA Hazardous Waste Codes D004 through D043.

Examples of toxic wastes include contaminated soils and sludges, waste solvents, paint residues, wastes from chemical manufacturing and pesticide/herbicide wastes.

State-only hazardous wastes

If a solid waste is not excluded and is not a Federal hazardous waste as listed above in A & B, it may be an Oregon State-only hazardous waste. Oregon Administrative Rule (OAR) 340-101-0033 lists wastes that are State-only hazardous wastes. State only hazardous wastes include pesticide residues and mixtures of wastes containing constituents of Federal P (3%) & U (10%) listed wastes (see lists in 40 CFR 261.31 and 261.32).

Waste sampling and analysis

Sampling and analysis of the waste may be necessary to complete the determination. Waste sampling and analysis, may be necessary when:

- You begin a new process or change an existing one;
- You have not provided appropriate laboratory information to an off-site treatment, storage and disposal facility;
- You are not able to determine with available information the chemical makeup of your wastestream;
- An off-site hazardous waste facility has reason to believe the wastes you shipped were not identified accurately;
- EPA amends RCRA waste identification/classification rules; or
- A facility receives your waste for the first time.

Sampling and analysis of the waste is more accurate and defensible than other options such as using knowledge of process.

Procedures and equipment for obtaining and analyzing samples are described in EPA's "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" SW-846, 3rd Edition.

DEQ recommends that you prepare a sampling and analysis plan before sample collection and testing. Chapters 1 and 9 of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" SW-846, 3rd Edition are excellent sources of information on sampling and analysis.

Note: In making your determination, be sure to include all applicable waste codes whether it is a listed hazardous waste, characteristic hazardous waste or a combination of both listed and characteristic hazardous waste.

Obtain a representative sample

A *representative sample* is defined as a sample of a universe or whole that can be expected to exhibit the average properties of the universe or whole.

A representative sample from each waste stream is required to properly characterize a waste using sample analysis. Methods for statistical determination of a valid number of samples, recommended sampling methods, sampling strategies and applicable sampling equipment also can be found in Chapter 9 of SW-846.

Generator knowledge of the process or materials that produced the waste

Another method to use in your waste determination is *generator knowledge* of the waste. Generator knowledge can be used to meet all or part of the waste analysis requirements, and can be defined broadly to include "process knowledge." Process knowledge may be information on the wastes obtained from existing published or documented waste analysis data or studies conducted on hazardous wastes generated by processes similar to that which generated your waste.

For example, comparing the specific process that generated your waste to those processes described in the listings rather than conducting a chemical/physical analysis of the waste identifies listed wastes. Therefore, with many listed wastes, generator knowledge is appropriate because the physical/chemical makeup of the waste is generally well known and consistent from facility to facility.

Note: The use of existing or historical records of analysis seems attractive as opposed to sampling and analysis due to the potential cost savings associated with using such information.

However, you must ensure that this information reflects the current processes and materials being used, and that no differences exist between the process in the documented data and your own.

If you use generator knowledge alone or in conjunction with sampling and analysis, you must maintain detailed documentation that clearly demonstrates the information is sufficient to identify the waste.

Documentation used to support generator knowledge may include, but is not limited to:

- Material safety data sheets or similar documents,
- A thorough process description, including data on all raw materials used in the process, or
- Other forms of detailed documentation.

Documenting both the generator knowledge and any analytical data is essential. Information used to make the waste determination must be maintained for at least three years after the waste is generated.

Note: *Concerning Material Safety Data Sheets (MSDSs) manufacturers and suppliers are only required to list constituents that comprise 1 percent or more of the material it addresses. This level of information may not be adequate to ascertain the constituent levels in the wastes to be characterized. Therefore, an MSDS should be viewed as a supporting document and not as the sole means of documenting generator knowledge.*

Summary

Although DEQ recognizes that sampling and analysis are not as economical or convenient as using generator knowledge, they usually provide advantages. Because accurate waste determination is such a critical factor for demonstrating compliance with the hazardous waste regulations, misidentification can render your facility liable for enforcement actions with respect to land disposal restriction requirements, annual reporting and other requirements. In addition, accurate waste analysis is critical for meeting some of the requirements of other regulatory programs, such as effluent discharges under the Clean Water Act and transportation requirements administered by the Department of Transportation.

Be sure to:

- Keep current with the latest regulatory developments in the hazardous waste program that may affect the classification of your waste; and,
- Re-evaluate your wastes frequently using current analytical methods and/or process knowledge, particularly any time a rule affecting hazardous waste identification is finalized.

Need technical assistance managing waste?

DEQ technical assistance is available:

- Free on-site visits
- Free telephone consultations
- Hazardous waste training

DEQ technical assistance can help you:

- Understand how hazardous waste regulations apply to your business
- Determine which wastes are hazardous
- Complete reporting forms
- Manage wastes better
- Reduce disposal costs
- Minimize the waste you produce
- Determine what areas need improvement

If you would like DEQ technical assistance or have any questions about your hazardous waste determination responsibilities, visit our website or please contact the DEQ field office nearest you:

Bend (541) 388-6146

Medford (541) 776-6010

Pendleton (541) 276-4063

Portland (503) 229-5263

Roseburg (541) 440-3338

Salem (503) 378-8240

Preferred Disposal Options for Potential Hazardous Waste Streams

WASTE	<p style="text-align: center;">PREFERRED DISPOSAL OPTIONS</p> <p style="text-align: center;">If multiple options are listed, the first option (boldfaced) is the preferred method.</p>
<p><u>Aerosol Cans</u></p>	<ul style="list-style-type: none"> ◆ Aerosol cans should be punctured in a safety device: <ul style="list-style-type: none"> ○ Collect the residue; manage as potentially hazardous waste. ○ Punctured empty cans may be recycled under the scrap metal exemption (if your scrap recycler takes them). ◆ Unpunctured cans are considered reactive waste and therefore should be disposed of as hazardous waste.
<p><u>Antifreeze:</u></p> <ul style="list-style-type: none"> ◆ Propylene glycol (usually pink) ◆ Ethylene glycol (usually green) <p>Contact your waste hauler to confirm that they will accept mixed antifreeze.</p>	<ul style="list-style-type: none"> ◆ Recycle ◆ Hire a waste hauler to collect and dispose. ◆ Purchase an on-site recovery unit. Distillation systems are more expensive than filtration systems but are more efficient at renewing used antifreeze.
<p><u>Batteries - Lead</u> (encourage the use of maintenance free batteries)</p>	<ul style="list-style-type: none"> ◆ Recycle. Store on an impervious surface, under cover. Protect from the rain. Check frequently for leakage. ◆ Automotive batteries are exempt if recycled. ◆ Other batteries should be labeled as universal waste. ◆ If not recycled, batteries containing acid and heavy metals are hazardous waste.
<p><u>Containers</u></p> <ul style="list-style-type: none"> • Paint cans • Buckets • Spent caulking tubes 	<ul style="list-style-type: none"> ◆ Cans may be put in trash can as long as: <ul style="list-style-type: none"> ○ All material that can be removed has been. (For example, in a 55-gallon drum, no more than 1” of residue remains on the bottom or inner liner.) ○ Containers that held compressed gas are at atmospheric pressure. ○ Containers that held acute hazardous waste have been triple rinsed with the appropriate (as listed on the container) solvent. Properly dispose of the solvent.
<p><u>Flares – Expired Distress Signals</u></p>	<ul style="list-style-type: none"> ◆ Encourage boaters to keep onboard as extras. ◆ Store in well marked, fire safe container. Use expired flares to demonstrate to boaters how they are used. Be sure to notify the Coast Guard and fire department ahead of time. ◆ Encourage boaters to bring flares to a local fire department or household hazardous waste collection program. <p>If disposed of, the flares are hazardous waste.</p>
<p><u>Gasoline - Stale</u></p>	<ul style="list-style-type: none"> ◆ Add stabilizer in the winter to prevent gasoline from becoming stale, or add octane booster in the spring to rejuvenate it. Use the fuel. ◆ Mix with fresh fuel and use. ◆ Transport as non-hazardous waste if picked by a fuel blender to be used as fuel. ◆ Hire a hazardous waste hauler to collect and dispose of it.

<u>Glue and Liquid Adhesives</u>	<ul style="list-style-type: none"> ◆ Catalyze and dispose of as solid waste.
<u>Kerosene</u>	<ul style="list-style-type: none"> ◆ Filter and reuse for as long as possible, then recycle.
<u>Light Bulbs</u> <ul style="list-style-type: none"> • Fluorescent bulbs • Mercury vapor lamps • High-pressure sodium vapor lamps • Low-pressure sodium vapor lamps • Metal halide lamps 	<ul style="list-style-type: none"> ◆ Recycle if you have more than a few. ◆ These are considered universal waste if recycled. Label as universal waste and insure that light tubes do not break. <p>If not recycled, these materials may be hazardous waste</p>
<u>Mineral Spirits</u>	<ul style="list-style-type: none"> ◆ Filter and reuse. (DO NOT add to used oil to be burned in space heaters) ◆ If reuse not possible, then dispose of as hazardous waste
<u>Oil – Non-terneplated Filters</u>	<ul style="list-style-type: none"> ◆ Puncture and completely hot drain for at least 24 hours. Recycle the oil and the metal canister. ◆ If you do not recycle the canister, double-bag it in plastic and place it in your regular trash.
<u>Oil – Quart Cans</u>	<ul style="list-style-type: none"> ◆ Drain completely and dispose in regular trash. They cannot be recycled.
<u>Oil – Terneplated Filters</u> (used in heavy equipment and heavy-duty trucks)	<ul style="list-style-type: none"> ◆ Dispose of as hazardous waste (contains lead).
<u>Oil – Used Absorbent Material</u>	<ul style="list-style-type: none"> ◆ If oil and diesel is adequately absorbed, discard in trash. ◆ If it is saturated with gasoline, allow it to air dry and reuse.
<u>Oil – Waste Oil:</u> <ul style="list-style-type: none"> ◆ Engine oil ◆ Transmission fluid ◆ Hydraulic oil ◆ Gear oil ◆ #2 Diesel ◆ Kerosene 	<ul style="list-style-type: none"> ◆ Recycle with a registered used oil transporter. ◆ Use waste oil for space heating in approved used oil burner ◆ Take small quantities to household hazardous waste/CEG collection events. ◆ Contact your waste hauler to confirm that they will accept mixed oil.
<u>Paint Brushes</u>	<ul style="list-style-type: none"> ◆ Allow to dry completely. Dispose in regular trash or, if paint contains heavy metals above regulatory levels, treat as hazardous waste.
<u>Paints and Varnishes</u> <ul style="list-style-type: none"> ◆ Latex ◆ Water-based ◆ Oil-based 	<u>Water-based:</u> <ul style="list-style-type: none"> ◆ Allow to dry completely. Dispose of in regular trash. <u>Oil/Solvent Based:</u> <ul style="list-style-type: none"> ◆ Dispose of as hazardous waste. <u>Water Based and Oil Based:</u> <ul style="list-style-type: none"> ◆ Use leftover material for other projects, i.e., as an undercoat for the next boat. ◆ Encourage tenants to swap unused material.
<u>Pesticide Containers</u>	<ul style="list-style-type: none"> ◆ Must be rinsed – use rinsate as makeup for next batch of pesticide if possible or spray it out through sprayer. <p>Unrinsed containers are either hazardous waste or universal waste.</p>

<u>Pesticides</u>	<ul style="list-style-type: none"> ◆ Use as product. <p>If disposed at a collection event or at hazardous waste facility unused pesticides may be a universal waste.</p>
<u>Pressure Washing Residue</u>	<ul style="list-style-type: none"> ◆ Dispose of as solid waste.
<u>Rags Soaked with Hazardous Substances</u>	<ul style="list-style-type: none"> ◆ Use rag service and do not dispose of rags. Wring rags out over a waste solvent collection container and keep in covered container until ready for pickup by an industrial laundry. Dispose of the solvent that collects in the bottom of the container as hazardous waste. ◆ If rag service is not used, perform hazardous waste determination and dispose of as hazardous waste if appropriate.
<u>Residue from Sanding, Scraping, and Blasting</u>	<ul style="list-style-type: none"> ◆ Evaluate this waste and document whether the residue is hazardous (e.g. does not contain metals or toxins). ◆ If it is not hazardous, dispose of as solid waste. ◆ If it contains metals, it is a hazardous waste or special waste and must be disposed of properly. ◆ If it contains tributyl tin it is a pesticide and considered an Oregon State Hazardous Waste.
<u>Resins – Epoxy and Polyester</u>	<ul style="list-style-type: none"> ◆ Catalyze and dispose of as solid waste as long as it dries hard and has no free liquids and facility is a conditionally exempt generator (CEG) of hazardous waste.
<u>Scrap Metal</u>	<ul style="list-style-type: none"> ◆ Recycle.
<u>Sludge Recovered from a Hazardous Solvent</u>	<ul style="list-style-type: none"> ◆ Dispose of as hazardous waste.
<u>Sludge Recovered from a Non-hazardous Solvent</u>	<ul style="list-style-type: none"> ◆ Let sludge dry in a well-ventilated area, wrap in newspaper, and dispose of in garbage.
<u>Solvents</u> <ul style="list-style-type: none"> ◆ Paint and engine cleaners such as acetone and methylene chloride 	<ul style="list-style-type: none"> ◆ Reuse as long as possible and then recycle. ◆ Consider a distillation unit for recycling solvents. ◆ Use less toxic alternatives to avoid disposal issues. ◆ Dispose of as hazardous waste. <p>DO NOT add to used oil to be burned in space heaters.</p>
<u>Used Bioremediating Bilge Booms</u>	<ul style="list-style-type: none"> ◆ Discard in regular trash as long as no liquid is dripping. Because the microbes need oxygen to function, do not seal in plastic.

