

## Industry Overview

Not all equipment repair operations produce hazardous waste. If, however, you use any solvents, petroleum products, paints, special parts cleaners and fluids, or lacquers, the waste generated from using these materials might be hazardous. If you generate hazardous waste, you might be subject to Resource Conservation and Recovery Act (RCRA) requirements covering the generation, transportation, and management of hazardous waste.

Your business is included in the *equipment repair* category if you operate a:

- Radio and/or television repair shop
- Refrigeration and air conditioning service or repair shop
- Miscellaneous equipment shop (e.g., electrical household appliances or industrial equipment)

or if you repair equipment used for:

- Pipelines (except natural gas)
- Communications
- Power generation transmission
- Automatic merchandising machines
- Amusement parks.

## Hazardous Wastes from Equipment Repair

Everyday mechanics and repair personnel use products containing hazardous materials. Products that contain materials that are hazardous to human health and the environment include:

**Rust removers** that contain strong acid or alkaline solutions

**Degreasers** that contain ignitable liquids and toxic chemicals

**Paint thinners or reducers** that are ignitable and/or contain toxic chemicals

**Paints and coatings** with heavy metals or toxic constituents.

Table 1 lists typical operations/processes that use products that might contain hazardous materials and that probably generate haz-

ardous waste. If you generate 100 kilograms (220 pounds or about half of a 55-gallon drum) or more of hazardous waste per month, you must fill out a Uniform Hazardous Waste Manifest when you ship hazardous waste off your property. The Manifest requires the Department of Transportation (DOT) description for each waste. Table 2 lists the proper DOT shipping descriptions for a number of wastes that might be generated during equipment repair operations. Table 1 and Table 2 are not comprehensive lists. If you suspect that any waste you are generating is hazardous, check with your state hazardous waste management agency or EPA Regional office.

There are special provisions in the regulations for used oil. You do not have to use a Manifest when you ship used motor oil that is destined for recycling. If, however, you are disposing of used oil yourself or are sending it offsite for disposal, you generally should handle it as hazardous waste because it is likely to be ignitable or toxic. There are special requirements that apply if you are burning used oil as fuel. Your state might have its own requirements for used oil; check with your state hazardous waste management agency.

## Waste Minimization

An effective waste minimization program can reduce the costs, liabilities, and regulatory burdens of hazardous waste management, while potentially enhancing efficiency, product quality, and community relations. Waste minimization techniques that can help you reduce the amount of hazardous waste that you generate include:

- Production planning and sequencing
- Process/equipment adjustment or modification
- Raw material substitution
- Loss prevention and housekeeping
- Waste segregation and separation
- Recycling.

Training and supervision of employees implementing waste minimization techniques is an important part of your successful program. Call the RCRA/Superfund Hotline toll-free at 800-424-9346 (or TDD 800-553-7672 for the hearing-impaired) for waste minimization information and publications.

**Table 1**  
**Typical Equipment Repair Operations:**  
**Materials Used and Hazardous Wastes that Might be Generated**

Process/Operation	Materials Used	Typical Material Ingredient	General Types of Waste Generated
Degreasing; Engine, Parts, and Equipment Cleaning	Degreasers (gunk), carburetor cleaners, engine cleaners, solvents, acids/alkalies, cleaning fluids	Petroleum distillates, aromatic hydrocarbons, mineral spirits, benzene, toluene, petroleum naphtha	Acid/alkaline wastes Toxic wastes Ignitable wastes Spent solvents
Rust Removal	Naval jelly, strong acids, strong alkalies	Phosphoric acid, hydrochloric acid, hydrofluoric acid, sodium hydroxide	Acid/alkaline wastes
Paint Preparation	Paint thinners, enamel reducers, white spirits, paint removers	Alcohols, petroleum distillates, oxygenated solvents, mineral spirits, ketones	Ignitable wastes Toxic wastes Paint wastes Spent solvents
Painting	Enamels, lacquers, epoxies, alkyds, acrylics, primers, solvents	Acetone, toluene, petroleum distillates, epoxy ester resins, methylene chloride, xylene, VM&P naphtha, aromatic hydrocarbons, methyl isobutyl, ketones	Ignitable wastes Toxic wastes Paint wastes Spent solvents
Spray Booth, Spray Guns, and Brush Cleaning	Paint thinners, enamel reducers, solvents, white spirits	Ketones, alcohols, toluene, acetone, isopropyl alcohol, petroleum distillates, mineral spirits	Ignitable wastes Toxic wastes Paint wastes
Paint Removal	Solvents, paint thinners, enamel reducers, white spirits	Acetone, toluene, petroleum distillates, methanol, methylene chloride, isopropyl alcohol, mineral spirits, alcohols, ketones, other oxygenated solvents	Paint wastes Spent solvents Toxic wastes

**Table 2**  
**Equipment Repair Waste Descriptions<sup>1</sup>**

Waste Type	Designations/Trade Names	DOT Shipping Name	Hazard Class	UN/NA ID Number
<b>STRONG ACID/ALKALINE WASTES</b>				
Ammonium Hydroxide	Ammonium Hydroxide, NH <sub>4</sub> OH, Spirit of Hartshorn, Aqua Ammonia	Waste Ammonium Hydroxide (containing not less than 12% but not more than 44% ammonia) (containing less than 12% ammonia)	Corrosive Material ORM-A	NA2672 NA2672
Hydrobromic Acid	Hydrobromic Acid, HBr	Waste Hydrobromic Acid (not more than 49% strength)	Corrosive Material	UN1788
Hydrochloric Acid	Hydrochloric Acid, HCl, Muriatic Acid	Waste Hydrochloric Acid	Corrosive Material	NA1789
Hydrofluoric Acid	Hydrofluoric Acid, HF, Fluorohydric Acid	Waste Hydrofluoric Acid	Corrosive Material	UN1790
Nitric Acid	Nitric Acid, HNO <sub>3</sub> , Aquafortis	Waste Nitric Acid (over 40%) (40% or less)	Oxidizer Corrosive Material	UN2031 NA1760
Phosphoric Acid	Phosphoric Acid, H <sub>3</sub> PO <sub>4</sub> , Orthophosphoric Acid	Waste Phosphoric Acid	Corrosive Material	UN1805
Potassium Hydroxide	Potassium Hydroxide, KOH, Potassium Hydrate, Caustic Potash, Potassa	Waste Potassium Hydroxide Solution Dry Solid, Flake, Bead, or Granular	Corrosive Material Corrosive Material	UN1814 UN1813
Sodium Hydroxide	Sodium Hydroxide NaOH, Caustic Soda, Soda Lye, Sodium Hydrate	Waste Sodium Hydroxide Solution Dry Solid, Flake, Bead, or Granular	Corrosive Material Corrosive Material	UN1824 UN1823
Sulfuric Acid	Sulfuric Acid, H <sub>2</sub> SO <sub>4</sub> , Oil of Vitriol	Waste Sulfuric Acid	Corrosive Material	UN1832
Chromic Acid	Chromic Acid	Waste Chromic Acid Solution	Corrosive Material	UN1755
<b>SPENT SOLVENTS AND IGNITABLE OR TOXIC WASTES CONTAINING:</b>				
Ethylene Dichloride*	Ethylene Dichloride, 1,2-Dichloroethane	Waste Ethylene Dichloride	Flammable Liquid <sup>2</sup>	UN1184
Benzene*	Benzene	Waste Benzene (benzol)	Flammable Liquid	UN1114

**Table 2 (continued)**  
**Equipment Repair Waste Descriptions<sup>1</sup>**

Waste Type	Designations/Trade Names	DOT Shipping Name	Hazard Class	UN/NA ID Number
Toluene	Toluene	Waste Toluene (tuluol)	Flammable Liquid	UN1294
Ethyl Benzene	Ethyl benzene	Waste Ethyl benzene	Flammable Liquid	UN1175
Chlorobenzene*	Chlorobenzene, Monochlorobenzene, Phenylchloride	Waste Chlorobenzene	Flammable Liquid	UN1134
Cresols*	o-Cresol, m-Cresol, p-Cresol, (m,p)-Cresol, (o,m,p)- Cresol	Waste Cresol	Corrosive Material	UN2076
Trichloroethylene*	TCE, Gemalgene, Lanadin, Lethurin, Nialk, Perm-a-Chlor	Waste Trichloroethylene	ORM-A	UN1710
Methyl Ethyl Ketone*	Methyl Ethyl Ketone, MEK, Methyl Acetone, Meetco, Butanone, Ethyl Methyl Ketone	Waste Methyl Ethyl Ketone	Flammable Liquid	UN1193
Chloroform*	Chloroform	Waste Chloroform	ORM-A	UN1888
Carbon Tetrachloride*	Perchloromethane Tetraform, Carbona Halon 104	Waste Carbon Tetrachloride	ORM-A	UN1846
Hexachloroethane*	Hexachloroethane	Waste Hexachloroethane	ORM-A	NA9037
White Spirits, Versol	White Spirits, Mineral Spirits, Naphtha	Waste Naphtha	Flammable Liquid	UN2553
1,1,1-Trichloroethane	Aerothene TT, Chlorten, Chloroethane, Methyl Chloroform, Alpha T, Chlorotene	Waste 1,1,1-Trichloroethane	ORM-A	UN2831
Petroleum Distillates	Petroleum Distillates	Waste Petroleum Distillate	Flammable Liquid Combustible Liquid <sup>3</sup>	UN1268 UN1268

**PAINT WASTES WITH HEAVY METALS**

Heavy Metal paints with:	Heavy Metal Paints Lead* Nickel* Chromium*	Hazardous Waste, Liquid or Solid, NOS <sup>4</sup>	ORM-E	NA9189
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**OTHER WASTES**

Used Oil	Various petroleum products	Waste Petroleum Oil, NOS Waste Petroleum Oil, NOS	Combustible Liquid Flammable Liquid	NA1270 NA1270
Ignitable Wastes, NOS	Ignitable Wastes	Waste Flammable Liquid, NOS Waste Combustible Liquid, NOS Waste Flammable Solid, NOS	Flammable Liquid Combustible Liquid Flammable Solid	UN1993 NA1993 UN1325
Hazardous Waste, NOS		Hazardous Waste, Liquid or Solid, NOS	ORM-E	UN9189

\* Toxicity Characteristic constituent. Any waste that results in a leachate containing a Toxicity Characteristic constituent equal to or above regulatory levels is hazardous.

1 These descriptions may change given variations in waste characteristics or conditions. Note that the DOT shipping name, hazard class, and UN/NA ID number do not directly correspond to RCRA hazardous waste categories.

2 A flammable liquid has a flash point below 100°F.

3 A combustible liquid has a flash point between 100°F and 200°F.

4 NOS - Not otherwise specified.

**For further information call the RCRA/Superfund Hotline 1-800-424-9346**