



Land Disposal Restrictions (An Overview)

THIS POLICY DOES NOT HAVE THE FORCE OF LAW

Hazardous Waste

*This guidance document is intended to provide a broad overview of the land disposal restrictions (LDR) program. It is not intended to give detailed information on how to comply with the LDR rules. To determine the specific regulations with which you must comply, refer to the LDR rules in Ohio Administrative Code (OAC) Chapter **3745-270**.*

What is the Background for Development of this Guidance?

Hazardous waste is often placed into land-based units. The disposal of hazardous waste in land-based units has the potential to threaten human health and the environment through ground water contamination. As a result, in 1984 Congress added the *Hazardous and Solid Waste Amendments* (HWSA) to strengthen the Resource Conservation and Recovery Act (RCRA). HWSA provided the basic framework for the LDRs by requiring U.S. EPA to evaluate all listed and characteristic hazardous wastes to determine which wastes should be restricted from land disposal. Today, most hazardous wastes must be treated to meet waste specific standards prior to disposal in permitted hazardous waste landfills or surface impoundments.

The LDR program requires that hazardous waste destined for land disposal meet specific standards. Treatment standards are based on the performance of available technologies that best minimize the mobility or toxicity of the hazardous constituents. These treatment standards provide environmental protection by ensuring that hazardous waste is properly treated to destroy, immobilize or reduce the toxicity of hazardous chemical components before it is land disposed.

What are the Prohibitions?

The LDR program has three major components addressing hazardous waste disposal, hazardous waste dilution and hazardous waste storage. These prohibitions regulate handling of hazardous wastes subject to the LDR requirements.

According to OAC rule **3745-270-02(A)(5)**, land disposal includes, but is not limited to, any placement of hazardous waste in:

- landfills;
- surface impoundments;
- waste piles;
- injection wells;
- land treatment facilities;
- salt domes or salt bed formations;
- underground mines or caves; or
- concrete vaults or bunkers, intended for disposal purposes

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Dilution Prohibition

When a hazardous waste's treatment standard is expressed as a numeric concentration level, it is often easier and less expensive to dilute the hazardous waste in water or soil in order to reduce the concentration of the hazardous constituents. This type of activity is inconsistent with the LDR program and does not reduce the toxic chemicals that could be released to the environment. The dilution prohibition ensures that hazardous wastes are properly treated.

However for certain characteristic hazardous wastes in permitted treatment systems, under the Clean Water Act (CWA), dilution is sometimes permissible. Specifics on the dilution prohibitions are found in OAC rule [3745-270-03](#).

Storage Prohibition

Prior to treatment or disposal, a hazardous waste may be stored in containers, tanks and/or containment buildings. The storage prohibition was established to prevent indefinite storage and associated potential environmental hazards. The storage prohibition allows permitted hazardous waste treatment, storage and disposal (TSD) facilities to store waste for up to one year.

If the waste storage exceeds one year, the facility has the burden of proving that such storage is necessary to facilitate proper recovery, treatment or disposal (see OAC rule [3745-270-50](#)). This provision does not allow generators to store hazardous waste on-site beyond their respective accumulation time periods or allow transfer facilities to store manifested shipments of hazardous waste for more than 10 days without a hazardous waste permit.

Hazardous waste generators accumulating waste on-site for longer than their respective accumulation time limits and transfer facilities storing manifested shipments of hazardous waste for more than 10 days without a hazardous waste permit are in violation of the storage prohibition in Ohio Revised Code (ORC) section [3734.02](#). For more information, refer to Ohio EPA's Generator Treatment guidance document, OAC rule [3745-52-34](#) and OAC rule [3745-53-12](#).

What are the Treatment Standards?

Prior to land disposal, all hazardous wastes must meet treatment standards. Treatment standards, arranged by hazardous waste code, are located in the "Treatment Standards for Hazardous Waste" table in OAC rule [3745-270-40](#). Treatment standards can be expressed as concentration-based treatment standards or as specific treatment technologies.

Concentration-based treatment standards, which depending on the waste are either concentration in the waste or in a waste extract, appear in the table as numeric values. When the use of a specific technology is required, the standard is expressed as a five-letter code. These specified technologies are described in OAC rule [3745-270-42](#).

Depending on the hazardous waste code, your business may meet the treatment standards by:

- ensuring all hazardous constituents in your waste or treatment residue are at or below the total concentration values based on total constituent analysis (total waste standards) or a Toxicity Characteristic Leaching Procedure (TCLP) analysis (waste extract standards), whichever is applicable;
- treating the hazardous constituents in your waste or treatment residue to at or below the values based on total constituent analysis (total waste standards) or a TCLP analysis (waste extract standards), whichever is applicable; or
- treating your hazardous waste by using a specific treatment technology (technology standards) when applicable

What is Wastewater and Non-wastewater?

Treatment standards can vary for wastewater or non-wastewater forms of each hazardous waste. It is possible to treat your waste under both wastewater and non-wastewater standards. OAC rule [3745-270-02](#) defines wastewater as wastes that contain less than one percent by weight total organic carbon (TOC) and less than one percent by weight total suspended solids (TSS). Wastes that do not meet all of these criteria are non-wastewaters.

What are Underlying Hazardous Constituents?

At the point of generation, you must determine if your waste is a listed and/or a characteristic hazardous waste and determine applicable LDR requirements. If you generate a characteristic hazardous waste [other than a D001 non-wastewater treated by combustion (CMBST), recovery of organics (RORGs) or polymerization (POLYM)], you must determine the underlying hazardous constituents [see OAC rule [3745-270-09\(A\)](#)].

If you generate a hazardous waste that is both listed and characteristic, the treatment standard for the waste code listed in OAC rules [3745-51-30 to 3745-51-35](#) will operate in lieu of the treatment standard for the characteristic waste code(s).

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indicated in OAC rules [3745-51-20 to 3745-51-24](#). This only applies if the treatment standard for the listed waste includes a treatment standard for the constituent that causes the waste to be characteristic. If these conditions aren't met, the hazardous waste must meet the treatment standards for all applicable listed and characteristic waste codes [see OAC rule [3745-270-09\(B\)](#)].

OAC rule [3745-270-02\(A\)\(9\)](#) defines underlying hazardous constituents as any constituent listed in the "Universal Treatment Standard" table in OAC rule [3745-270-48](#). These constituents are not those that cause the waste to exhibit a characteristic, but they can pose environmental hazards nonetheless. The underlying hazardous constituents must be treated to meet the constituent-specific levels listed in the universal treatment standards (UTS). Removal of hazardous waste characteristics may not be sufficient for land disposal. Some characteristic hazardous wastes that no longer exhibit a characteristic may require additional treatment to meet additional LDR requirements. Once your characteristic hazardous wastes have been characterized and treated for their underlying constituents, they can be disposed of in a non-hazardous waste landfill.

What are the Exemptions?

While the LDR program generally applies to all persons who generate, transport, treat, store and dispose of restricted hazardous wastes, OAC rule [3745-270-01\(E\)](#) lists exclusions from the LDR requirements. The following hazardous wastes are not subject to the LDR program:

- non-acute hazardous waste or less than one kilogram of acute hazardous waste per month [see OAC rule [3745-51-05\(B\)](#)] generated by conditionally exempt small quantity generators (CESQG);
- waste pesticides and pesticide container residues disposed of by farmers on their own land in accordance with OAC rule [3745-52-70](#);
- wastes identified or listed as hazardous for which Ohio EPA has yet to promulgate land disposal prohibitions or treatment standards; and
- de minimis losses of characteristic wastes to wastewaters as described in OAC [rule 3745-270-01\(E\)\(4\)](#).

What are the Notification and Recordkeeping Requirements?

Generators

Generators sending hazardous waste off-site for treatment must send a one-time notification with the initial shipment to the TSD facility. The required notification information is listed in table 1, column A, of OAC rule [3745-270-07](#). As long as the hazardous waste and TSD do not change, no further notification is required. If a generator is treating their hazardous waste to meet the LDR requirements, they must develop and follow a waste analysis plan (WAP). The WAP must include all information necessary to treat the hazardous waste and must be kept onsite. For additional information on generator treatment, see Ohio EPA's "Regulatory Status of Generator Treatment" guidance document.

Treatment Facilities

Owners and operators of treatment facilities must send similar notifications with the shipment of treated wastes to disposal facilities and must test hazardous wastes they manage in accordance with their WAP [see table 2 in OAC rule [3745-270-07\(B\)](#)]. A certification normally accompanies the notification indicating that the hazardous waste meets the treatment standards and may be land disposed.

Contact

For more information, contact the Hazardous Waste Compliance and Inspection Support Unit of the [Division of Materials and Waste Management](#) at 614-644-2621.