



The Mixture / Derived - From Rules And Wastes Listed Solely for Ignitability, Reactivity, and/or Corrosivity

THIS POLICY DOES NOT HAVE THE FORCE OF LAW

Hazardous Waste

*This document is intended to help you understand the mixture and derived-from rules, including the exclusion under Ohio Administrative Code (OAC) rule **3745-51-03(G)**.*

What are the mixture and derived-from rules?

The mixture and derived-from rules define all wastes that originate from listed hazardous wastes (i.e., those wastes listed under OAC rules **3745-51-30 to 3745-51-35** as hazardous waste. The mixture rule is found at OAC rule **3745-51-03(A)(2)(e)**. The derived-from rule is found at OAC rule **3745-51-03(C)(2)(a)**. An exception to both of the rules is found in OAC rule **3745-51-03(G)**.

Under the mixture rule, if a waste is mixed with a listed hazardous waste, the mixture must be managed as the listed hazardous waste. Under the derived-from rule, any waste generated from the treatment, storage, or disposal of a listed hazardous waste remains regulated as a listed hazardous waste.

There is an exception for the mixture rule and the derived-from rule. If the listed waste is listed solely for ignitability, corrosivity, or reactivity, and either the waste mixture or the derivative waste does not exhibit any characteristic of hazardous waste, including TCLP toxicity, then the mixture or the derived-from waste is not a hazardous waste. If the waste exhibits the characteristic for TCLP toxicity, it is a characteristic hazardous waste that would carry the appropriate hazardous waste numbers (D004 through D043) but not the hazardous waste number for the listed waste.

Waste derived from the treatment, storage, or disposal of listed hazardous wastes include wastes such as sludge's, ash, spill residues, and leachate generated from treatment, storage, or disposal of listed hazardous waste.

Note: Mixtures of the waste, materials derived-from the waste that are listed solely for ignitability, corrosivity, or reactivity, and the as-generated waste are not listed waste when they do not exhibit a characteristic of ignitability, reactivity, and/or corrosivity; they are not hazardous waste as long as the waste does not exhibit any characteristic found in OAC rules **3745-51-21 through 3745-51-24**.

How do I know if my listed hazardous waste is listed solely for an ignitability, reactivity, and/or corrosivity characteristic?

The list in the box to the right contains those listed "F", "K", and "U" hazardous waste which are listed solely for one or more of the hazardous waste characteristics of ignitability, reactivity, and/or corrosivity. An (I), (C), (R), (E), (H) and a (T) following the EPA hazardous waste number denotes ignitability, corrosivity, reactivity, toxicity characteristic waste, acute hazardous waste, and toxic waste. Listed "F", "K", or "U" hazardous wastes are listed in rules **3745-51-30 to 3745-51-35** of OAC. The basis for listing these wastes is identified by one or more of the following hazard codes:

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- (I) Ignitable
- (C) Corrosive
- (R) Reactive
- (E) Toxicity Characteristic Waste
- (H) Acute Hazardous Waste
- (T) Toxic

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Examples

Example A

If you generate spill clean-up material as a result of spilling a drum of unused ethyl ether (U117), what hazardous waste code will you use to classify your clean-up material?

The **unused** ethyl ether that spilled is a commercial chemical product (CCP) and not a waste. Spilled, unusable ethyl ether and residues resulting from the cleaning of a spill of ethyl ether are listed hazardous waste having the waste code U117. U117 is listed solely for ignitability.

Any waste generated when the material is cleaned-up would not be a hazardous waste if it does not exhibit the characteristic of ignitability. Your waste evaluation must determine if the clean-up material exhibits any other characteristic (corrosivity, reactivity, or (TCLP) toxicity). If the waste generated when the material is cleaned-up no longer exhibits any characteristic of hazardous waste identified in rules [3745-51-20 to 3745-51-24](#) of the OAC, then it is not a hazardous waste. *Land Disposal Restriction's* (LDR's) apply to hazardous waste at the point of generation.

In the case of a spilled CCP that is cleaned up in a reasonable period of time, LDR's would not apply to clean up residues that are not hazardous waste.

Example B

If you generate spill clean-up material as a result of a drum of spent ethyl ether spilling over, what hazardous waste code will you use to classify your clean-up material? Spent ethyl ether is F003 hazardous waste.

Spills or releases sometimes occur which involve wastes that are listed for only a characteristic. An absorbent material used to clean-up a spill of spent ethyl ether (F003 listed hazardous waste) which no longer exhibits the characteristic of ignitability is no longer considered to be a listed F003 hazardous waste. This is because the F003 hazardous waste is listed solely for the characteristic of ignitability. Although the waste may no longer carry the F003 listing, your waste evaluation must determine if the clean-up material exhibits any other characteristic (corrosivity, reactivity, or toxicity). If the waste no longer exhibits any characteristic of hazardous waste identified in rules [3745-51-20 to 3745-51-24](#) of the OAC, then it is no longer a hazardous waste.

All Chemicals

Listed As:

F003 (I)

K044 (R)

K045 (R)

K047 (R)

U001 (I)

U002 (I)

U008 (I)

U020 (C, R)

U031 (I)

U055 (I)

U056 (I)

U057 (I)

U092 (I)

U096 (R)

U110 (I)

U112 (I)

U113 (I)

U117 (I)

U124 (I)

U125 (I)

U154 (I)

U161 (I)

U186 (I)

U189 (R)

U213 (I)

U239(I)

P009 (R)

P042 (R)

P081 (R)

P112 (R)

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Example C

If you mix a non-hazardous wastewater treatment sludge with a listed F005 hazardous waste, would the entire mixture be classified as a listed F005 hazardous waste?

Yes, the entire mixture would be classified as a listed F005 hazardous waste. F005 hazardous waste is listed for both ignitability and toxicity (not TCLP). It is not listed solely for the characteristic of ignitability, reactivity, or corrosivity

LDR's apply at the point when the ethyl ether becomes spent. Concentration-based LDR treatment standards for F003 are found in OAC rule [3745-270-40](#). If the material meets the treatment level it may be disposed of as a non-hazardous waste. The concentration-based standards are found in OAC rule [3745-270-40](#).

Example D

If an incinerator generates incinerator ash from burning U154 (I), U186 (I), U161 (I), and U189 (R), would the ash carry those same "U" hazardous waste listings?

U154, U186, and U161 are hazardous waste listed solely for the characteristic of ignitability.

U189 hazardous waste is listed solely for the characteristic of reactivity. If the ash no longer exhibits the characteristics for which the waste was listed - ignitability and reactivity, it won't carry any of those listed hazardous waste codes. However, if it exhibits the characteristic for toxicity under TCLP, it would carry the appropriate hazardous waste number (D004-D043). Incineration ash derived from the treatment of listed wastes that are not listed solely for ignitability, corrosivity, or reactivity will carry the appropriate hazardous waste number for those listed hazardous wastes.

Any hazardous waste listed in OAC rules [3745-51-30 to 3745-51-35](#) which is listed solely for the characteristic of ignitability, corrosivity, and/or reactivity is no longer a listed hazardous waste if it no longer exhibits any characteristic of hazardous waste as identified in OAC rules [3745-51-21 to 3745-51-24](#). A waste determination of whether the ash exhibits the hazardous waste characteristic of toxicity under OAC rule [3745-51-24](#) is required.

So, if the ash is hazardous for lead, will it also carry the "U" code?

The ash must be evaluated as a newly generated waste. If the ash exhibits the hazardous characteristic of toxicity for lead only, it would not carry the "U" code. It would be classified as D008 hazardous waste. Note that the wastes exempted under OAC rule [3745-51-03\(G\)](#) remain subject to LDRs for the original hazardous wastes incinerated at the point of land disposal even if they no longer exhibit the listed characteristic [see OAC rule [3745-51-03\(G\)\(3\)](#)].

Contact

If you have questions that aren't answered in this guidance, please contact the Hazardous Waste Compliance and Inspection Support Unit of the [Division of Materials and Waste Management](#) at 614-644-2621.