



# Hazardous Waste Management: Waste Determinations

Division of Waste and Hazardous Substances, Compliance and Permitting Section

## What is a Hazardous Waste Determination?

A hazardous waste determination is the use of generator knowledge and/or analytical testing to determine if a solid waste is a regulated hazardous waste. To be a hazardous waste, a solid waste must either display one or more characteristics of hazardous waste and/or meet the description of a listed hazardous waste in Delaware's *Regulations Governing Hazardous Waste* (DRGHW), Part 261. A waste determination dictates how a waste will be managed from the moment it is generated through its ultimate disposal destination. This fundamental principle of hazardous waste management is referred to as "cradle to grave." Generators of solid waste must accurately determine if the waste they generate is a hazardous waste as described in §262.11.

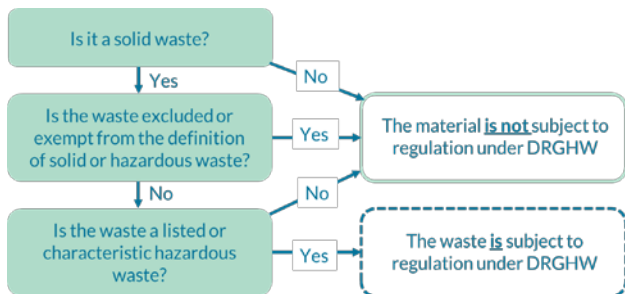
## When to Make a Hazardous Waste Determination

A hazardous waste determination must be made at the point of waste generation (the act or process of producing the waste) before any waste diluting, mixing, or alteration (treatment) occurs. In addition, waste must be monitored and reassessed for physical or chemical changes if there is reason to believe that these changes may cause the waste to become hazardous or change the hazardous waste listing or characteristics already identified. For example, a sand blasting operation removes scale rust from metal. Data from analytical analysis show spent sand blast waste is a non-hazardous solid waste. When the business begins sand blasting painted metal surfaces, the sand blasting media becomes spent. A hazardous waste determination must be made immediately to determine the sand blast and paint chip mixture is not a hazardous waste.

## How to Make a Hazardous Waste Determination

The four steps in the waste determination process are:

1. Determine if the material is a solid waste
2. Determine if the waste is excluded/exempt
3. Determine if the waste is listed
4. Determine if the waste is characteristic



## Listed Wastes

The hazardous waste lists identify specific waste streams that are known to threaten human health or the environment. The four hazardous waste lists are:

1. **F-listed wastes** are from non-specific manufacturing process sources, including spent solvents, electroplating waste, dioxins, leachate, and petroleum refinery sludges.

2. **K-listed wastes** are from specific industrial sources, including inorganic pigments, pesticides, and organic chemicals. To use the K-list, a generator must first determine if their waste fits any of the K-list industry categories.
3. **P- and U-listed wastes** are unused commercial chemical products, intermediates and off-spec variants. Chemical mixtures only meet this listing description if the sole active ingredient of the product is on the P- or U-list.

## Characteristic Wastes

The four characteristics of hazardous waste are:

1. **Ignitability** – liquids with a flash point below 140° F, non-liquids that can ignite under standard conditions and burn vigorously and persistently, ignitable compressed gas, or oxidizers
2. **Corrosivity**– aqueous solutions with a pH less than or equal to 2 or greater than or equal to 12.5, or liquids with the ability to corrode steel at a rate greater than 6.35 mm (0.250 inch) per year at a test temperature of 55°C (130°F) as determined by Method 1110A of EPA's SW-846 (incorporated by reference within §260.11).
3. **Reactivity**– includes wastes that are unstable under normal conditions, or that react violently or are explosive with water
4. **Toxicity**– wastes with a concentration greater than or equal to the regulatory level of one of the constituents listed in §261.24. This characteristic is determined using the Toxicity Characteristic Leaching Procedure (TCLP) from a representative sample of the waste.

Full details for related definitions, exclusions, exemptions, characteristic toxic wastes and listed wastes are found in the following sections of DRGHW.

Solid Waste Definition	§261.2
Exclusions/Exemptions	§261.4
Characteristic Waste (D-listed)	§261.21-24
Non-specific Source Wastes (F-listed)	§261.31
Specific Source Wastes (K-listed)	§261.32
Acutely Toxic Wastes (P-listed)	§261.33(e)
Toxic Wastes (U-listed)	§261.33(f)

## Account for All Possible Waste Codes

When making a hazardous waste determination, it is important to remember that a waste can display multiple characteristics and/or meet multiple listing descriptions. Accurate hazardous waste determinations must take into account all applicable listing descriptions and characteristics, each of which, is identified with a four-character waste code (e.g., D001, K051, P075, etc.). Small and large quantity generators must label all containers of hazardous waste with all applicable waste codes prior to off-site shipment. Alternatively, generators may use a nationally recognized electronic system, such as bar coding, to identify waste codes.

For example, a paint company wants to discard expired paint. They know that the paint is oil-based and determine it to exhibit the ignitable (D001) characteristic. The company concludes its hazardous waste determination and sends the ignitable paint waste to a disposal facility. The disposal facility decides to test the paint waste for heavy metals and discovers that the paint contains chromium (D007) levels above the regulatory limit. The paint company failed to consider that heavy metals can be used to pigment paint, thus failed to make an accurate hazardous waste determination. Failure to perform an accurate hazardous waste determination may lead to incomplete treatment or management at a disposal facility. In addition, generators must make accurate hazardous waste determinations at the point of generation to identify hazardous wastes that are restricted from land disposal and therefore subject to the requirements of Part 273. Hazardous waste determinations must be accurate!

## Hazardous Waste Determination Tools

Hazardous waste determinations can be made utilizing generator knowledge of materials and the process, utilizing laboratory data, or both. The following are a few examples of options available to generators.

### Safety Data Sheets (SDSs)

SDSs can provide information regarding ignitability (flash point), corrosivity (pH), reactivity or toxicity of the virgin product(s) going into a process. However, they tend to be less useful when it comes to identifying the characteristics of waste generated from a process and provide no assistance in determining if the process meets one of those listed within the F- or K-listing descriptions. Because materials used in process are routinely mixed with other materials and are/or are subjected to a process that may cause a chemical alteration of virgin materials, these considerations must be included when making a hazardous waste determination through the use of a SDS.

It is also important to note, safety standards and terminology vary among regulatory programs. For example, “acute toxicity” by Occupational Health and Safety Administration (OSHA) standards may not be “acute” or “toxic” by DRGHW standards. Also, OSHA requires that a SDS list all chemical constituents that are present in quantities of at least 1% (or 0.1% if the chemical is a carcinogen), but does not require the SDS to list the percentage make-up of the chemicals within a material. This means that a material used in a process may contain a constituent that is not listed on the SDS, but which contributes to the generation of a hazardous waste. Some SDS will state the percentages and others will not, but it’s important to consider what may – or may not – cause your materials to become hazardous waste when disposed.

### Symbols

The Department of Transportation (DOT) uses symbols to indicate hazards associated with a product. These symbols are a good indicator that a waste may display characteristics of hazardous waste. The following are some examples of DOT placards:



### Analytical Data

A waste generator can use applicable analytical methods (e.g., TCLP) described in Part 261, Subpart C to demonstrate if a waste stream is hazardous or non-hazardous. Analytical data are typically used to determine whether a waste exhibits one or more hazardous waste characteristics. Please be aware that should the products or manufacturing process change, the analytical data for the waste stream may no longer be accurate or applicable and a new hazardous waste determination is required. While awaiting an analytical determination, potentially hazardous waste must be managed as a hazardous waste until demonstrated otherwise.

### Waste Profiles

Waste management companies may offer to perform or assist a waste generator with making a hazardous waste determination. This involves testing the generated waste and/or providing knowledge of the waste based on the information obtained from the waste generator (e.g., a process description, a product list, etc.) to create a “waste profile.” While the waste management company is providing the waste profile, the generator of the waste has the ultimate responsibility for ensuring the waste is properly characterized. A waste profile must be supported by either laboratory analysis or acceptable knowledge as described in §262.11(c-d).

## Recordkeeping Requirements

Small and large quantity generators of hazardous waste, regardless of whether a waste is determined to be hazardous or non-hazardous, must maintain records of all waste determinations. At minimum, waste determination records **must** include the following:

- Tests, sampling, waste analysis or other determination results
- Tests, sampling and analysis documents used to demonstrate validity/relevance of methods used
- Documents used to determine generation process, composition and properties of the waste
- Records explaining the knowledge basis for the determination

Records must be maintained for at least three (3) years from the date that the waste was last sent on-site or off-site for treatment, storage or disposal. While not required, very small quantity generators of hazardous waste are encouraged to maintain these records.

This fact sheet is a summary provided as a courtesy to businesses. It is not intended as a substitute for 7 DE Admin. Code 1302, Delaware’s *Regulations Governing Hazardous Waste* (DRGHW), Parts 260-266, 268, 273 and 279.

[regulations.delaware.gov/AdminCode/title7/1000/1300/1302/](http://regulations.delaware.gov/AdminCode/title7/1000/1300/1302/)



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