

# HAZARDOUS WASTE DETERMINATIONS

What is a solid waste? A solid waste is any solid, semisolid, liquid, or contained gaseous material that is discarded. Obviously something that is thrown into a dumpster is a solid waste. However, material that is dumped onto the ground, abandoned, stored, recycled or treated in lieu of being disposed of may also be a solid waste. Once something has been determined to be a solid waste, it must then be checked to see if it is a hazardous waste. Tools that can be used include product labels, Material Safety Data Sheets (MSDSs) and lab test results. A proper hazardous waste determination is a two step process. Both steps must be performed, and all appropriate waste codes must be applied to the waste stream.

## STEP 1: IS THE WASTE A LISTED WASTE?

A solid waste is a hazardous waste if it is **listed** as such on any of the EPA hazardous waste lists located in 40 CFR 261 Subpart D (**F, K, U, and P listed wastes**)

1. ***Nonspecific sources – F001 to F039 [40 CFR 261.31]*** These are hazardous wastes produced by general industry, manufacturing, and maintenance operations

**F001:** Spent halogenated solvents used in degreasing: Tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons; all spent solvent mixtures/blends used in degreasing containing, before use, **a total of ten percent or more (by volume)** of one or more of the above halogenated solvents or those solvents listed in F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures. **Examples: solvent degreasers, vapor degreasers**

**F002:** Spent halogenated solvents: Tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, ortho-dichlorobenzene, trichlorofluoromethane, and 1,1,2-trichloroethane; all spent solvent mixtures/blends containing, before use, **a total of ten percent or more (by volume)** of one or more of the above halogenated solvents or those listed in F001, F004, or F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures. **Examples: dry cleaning solvents, brake cleaners, paint removers**

**F003:** Spent non-halogenated solvents: Xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; all spent solvent mixtures/blends containing, before use, **only the above** spent non-halogenated solvents; **and all spent solvent mixtures/blends** containing, before use, one or more of the above non-halogenated solvents, and, **a total of ten percent or more (by volume)** of one or more of those solvents listed in F001, F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures. **Examples: paint thinners, lacquer thinners, alcohol cleaners**

**F004:** Spent non-halogenated solvents: Cresols and cresylic acid, and nitrobenzene; all spent solvent mixtures/blends containing, before use, **a total of ten percent or more (by volume)** of one or more of the above non-halogenated solvents or those solvents listed in F001, F002, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures. **Examples: Carburetor dip cleaner (cresylic acid)**

**F005:** Spent non-halogenated solvents: Toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, benzene, 2-ethoxyethanol, and 2-nitropropane; all spent solvent mixtures/blends containing, before use, **a total of ten percent or more (by volume)** of one or more of the above non-halogenated solvents or those solvents listed in F001, F002, or F004; and still bottoms from the recovery of these spent solvents and spent solvent mixtures **Examples: Lacquer thinners**

**F006 to F039:** Other non-specific wastes. **Examples: F006 electroplating sludge, F007 spent cyanide plating baths**

2. ***Specific sources – K codes [40 CFR 261.32]*** These are hazardous wastes produced by a particular industrial activity Examples: K061 emission control dust , K016 distillation residue from carbon tetrachloride production
3. ***Discarded commercial chemical products, off-spec products, residues and spill residues:***
  - a. **U001 to U411 [40 CFR 261.33]** Examples: U002 acetone, U165 naphthalene, U220 toluene, U239 xylene
  - b. **P023 to P205 [40 CFR 261.33]** Wastes that are acutely toxic. Small amounts (1kg or more per month or at any one time) make a facility a Large Quantity Generator. Examples: P042 epinephrine, P075 nicotine, P089 parathion, P108 strychnine, some pharmaceutical wastes, some chemotherapy wastes

**Note:** Due to the mixture rule, a non-listed waste or a non-hazardous waste that comes into contact with a listed waste becomes a listed waste. Examples: solvent contaminated cleaning rags, solvent still bottoms, kitty litter used to clean up a spill, contaminated soil or debris.

## **STEP 2: IS THE WASTE A CHARACTERISTIC WASTE?**

A solid waste is a characteristic hazardous waste if it meets any of the characteristics identified in 40 CFR 261 Subpart C (**D code wastes**):

1. ***Ignitability – D001 [40 CFR 261.21]*** A liquid, other than an aqueous solution containing less than 24 percent alcohol by volume, that has flash point less than 60 °C (140 °F). (Please see rule for a complete set of criteria.) Examples: oil based paints, mineral spirits, fuels, non-empty aerosol cans of some paints
2. ***Corrosivity – D002 [40 CFR 261.22]*** An aqueous solution that has a pH less than or equal to 2 or greater than or equal to 12.5, or is a liquid that corrodes steel (SAE 1020) at a rate greater than 6.35 mm (0.250 inch) per year at a test temperature of 55 °C (130 °F). Examples: muriatic acid, sulfuric acid, solutions of sodium hydroxide
3. ***Reactivity – D003 [40 CFR 261.23]*** A waste that is normally unstable and readily undergoes violent change without detonating or reacts violently with water or forms potentially explosive mixtures with water. (Please see rule for a complete set of criteria.) Examples: fireworks, gunpowder
4. ***Toxicity – D004 to D043 [40 CFR 261.24]*** The extracts from a representative sample of the waste are tested and are found to contain certain contaminants in greater concentrations than permissible as listed in Table 1 of 40 CFR 261.24.

**Maximum Concentration of Contaminants for  
the Toxicity Characteristic – Testing Methods**

<b>TCLP Metals</b>			
<i>Parameter</i>	<i>Regulatory Limit (mg/L)</i>	<i>HW No.</i>	<i>EPA Method</i>
Arsenic	5.0	D004	6010
Barium	100.0	D005	6010
Cadmium	1.0	D006	6010
Chromium	5.0	D007	6010
Mercury	0.2	D009	7470
Lead	5.0	D008	6010
Selenium	1.0	D010	6010
Silver	5.0	D011	6010
<b>TCLP Semi-Volatiles</b>			
o-Cresol	200.0	D023	8270
m-Cresol	200.0	D024	8270
p-Cresol	200.0	D025	8270
Cresol	200.0	D026	8270
2,4-Dinitrotoluene	0.13	D030	8270
Hexachlorobenzene	0.13	D032	8270
Hexachlorobutadiene	0.5	D033	8270
Hexachloroethane	3.0	D034	8270
Nitrobenzene	2.0	D036	8270
Pentachlorophenol	100.0	D037	8270
Pyridine	5.0	D038	8270
2,4,5,-Trichlorophenol	400.0	D041	8270
2,4,6,-Trichlorophenol	2.0	D042	8270
<b>TCLP Volatiles</b>			
Benzene	0.5	D018	8260
Carbon Tetrachloride	0.5	D019	8260
Chlorobenzene	100.0	D021	8260
Chloroform	6.0	D022	8260
1,4-Dichlorobenzene	7.5	D027	8260
1,2-Dichloroethane	0.5	D028	8260
1,1-Dichloroethylene	0.7	D029	8260
Methyl Ethyl Ketone	200.0	D035	8260
Tetrachloroethylene	0.7	D039	8260
Trichloroethylene	0.5	D040	8260
Vinyl Chloride	0.2	D043	8260
<b>TCLP Pesticides</b>			
Chlordane	0.03	D020	8081
Endrin	0.02	D012	8081
Heptachlor (and epoxide)	0.008	D031	8081
Lindane	0.4	D013	8081
Methoxychlor	10.0	D014	8081
Toxaphene	0.5	D015	8081
<b>TCLP Herbicides</b>			
2,4-D (dichlorophenoxyacetic acid)	10.0	D016	8151
2,4,5-TP (silvex)	1.0	D017	8151