Office of Pollution Prevention

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Automotive Repair Facilties

This fact sheet outlines hazardous waste management requirements and pollution prevention options for automotive repair facilities. Through pollution prevention, automotive repair facilities will not only better comply with environmental regulations, but also reduce operating costs, improve worker safety, and enhance their shops' image in their community.

Facility Wastes - *Overview*

Most automotive repair facilities generate spent solvents, lead-acid batteries, used antifreeze, absorbents, used oil, used oil filters, parts cleaning wastes, shop cleaning wastes, aerosol cans, paints, refrigerants, tires and various engine and auto body parts. These wastes can be created by replacing automotive fluids, maintaining parts and repairing equipment.

The **Resource Conservation and Recovery Act (RCRA)** is a federal environmental law that regulates solid and hazardous wastes from generation through disposal. Hazardous wastes are classified into two categories: *listed* and *characteristic*. Characteristic hazardous wastes exhibit one or more of the four hazardous characteristics (ignitability, corrosivity, reactivity and toxicity). Listed hazardous wastes are specifically listed by name or process in the Code of Federal Regulations Chapter 261, and in Ohio's Hazardous Waste Management Rules, Ohio Administrative Code Chapter 3745-51.

Every automotive repair facility that generates a hazardous waste is considered a generator. Hazardous waste generators must abide by certain environmental laws and regulations. Many automotive repair facilities produce hazardous wastes. If you intend to dispose of (landfill or incinerate) shop wastes, you must first determine (often referred to as "characterization") whether the wastes are hazardous wastes. This characterization can be decided through knowledge of the waste stream (material safety data sheet) or appropriate analytical testing.

What is Pollution Prevention?

Pollution prevention uses source reduction and environmentally sound recycling to reduce or eliminate hazardous waste and other pollution at the source. Pollution prevention includes good operating practices, material substitutions, process changes and recycling. Pollution prevention addresses all waste streams (solid and hazardous waste, air and water).

There are many pollution prevention opportunities available for automotive repair facilities. If you currently generate a hazardous waste or any other type of waste, pollution prevention can help you reduce or eliminate that waste. (See Table I - Guide to Managing Auto Repair Shop Wastes)

Serious Hazardous Waste Violations

- Disposing of hazardous waste improperly (for example, throwing solvent waste in trash).

- Storing wastes in containers that are leaking or in poor condition.

- Not properly evaluating wastes.

Used Oils

U.S. EPA estimated that 1.2 billion gallons of used oil were generated by the commercial sector in 1988. Although a large portion was either burned for energy recovery or recycled, millions of gallons were disposed in landfills, applied to roadways, incinerated, or illegally disposed. The mismanagement of used oil has resulted in significant damage to the environment and costly cleanup.

Used oil includes motor oil, brake and transmission fluid, and hydraulic oil. *Used oil that has not been mixed with a hazardous waste and is recycled is not subject to Ohio's hazardous waste requirements, but may be subject to Ohio's Used Oil Regulations. For details, contact Ohio EPA, Division of Hazardous Waste Management (DHWM) at (614) 644-2934.*

Special Note On Using Space Heaters

In a temperate climate such as Ohio, many automotive repair facilities manage their used oil in the winter by burning it in

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Used Oil Facts

- One gallon of used oil contaminates one million gallons of water.

- Used oil often contains toxic chemicals such as lead, arsenic, cadmium, benzene, and chlorinated solvents.

- Used oil discharged into sanitary sewer systems can upset a wastewater treatment system and pose a fire hazard or, if discharged into a storm sewer system, can disrupt or damage surface water ecosystems.

auxiliary heating units known generically as *space heaters.* If you burn used oil in a space heater, it is important to distinguish between the two types of used oil, *off-specification* and *on-specification* used oil. The burner must determine the specification status of his/her used oil. This generally means having the oil tested or analyzed.

Although Ohio does not regulate burning on-specification used oil in a space heater under its hazardous waste or used oil guidelines, this activity may require an air permit, or its equivalent, from Ohio's air pollution control program (see below). Off-specification used oil is more contaminated with certain chemicals than on-specification used oil, so its burning warrants special control.

A business may burn its off-specification used oil in a space heater, provided the following conditions are satisfied:

(1) the heater does not exceed 500,000 BTUs per hour

(2) combustion gases are vented to the outside

(3) the oil is burned only by the person(s) that generate(s) the oil or receives it from a do-it-yourselfer (DIY)

(4) Ohio's applicable air pollution requirements are met. For details, contact Ohio EPA, Division of Air Pollution Control (DAPC) at (614) 644-2270.

Off-site recycling services are commonly available for auto repair shops that generate used oil. Most used oil recycling services will charge a fee for pickups and to cover costs associated with recycling. However, off-site recycling of used oil is often the most economical and environmentally sound way of handling used oil.

To ensure the capability to recycle used oil, do not add chlorinated solvents or other wastes to used oil. Keep used oil segregated to prevent contamination from other waste streams**.**

Used Oil Filters

It has been estimated that approximately 400 million used oil filters are disposed of each year in the United States. Assuming the average filter contains about 3 to 4 ounces of oil, this translates into over 12 million gallons of oil.

Used oil filters may be hazardous waste because of chemicals which are present in the used oil. Used oil filters are not hazardous waste if they are recycled as scrap metal, or if they are non-terne plated and "hot-drained" by one or a combination of the following methods:

(1) Puncturing the filter anti-drain back valve or the filter dome end and hot-draining

(2) hot-draining and crushing

(3) dismantling and hot-draining

(4) any other equivalent hot-draining method which will remove used oil. Used oil recovered from filters can be recycled in addition to the metal from the spent metal filter cases.

Used Antifreeze

Ethylene glycol (antifreeze) is a water-soluble compound that has a sweet taste. *It may be hazardous waste because of the high levels of lead in it.* It is also toxic to fish and wildlife. Handle it very carefully. Store it in a secure area in a closed container that is in good condition. Because animals are attracted to its sweet taste, clean up any spills or discharges at once. Do not store antifreeze next to a floor drain that is connected to a septic system, or by a storm drain discharging into surface waters. Used antifreeze should not be disposed to sanitary sewers and the publicly owned treatment works (POTW).

Antifreeze recycling equipment is commercially available for use by automotive repair facilities. Antifreeze recycling can be a cost-effective way for shops to handle used antifreeze solutions. Antifreeze recycling equipment includes distillation and filtration technologies. These systems can filter solids and remove metal ions from the used antifreeze. Automotive repair facilities also can manage used antifreeze by sending it off-site to an antifreeze recycling facility.

Used Refrigerants/Chlorofluorocarbons

Chlorofluorocarbons (CFCs) have received world wide attention because they have weakened the ozone, a special layer in the atmosphere protecting Earth from harmful ultraviolet radiation. Automotive refrigerant from air conditioners is one of the largest sources of CFCs in the United States. *In addition, certain CFCs used as refrigerants or coolants may be hazardous wastes.* Most automotive refrigerants are CFC-12 (also called freon or R-12).

TABLE 1
GUIDE TO MANAGING AUTO REPAIR WASTES

Waste Stream	Toxic/Hazardous Property	Pollution Prevention Alternative
 *Used Antifreeze*	Ethylene glycol, lead	Keep antifreeze segregated and consider on-site recycling units or send off-site for recycling. ☎
 *Used Oil and Other Engine Fluids*	Heavy metals, used oil, flammables	Consider nonhazardous alternatives if available. Keep oils/fluids segregated and send off-site for recycling. ☎
 *Used Oil Filters*	Used oil	Drain oil from filters and recycle. Crush filters and send off-site for metal recycling. ☎
 *Oil/Water Separator Sludge*	Used oil, grease, spent fuels, heavy metals, solvents	Minimize generation by using good housekeeping and preventing spills. Use drip pans and dry cleanup methods.
 *Spent Fuel*	Benzene, flammables	Reuse spent fuels. Send contaminated fuels off-site for recycling.
 *Lead-Acid Batteries*	Corrosive acid, lead	Collect batteries and return to vendor or send off-site for recycling. ☎
 *Aerosol Cans*	Flammables, CFCs, solvents, other toxics	Evaluate nonhazardous, non-CFC alternatives. Use refillable aerosol cans. ☎
 *Used Refrigerants*	CFCs	Use on-site recycling systems to recover and reuse. ☎

☎ **= Contact Ohio EPA/OPP at 614/644-3469 for more information regarding this topic.**

Waste Stream	Toxic/Hazardous Property	Pollution Prevention Alternative
 *Used Engine Parts*	Heavy metals, public nuisance	Rebuild on-site or sell to parts remanufacturer. Recycle off-site for metal scrap.
 *Auto Glass, Mirrors, Headlamps*	Lead	Send off-site for recycling. ☎
Parts Washers and Spent Solvents 	Flammables, chlorinated compounds, other toxics	Evaluate mechanical cleaning methods, including wire brushing. Consider nonhazardous solvent alternatives for parts washers and cleaning. Consider two-stage parts washers with filtration to extend life of cleaning solvents. Evaluate water-based (aqueous) cleaning with recycling systems. Contract with a service company to recycle solvents and maintain parts washers. Evaluate on-site distillation units to recycle spent cleaning solvents. ☎
 *Water-based (aqueous) cleaning*	Wastewater, oil and grease, heavy metals	Consider on-site wastewater recycling systems ☎
 *Shop Towels, Rags, and Absorbents*	May contain flammables, chlorinated compounds, heavy metals or other toxics	Consider off-site laundry services for rags and shop towels. Minimize generation by improving housekeeping and using drip trays and pans. Use hand-operated wringers to recover solvents for reuse.
 *Outdated Supplies*	Hazardous chemicals	Use an inventory system to keep track of supplies. Minimize purchase quantities and use a "first-in, first-out" policy.

☎ **= Contact Ohio EPA/OPP at 614/644-3469 for more information regarding this topic.**

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Do not attempt to service auto air conditioning systems unless you have proper training and certification. For more information, contact Ohio EPA, DAPC at (614) 644 -2270.

Automotive repair facilities can recycle used refrigerants. Portable, self-contained recycling units are commercially available to recycle CFC-12. The equipment processes the refrigerant through a separator, filter and dryer. The refrigerant can then be returned to the air conditioner after repair is completed. Automotive repair facilities who service a number of air conditioners each year may save money by purchasing a CFC-recycling system. CFCs may also be collected and sent off-site for recycling.

Parts Cleaning Wastes

Cleaning engine parts using solvents and parts washers is a common practice for automotive repair facilities. In general, parts washers do not require a hazardous waste permit. *Parts washer solvents are not considered wastes until they are removed from the unit, or unless they remain in the unit over 90 days after the unit ceases operation.*

Parts washers are often used in combination and concurrently with on-site solvent recovery units to reclaim spent solvents. This process does not require a hazardous waste permit. *Spent solvents that are removed from a parts washer and stored in containers remain wastes prior to reclaiming.* Although some parts washer cleaners are nonhazardous as products, they may become heavily contaminated during use and exhibit a hazardous waste characteristic.

All businesses disposing of their solvents must determine if they are hazardous wastes. Be sure you know the types and quantities of ingredients in solvent products before you purchase them. Be aware that complete or adequate product information is not always disclosed on the product label or material safety data sheets.

There are several pollution prevention opportunities related to parts cleaning. First, automotive repair facilities should evaluate the need for cleaning and determine how clean a part needs to be. Mechanical methods including wire or abrasive brushes should be used when appropriate.

Automotive repair facilities can evaluate alternative solvents and cleaners for use. To reduce regulatory burden for shops, parts washer solvents should be evaluated so that they do not contain regulated materials.

If parts washers are used, there are a number of ways to reduce hazardous waste generation and to extend the life of cleaning solvents used. For example, automotive repair facilities should consider using a two-stage cleaning system. The first stage should clean the dirtiest parts. The second stage uses cleaner solvent for final cleaning and rinsing. When the cleaning solution in the second stage is no longer effective, it can then be used to replace the solvent in the first stage. Fresh solvent is then used to replace the second stage. Parts washers should have a recirculating feature with built-in filtration to continuously remove dirt and contaminants. Drip racks or trays can help increase drainage from parts to minimize solvent loss. When not in use, lids on parts washers should be kept closed to reduce evaporative solvent loss.

For some larger automotive repair facilities, the use of an on-site solvent distillation unit may be an economically feasible way to recover solvents and significantly reduce solvent waste generation. A solvent distillation unit recovers solvent by heating the cleaning mixture to vaporize the solvent and condense the vapor. Different types of distillation units are currently available.

There are many companies available that provide off-site recycling of cleaning solvents. In addition, many auto repair shops contract with a parts washer service company to help properly maintain washers and manage solvent wastes for off-site recycling.

For some automotive repair facilities, aqueous (detergent-based) cleaning may be an alternative to using parts washers and cleaning solvents. Aqueous cleaning systems are available with features including high pressure sprays and immersion baths with ultrasonics to enhance cleaning effectiveness. Aqueous cleaning systems can be designed with equipment to filter out contaminants, return chemicals for cleaning and to recycle water.

Wastewater discharged from aqueous cleaning systems may be subject to local, state and federal environmental requirements. For additional information, contact Ohio EPA's Division of Surface Water at (614) 644-2001.

Shop Cleanup Wastes

Floor cleaning wastes, absorbents used for spills or leaks and shop rags are common waste streams generated by shop cleanup activities. Although used absorbents may contain only very small amounts of contaminants, they must be characterized before being disposed.

Using shop towels instead of absorbents may be a viable option under some circumstances. *Used shop towels are not hazardous wastes if they are sent to a launderer/dry cleaner, cleaned and reused (Please note this does not apply to absorbents used to contain or cleanup leaks and spills). The used towels must not contain free liquid prior to laundering.* Hand-operated wringers can be used to recover solvents for reuse from rags and towels. Like wastewater discharged from aqueous parts cleaning, water from floor and equipment cleaning also may be subject to local, state and federal environmental requirements. *In addition, sludge from shop floor sumps may require disposal as a hazardous waste depending on characterization.* Automotive repair facilities

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Pollution Prevention Tips for Auto Repair Shops

- Segregate and store wastes in proper containers to allow for recycling.

- Replace hazardous or toxic products with safer alternatives.

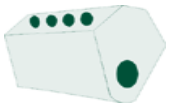
- Control inventory to reduce wastes.

- Replace disposable items with reusable ones.

- Establish an incentives program for employees to reduce wastes.

Other Auto Repair Shop Wastes

Used engine parts, tires, and batteries are just a few of the other types of wastes generated by auto shops. *Generally speaking, these materials are not hazardous wastes if they are recycled and are not contaminated with a hazardous waste.* For assistance in managing miscellaneous auto shop wastes, contact Ohio EPA's DHWM at (614) 644- 2934.



are encouraged to operate a "dry shop" to reduce the generation of floor cleaning related wastewater and floor sump sludge.

Good operating practices including improved housekeeping measures can help automotive repair facilities reduce the generation and disposal of these waste streams. Using drip trays and pans can prevent spills, recover product for reuse, and eliminate the need for floor dry absorbents. Squeegees can also be used to recover product and cleanup spills.

Ohio EPA Auto Repair Publication Contacts

Office of Pollution Prevention
(614) 644-3469
www.epa.state.oh.us/opp

Division of Hazardous Waste Management
(614) 644-2934
www.epa.state.oh.us/dhwm

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CCAR-GreenLink
Coordinating Committee For Automotive Repair (CCAR)
11301 Nall Ave. Suite 203 Leawood, KS 66211
www.ccar-greenlink.org

Trade Associations

Automotive Service Association of Ohio
(740) 548-4889
(800) 441-6518 (in Ohio)
e-mail: asaohio@infinet.com

Automotive Service Association (National)
(817) 283-6205
(800) 272-7487 or
(800) ASA-SHOP
www.asashop.org

www.epa.state.oh.us/opp

The Office of Pollution Prevention was created to encourage multi-media pollution prevention activities in Ohio to reduce risk to public health, safety, welfare and the environment. Pollution prevention stresses source reduction and, as a second choice, environmentally sound recycling while avoiding cross media transfers. The Office develops information related to pollution prevention, increases awareness of pollution prevention opportunities, and can offer technical assistance to business, government, and the public.

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