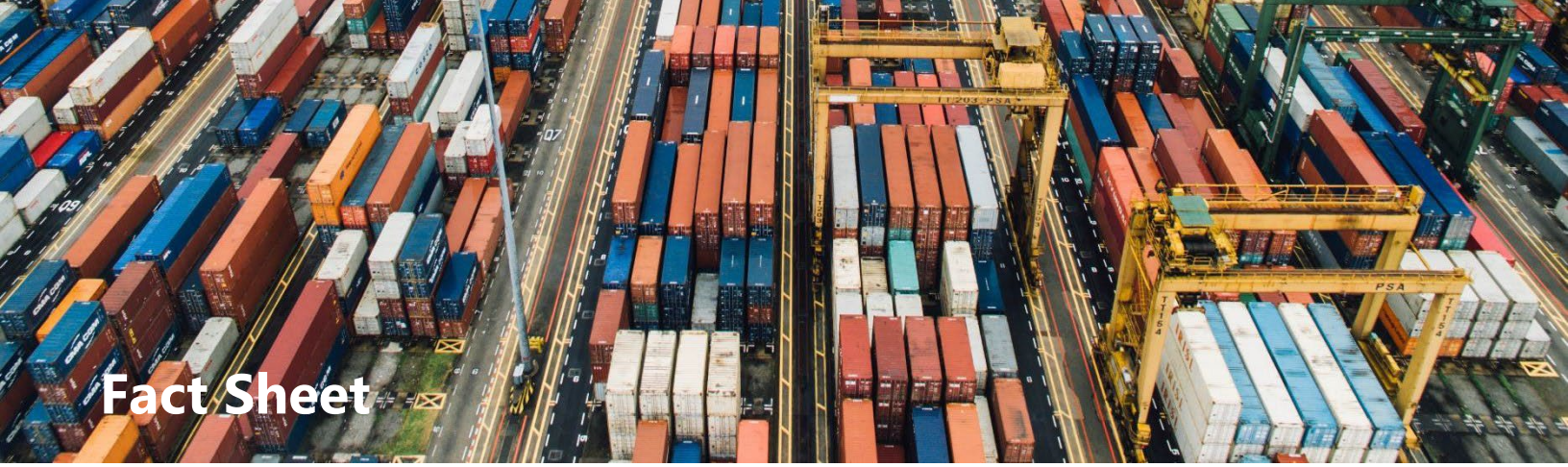

How to determine if your waste is hazardous

Updated: September 2023

This document assists waste generators in properly identifying the waste they generate, treat, store, or send off-site for recycling, energy recovery or disposal as hazardous waste. In addition to this fact sheet, there is a 28-minute training video available.

For a complete description of waste determination requirements, please refer to the regulations found in Oregon Administrative Rules Chapter 340 Division 100-102 and the Code of Federal Regulations Title 40 Part 261. For more specific regulatory citations, consult individual requirements, as this summary is an overview and does not encompass all aspects of hazardous waste regulation.

Waste generators must:

- Determine if your waste is hazardous
- Properly manage your waste from generation to disposal

Waste must be managed as if it is hazardous until it has been determined to be non-hazardous.
Waste management service companies may offer to perform or assist in conducting a hazardous waste determination. However, the generator is responsible for any mismanagement of hazardous waste. Failure to do an adequate waste determination is the number one violation cited by DEQ hazardous waste compliance inspectors. Failure to perform a proper waste determination can lead to mismanagement of waste, resulting in harm to human health and the environment.

Generator knowledge of the process or materials that produced 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 obtained from existing waste analysis studies conducted on hazardous wastes generated by processes similar to those you use. For example, you may be able to compare your specific processes to those processes associated with listed hazardous wastes rather than conducting a chemical or physical analysis of the waste yourself. With many listed wastes, generator knowledge is appropriate because the physical or chemical makeup of the waste is generally well known and consistent from facility to facility.

You may also be able to use existing or historical analytical records of analysis rather than conduct new sampling and analysis; this may save you costs and time. However, if your processes have changed since the

historical data was collected, that data may not represent the current wastes your processes generate. 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 properly identify the current wastes generated.

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

- Safety data sheets, also known as SDS or MSDS, or similar documents
- A thorough process description, including data on all raw materials used in the process
- Other forms of detailed documentation

Documenting both 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. Be prepared to share this documentation with DEQ if DEQ requests the data.

A note concerning safety data sheets:
Manufacturers and suppliers are only required to list constituents that comprise 1% or more of the material. This level of information may not be adequate to ascertain the constituent levels in the wastes to be characterized. Therefore, safety data sheets should be viewed as a supporting document and not as the sole means of documenting generator knowledge.

Waste sampling and analysis

Sampling and analysis of the waste may be necessary to complete the determination if and when:

- There is a new process or there has been a change to an existing one.
- An off-site treatment, storage and disposal facility requests analytical data.
- The chemical makeup of the waste stream is not able to be determined with the available information.
- An off-site hazardous waste facility has reason to believe the waste they received was not identified accurately.
- A disposal facility receives a waste stream for the first time.
- U.S. Environmental Protection Agency amends Resource Conservation and Recovery Act waste identification or classification rules.

Sampling and analysis of the waste are more accurate and defensible than using knowledge of process or other options. Procedures and equipment for obtaining and analyzing samples are described in EPA's *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, Third Edition* which is available online. It is the generator's responsibility to ensure that the most up-to-date test method is used. Consult the SW-846 Methods Status Table for the most recent test method that should be used.

DEQ recommends preparing 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, Third Edition* are excellent sources of information on sampling and analysis.

Obtain a representative sample

EPA defines a representative sample as a sample of a universe or whole that can be expected to exhibit the average properties of the universe or whole. In other words, a representative sample is a small amount of something that accurately represents the larger amount that it was taken from.

A representative sample from each waste stream is required to properly analyze each waste. 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.

DEQ recognizes sampling and analysis are not as economical or convenient as using generator knowledge. However, accurate waste determination is critical for demonstrating compliance with the hazardous waste regulations. Misidentification may mean that a facility is out of compliance with land disposal restriction requirements, annual reporting, and other requirements. In addition, accurate waste analysis is important for meeting some of the requirements of other regulatory programs, such as effluent discharges under the Clean Water Act and hazardous waste transportation requirements administered by the U.S. Department of Transportation.

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

Answering these five questions is the best approach to determining whether a waste is hazardous:

1. Is the material a solid waste?
2. Is it exempted or excluded from management as a hazardous waste?
3. Is the waste an F, K, P or U-listed hazardous waste?
4. Is the waste a characteristic hazardous waste?
5. Is the waste a state-only hazardous waste?

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

The term solid waste can be misleading. The word solid does not refer only to the physical state of the waste. Solid waste can be a physical solid, liquid, semi-solid sludge or contained gas. Under the Resource Conservation and Recovery Act, or RCRA, a solid waste is any material that is no longer used for its originally intended purpose and is to 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. Please note that Oregon also has separate regulations that apply to solid waste independent of federal RCRA requirements.

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

Not all solid wastes are hazardous wastes. Certain wastes, such as household wastes or used oil destined for recycling, are exempted or excluded from the definition of hazardous waste and therefore, from regulation as a hazardous waste. Waste exclusions or exemptions can be found in Code of Federal Regulations Title 40 Part 261.4 and 261.6 - 261.9, and Oregon Administrative Rules 340-101-0004.

Even if you've determined your solid waste is excluded from hazardous waste regulation, you should re-evaluate periodically to verify conditions affecting the composition of your waste have not changed. You must document the applicable exemption or exclusion in your files and be ready to share this information should DEQ request it. Refer to 40 CFR 268.7(a)(7) for these requirements. Solid wastes that are not hazardous wastes may also be regulated by Oregon solid waste laws so you should consult with DEQ to determine if your non-hazardous solid wastes need to be managed according to Oregon solid waste requirements.

STEP 3: Determine if the waste is a listed hazardous waste.

If you determine 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. An example would include F002 wastes, which are 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.

STEP 4: Determine if the waste is a characteristic hazardous waste.

If you determine the waste is not a listed hazardous waste, you must conduct waste sampling and analysis, apply generator knowledge of the process of the materials used to produce the waste, or use both methods, to determine if it exhibits any of the four characteristics of a hazardous waste: ignitability, corrosivity, reactivity, or toxicity.

A waste is ignitable if it:

- Is a liquid, and its flash point is less than 140° F (60° C)
- Is an oxidizer or an ignitable compressed gas as defined by the U.S. Department of Transportation regulations in 49 CFR Part 173
- It has the potential to ignite under standard temperature and pressure and burn persistently and vigorously once ignited

Wastes that are ignitable are designated as EPA Hazardous Waste Code D001. Examples of ignitable wastes include certain spent solvents, such as mineral spirits.

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 one quarter inch per year.

Corrosive wastes are designated with EPA Hazardous Waste Code D002. Examples of corrosive wastes include spent sulfuric acid and concentrated waste sodium hydroxide solutions.

A waste is reactive 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 at standard temperature and pressure
- 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 designated as EPA Hazardous Waste Code D003. Examples of reactive wastes include peroxides and certain cyanide or sulfide-bearing wastes.

A waste is toxic hazardous waste:

- By having a laboratory analyze an extract of the waste using the Toxicity Characteristic Leaching Procedure, also known as TCLP, and the results from analysis show constituents at levels equal to or above those found on the Maximum Concentration of Contaminants table found at 40 CFR Part 261.24.

U.S. EPA designates wastes that exhibit the toxicity characteristic as federal hazardous waste with codes D004 through D043. The D codes are in 40 CFR Part 261.24 and are broken down into heavy metals, volatiles, semi-volatiles, and pesticides and herbicides. Examples of toxic wastes include contaminated soils and sludges, waste solvents, paint residues, and wastes from chemical manufacturing.

STEP 5: Determine if the waste is a state-only hazardous waste.

If a solid waste is not excluded and is not a listed or characteristic hazardous waste, it may still be an Oregon state-only hazardous waste. Some examples of state-only hazardous wastes include pesticide residues and mixtures of wastes containing constituents of Federal P- and U-listed wastes at 3% and 10%, respectively. Oregon Administrative Rule 340-101-0033 lists the state-only hazardous wastes.

NOTE: When making a determination, be sure to include *all* applicable waste codes, whether a listed hazardous waste, characteristic hazardous waste, or a combination of both listed and characteristic hazardous waste. You may need to repeat Steps 3 – 5 one or more times to make a complete waste determination.

Have questions?

DEQ has made it easy for you to get your questions answered. To learn more and request free, non-regulatory technical assistance, please visit oregon.gov/deq/Hazards-and-Cleanup and click on "Technical Assistance."

Non-discrimination statement

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