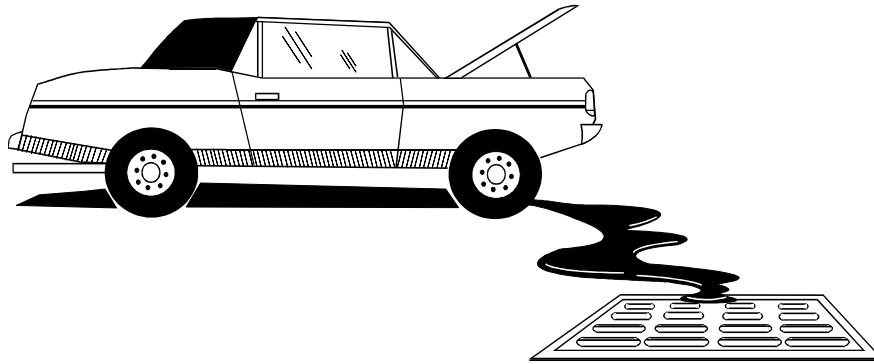


CHAPTER TWO

Waste Handling, Storage and Disposal Practices

Airbags	15
Antifreeze	15
Catalytic Converters	17
Fuel	18
Lead-Acid Batteries	20
Lead Parts	22
Mercury Switches	23
Refrigerant	24
Upholstery	26
Used Oils	26
Used Oil Filters	28
Waste Tires	30
Window Washing Fluid	32
<i>Table 3. – Recyclers and Equipment Resource List</i>	33



Waste Handling, Storage and Disposal Practices

Many components in vehicles and equipment can be recycled and reused if handled properly. If handled improperly, they can become a major source of pollution affecting air, ground water, surface water, and soils. A Self Inspection Form has been provided in the Appendix to assist you in determining areas where better management practices may be necessary according to Delaware Hazardous Waste Management Regulations. This Chapter addresses the best ways to handle the different waste products found in vehicles and equipment to benefit you, the operator and the environment. A list of suppliers and recyclers for vehicle wastes can be found on Table 3.

AIR BAGS

The units, whether made of plastic, vinyl, or metal, contain a propellant called sodium azide, a hazardous substance, which is dangerous if inhaled and may burn exposed skin. Undeployed air bags can also damage vehicle shredders by releasing sodium azide in the processing equipment and ultimately in the auto “fluff.” Contaminated fluff requires costly handling and disposal methods. In order to protect yourself and your equipment, remove or deploy airbags prior to crushing or performing other maintenance on the vehicle.

Deploying or Removing Airbags

1. Leave deployed (used) air-bag units in vehicles. Air bags that have been deployed do not present a human or an environmental risk.
2. Remove or deploy all undeployed (unused) air-bag units when vehicles enter the facility. If the airbag is removed, it can be resold if it meets industry approval.
3. Air bags can be deployed using the following method:
 - a) Disconnect cables from the vehicle’s battery. Wait 20 minutes for the unit’s internal battery to discharge completely.
 - b) Deploy air bags remotely using the jumper harness/wiring system outlined in the Appendix article, “Disposal of Air Bags in Scrap Vehicles” or by using the manufacturer’s recommended method.
4. Store undeployed airbag units indoors, away from sources of ignition, and protected from the weather until they can be resold.

ANTIFREEZE

Antifreeze is poisonous and you will need to properly manage and store it to prevent spills which could affect the soil, ground water or surface water and potentially harm people, plants and animals. Usable Antifreeze can be reclaimed on-site, then reused or resold. Unusable antifreeze or waste antifreeze will need to be disposed of at an approved off-site Treatment, Storage and Disposal Facility or recycled by an approved recycling service. Table 1, page 9, provides information on the environmental effects of antifreeze. Table 2 (page 10) and Table 3 (page 27) provide information on recycling and reclaiming antifreeze.



Recycling Used Antifreeze:

Drain antifreeze from radiators and heater cores as soon as possible after vehicles enter the facility. See **Radiator and Heater Core Removal**, page 6.

Determine if the antifreeze is usable or a waste fluid (see **Disposing of Waste Antifreeze**).

Usable antifreeze is considered a product and can be used in facility vehicles, sold or given away.

Store antifreeze in closed containers on a curbed, coated or lined, concrete surface with spill controls, including drip-pans and absorbents.

Label storage containers according to type of antifreeze either “Usable Antifreeze” or “Waste Antifreeze.”

Keep storage containers closed when not in use. Remember to always remove open topped funnels. Otherwise they may fill with rain and cause used antifreeze to overflow.

Recycling Methods for Usable Antifreeze:

1. **Reuse**: Antifreeze can be reused in facility vehicles or machinery, sold as used antifreeze or given away. Usable antifreeze can be filtered to remove solids, however, filtration does not remove dissolved contaminants.
2. **Distillation**: Restores used antifreeze to a high level of purity, by removing dissolved contaminants.
3. **Ion exchange**: Restores used antifreeze to a high level of purity, by removing dissolved contaminants.

You may want to purchase distillation, ion exchange or filtration equipment for your facility or use an approved antifreeze recycling service to recycle used antifreeze (See Table 3).

Disposing of Waste Antifreeze:

Waste antifreeze is antifreeze that is contaminated or too old to be reused.

Store waste antifreeze in closed containers on a curbed, coated or lined, concrete surface with spill controls, including drip-pans and absorbents.

Label storage containers according to antifreeze type "Waste Antifreeze."

Keep storage containers closed when not in use. Remember to always remove open topped funnels. Otherwise they may fill with rain and cause used antifreeze to overflow.

You can discharge antifreeze to a wastewater treatment facility provided your discharge is less than 15 kilograms (33 lbs or 3.5 gal.) per month. Antifreeze is determined to be hazardous to a wastewater treatment facility and is allowed only if the discharge meets the following requirements:

- a) The Environmental Protection Agency and the State of Delaware, Hazardous Waste Management Branch is notified in writing. See the two page fact sheet - Hazardous Waste Notification Requirements.
- b) The wastewater treatment facility operator is notified in writing and approves of the discharge in writing,
- c) The wastewater treatment facility is permitted by the Department of Natural Resources and Environmental Control and in some cases local agencies.

Recycle waste antifreeze with a permitted hazardous waste recycler (See Table 3) and use a permitted hazardous waste transporter. See Appendix for a list of permitted hazardous waste transporters for Delaware.

PLEASE DO NOT:

- * Do not store antifreeze in open or leaking containers
- * Do not pour antifreeze on the ground.
- * Do not pour antifreeze into the stormwater sewer system, or into an on-site septic system.
- * Do not leave open topped funnels in storage drums or tanks.
- * Do not mix antifreeze with other fluids.

Additional Information can be found in the Appendix. See the following documents:

CATALYTIC CONVERTERS

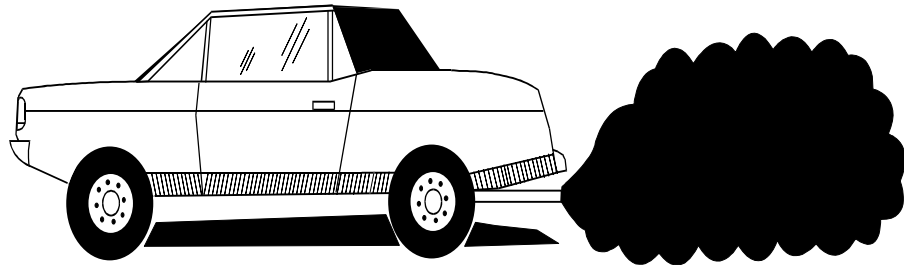
Catalytic converters, which contain platinum, a valuable, recyclable metal, are seldom resold as parts by facilities. Before they can be resold, catalytic converters must be tested using expensive equipment. Instead, most facilities recycle catalytic converters by selling them to core buyers or scrap recyclers.



Recycling Catalytic Converters:

1. Remove catalytic converters from vehicles as soon as possible after vehicles enter the facility.
2. Recycle catalytic converters at a catalytic converter collection center.
3. Test catalytic converters with federally-approved testing equipment if the converters are to be resold at the facility.

Note: Catalytic converters that have not been tested and approved in this manner cannot be sold to the public. Catalytic converters are important pollution prevention devices designed for use with specific makes and models of cars. Untested and unproved catalytic converters may not protect the environment from air pollution.



FUEL

Fuels removed from vehicle fuel tanks may be managed in a number of ways. You should make every effort to re-use or recycle removed fuel products. Re-usable fuel can be accumulated in appropriate containers until the fuel is needed. To ensure cross contamination does not occur, accumulate fuels in labeled, separate containers segregated by fuel type.

Waste Fuel that is not acceptable for on-site re-use should be sent to an off-site processor or re-refiner for recycling. Waste or contaminated fuel poses not only an environmental risk to facilities, but also a safety risk to employees. Handling, storing and disposing of fuel requires special care to prevent spills, explosions and fires, as well as human health risks due to exposure. To prevent mishaps during accumulation of waste fuel, schedule off-site shipments in a timely manner.

Note: Containers or tanks in which fuel will be placed and the container from which the fuel is being poured need to be grounded so that static electricity will not cause a spark which could ignite the fuel.



Recycling Used Fuel:

1. Drain and remove fuel tanks as soon as possible after vehicles enter the facility. See **Fuel Tank Removal**, page 6.
2. Determine if fuel is usable or “waste fuel” (See **Disposing of Waste Fuel**).
3. Store usable fuel in a tank or container on-site for use in facility or employee vehicles, or pump fuel directly from dismantled vehicles into facility vehicles using an air-driven pump.
4. Follow these steps when accumulating usable fuel in drums or other portable containers.
 - a) Store fuel in closed containers such as drums or above-ground storage tanks. Place containers on a covered and curbed, coated or lined , concrete surface with spill controls, including drip-pans and absorbents.



- b) Containers in which fuel will be placed and the container from which the fuel is being poured need to be grounded so that static electricity will not cause a spark which could ignite the fuel.
 - c) Label waste fuel-storage containers as “Usable Fuel” or “Good Fuel”.
 - d) Inspect fuel storage containers often.
 - e) Keep storage containers closed and remove open topped funnels when not in use.
5. When accumulating usable fuel in underground storage tanks, contact the Underground Storage Tank Branch at (302) 395-2500 in New Castle for specific requirements.

Disposing of Used Fuel:

Waste fuel is fuel that has been mixed with water or other wastes, or is too old to be reused.

Follow these steps when accumulating waste fuel in drums, portable containers, or underground storage tanks:

1. Store waste fuel in closed containers such as drums or DOT approved portable containers. Place containers on a covered and curbed, coated or lined concrete surface with spill controls including drip-pans and absorbents.
2. Containers in which fuel will be placed and the container from which the fuel is being poured need to be grounded so that static electricity will not cause a spark which could ignite the fuel.
3. Label waste fuel-storage containers as “Waste Fuel”.
4. Inspect waste fuel storage containers often.
5. Keep storage containers closed and remove open topped funnels when not in use.
6. When accumulating usable fuel in underground storage tanks, contact the Underground Storage Tank Branch at (302) 395-2500 in New Castle for specific requirements.
7. Recycle waste fuel with a permitted hazardous waste recycler (See Table 3) and use a permitted hazardous waste hauler. See Appendix for a list of permitted hazardous waste haulers for Delaware.

PLEASE DO NOT:

- * Do not use an electric pump to drain fuel tanks. Electric pumps give off sparks that may ignite fuel.
- * Do not store fuel in fuel tanks of scrap vehicles.
- * Do not mix fuel with other fluids.

LEAD ACID BATTERIES

Used lead acid batteries which contain lead and corrosive chemicals, pose potential pollution risks and cause special handling problems at your facility. Improperly managed and stored batteries are not only a safety hazard, but can pollute the environment if they crack and leak, particularly when stored outdoors and when subjected to freezing temperatures. Batteries are considered hazardous waste because of corrosivity of the acid and the toxicity of the lead.

Reusing or Disposing of Batteries:

1. Test batteries to determine whether battery should be reused or sent to disposal facility.
2. **Usable Batteries:** Remove lead cable ends from usable batteries and store the cable ends in a covered container that is strong enough to hold the excessive weight of the lead.
3. **Scrap Batteries:** Leave lead battery cable ends attached to scrap batteries for disposal. Place cracked or leaking batteries immediately in a closed, leak-proof storage container or on a curbed, coated or lined concrete surface with spill controls, including drip-pans and lime or baking soda.
4. Store batteries indoors, in either a closed, leak-proof container or on a curbed, coated or lined , concrete surface with spill controls, including drip-pans and lime or baking soda. Spreading neutralizers such as lime or baking soda in the bottom of battery boxes or battery storage bins will help to neutralize any spilled battery acid.
5. If stored outdoors, the storage area should be covered to keep rainwater from collecting and to prevent contaminated run-off from occurring due to rain or snow.
6. Store batteries on a “non-reactive” surface. This kind of surface may include the following:
 - a) Fiberglass or plastic “battery boxes” made specifically for battery storage. These can be purchased from local suppliers.
 - b) A covered wooden frame lined with heavy polypropylene plastic. Polypropylene is the least expensive plastic available. However, any heavy sheet plastic may be used.

- c) Store batteries on a curbed, concrete surface coated with acid-resistant epoxy, fiberglass, or lined with heavy polypropylene plastic.
 - d) Batteries could be stored in Polypropylene cement-mixing tubs. These tubs, usually sold at lumber yards, are rectangular (2 feet by 3 feet) and can hold approximately 30 batteries.
7. Store batteries in an upright position to prevent leaks from vent holes.
 8. Stack batteries no more than five high. The stack may become unstable if stacked higher and the weight may cause cracks in battery casings. Some facilities use wooden planks between each layer of batteries to provide stability and to prevent terminal posts from puncturing the battery above.
 9. Inspect all batteries, storage containers and cover materials weekly for leaks, cracks or tears. Storage containers or materials that have been exposed to freezing temperatures should be checked more often.
 10. Manage all spilled materials and absorbents as a hazardous waste.
 11. Keep batteries in one area of the facility. Storing and charging batteries in one place decreases the chance of spills and leaks throughout the yard and helps you control inventory.
 12. Send scrap batteries to a disposal facility. See Table 3 for list of haulers and facilities.

PLEASE DO NOT:

- * Do not store batteries in vehicles; they can corrode and leak more easily.
- * Do not over fill storage containers. Batteries on the bottom may be crushed and the storage containers may become difficult to move.
- * Do not accumulate batteries for a long period of time, Dispose of batteries regularly!



Figure 4: Poor Storage Practice: Batteries stored in an area with no containment and with lack of cover.

- * Do not store batteries indoors or outdoors without proper spill protection. If batteries are stored outdoors they should be covered to prevent runoff due to rain and snow. Spills can easily occur leading to soil, surface water and ground water contamination
- * Do not drain fluids from batteries.

Additional information may be found in:

Chapter 3 - **Spill Control** - Prevention and Clean Up

LEAD PARTS

Lead is a well-known toxic substance and potential pollutant. Even though phasing-out of leaded gasoline has reduced the levels of lead in the air and soil, other sources remain. Lead parts, such as battery cable ends, soldered tubing joints and tire weights, are often a forgotten source of lead pollution. Ensure all lead wastes are handled carefully and properly recycled or disposed. If you require further information or desire regulatory requirements call the Hazardous Waste Management Group at (302) 739-3689.



Recycling Lead Parts:

1. Remove lead tire weights and battery cable ends before crushing vehicles. Battery cable ends may be left on unusable batteries and disposed of along with the batteries.
2. Remove other known sources of lead from vehicles. Lead can be found in radiators, heater cores, steering columns and in any soldered parts such as circuit boards and in electronic components.

3. Store lead parts in a covered container that is capable of handling the excessive weight of the lead. Some facilities store lead tire weights with batteries in battery boxes. If you use this method, make sure weights are not placed under batteries or allowed to roll around in the box. This makes the stacks unstable and increases the possibility of puncturing the batteries.
4. Dispose of lead parts with a metals or battery smelter facility. See Table 3 for battery smelter facilities.

PLEASE DO NOT:

- * Do not leave lead parts in vehicles.
- * Do not store lead parts on the ground.
- * Do not store lead parts in uncovered containers.
- * Do not dispose of lead parts in the regular trash.

Additional Information can be found in the Appendix. See the following documents:

Program Highlight: Conditionally Exempt Small Quantity Generator Program Requirements

MERCURY SWITCHES

Mercury, a highly toxic metal, is often found in hood or trunk light switches. Liquid mercury and mercury vapor are hazardous to both humans and the environment. Once released into the environment, mercury cannot be degraded. It will stay in the environment forever. Mercury is best managed by recycling. If you have further questions or desire regulatory information, call the Hazardous Waste Management Group at (302) 739-3689.



Recycling Mercury Switches:

1. Remove all mercury switches from vehicles as soon as possible after they enter the facility. Be careful not to break or puncture the mercury container during removal.

Note: These mercury switches have been found in vehicles built in the 1970s and 1980s, as well as brand-new cars. To be safe, remove all mercury switches from vehicles before they are crushed.

2. Store mercury switches in a leak-proof, closed container. The mercury in the switch is enclosed in a glass capsule. The most important storage precaution is to store mercury switches in a way that prevents the capsule from breaking.
3. Recycle mercury switches at an approved recycler or at a permitted treatment, storage and disposal facility that is able to reclaim mercury.

PLEASE DO NOT:

- * Do not leave mercury switches in vehicles. Make sure all mercury switches are removed from vehicles before crushing.
- * Do not store mercury switches in uncovered containers.
- * Do not dispose of mercury switches in the regular trash.

REFRIGERANT (CFS)

Refrigerant (Chlorofluorocarbons or CFCs) refers to Freon used in air conditioning units. Refrigerant is a pollution concern because it contributes to ozone depletion and is easily dispersed into the air during air-conditioning unit servicing or dismantling. Motor vehicle salvage facilities are required by the US Environmental Protection Agency (EPA) to recover all refrigerant from vehicles that enter their facilities. New refrigerants are available that should not deplete the ozone layer, and may be used in place of the refrigerant currently used in automobile air conditioners. Regulation of refrigerants is handled by the Air Quality Management Branch which can be reached at (302) 739-4791 in Dover or (302) 323-4542 in New Castle County.

Refrigerant can be processed by the following methods:

Recovery - Removing refrigerant from air conditioning units and storing it in a container without testing or processing it.

Reclaiming - Processing refrigerant, usually by distillation, until it meets resale specifications. This requires a chemical analysis to see whether specifications have been met.

Recovering Refrigerants:

1. Check air conditioning units and remove refrigerant from all vehicles that enter the facility. Because a pressure gauge allows refrigerant to escape into the environment, assume that all units contain refrigerant and then remove it using approved recovery equipment. Removing refrigerants must be done by someone who has been properly trained and certified by a technical certification program approved by EPA. Refrigerant recovery equipment must be certified by an independent standards testing organization approved by EPA. For further information on certification requirements, please read the June 1998 EPA Fact Sheet - **Recovering Refrigerant at Salvage Yards and Other Motor Vehicle Disposal Facilities** found in the Appendix.
2. Verify that all vehicles entering the facility without refrigerant have had the refrigerant removed using approved recovery methods. Verification consists of a signed statement by the person or organization from whom the vehicles were received. This statement should include the name and address of the person who removed the refrigerant and the date it was

removed. If refrigerant is not present because the air-condition unit was damaged or because of a vehicle's age or lack of use, verification must include a statement to that effect. Keep all records for a minimum of three years.

3. Seal all air-conditioning unit openings and hoses after removing refrigerant to prevent any remaining refrigerant from leaking out of the unit and contaminating components that may be reused.
4. Store refrigerant in a tank that meets Federal Department of Transportation (DOT) or Underwriters Laboratories (UL) standards. Disposable refrigerant containers should not be reused for recovering refrigerant.
5. Sell removed refrigerant only to certified reclaiming facilities or CFC collectors who will reclaim it to its original purity specifications.
6. Supply documentation to facilities, where vehicle or equipment will be crushed, stating that the refrigerant was removed using approved methods.

PLEASE DO NOT:

- * Do not do anything that will release refrigerant into the air, such as cutting lines, disconnecting hoses or flattening vehicles without first removing refrigerant.
- * Do not over-fill storage tanks. Storage tanks should be filled to a maximum of 60 percent of the Gross Weight Rating listed on the tank, or 80 percent of the tank's rated volume at 70 degrees Fahrenheit.
- * Do not release refrigerant from storage tanks.
- * Do not sell removed refrigerant until it has been reclaimed.
- * Do not use automobile air-conditioning recovery equipment for recovering refrigerant from appliances. Appliances require a different type of recovery system.

UPHOLSTERY

The State of Delaware Regulations Governing the Control of Air Pollution prohibits the open burning of automobile upholstery. Regulation 13 Section 1.2 states, "No person shall cause or allow open burning in the conduct of a salvage operation". Air regulations are implemented by the State of Delaware, Air Quality Management Section which can be reached at (302) 739-4791 in Dover or (302) 323-4542 in New Castle County.

Upholstery can be removed and resold or crushed with the vehicle and then disposed of with the shredder fluff.

USED OILS

It is important that used oils be collected, stored, recycled and/or disposed of properly. Oils that are handled improperly can cause serious problems. For example, one gallon of used oil can contaminate up to one million gallons of water, making it unfit to drink, as well as harmful to wildlife and the environment.

Used oils include, but are not limited to, the following synthetic or petroleum-based fluids: motor oil, brake fluid, transmission fluid, power-steering fluid, differential oil, and transaxle fluid.

If used oils are mixed with hazardous wastes, the entire mixture is considered a hazardous waste. Hazardous wastes cannot be offered to used-oil collectors for recycling. The Hazardous Waste Management Group prohibits the mixing of any quantity of hazardous waste, such as spent solvents, with used oil.

Note: Do not mix hazardous wastes with used oil. Once mixed, the entire mixture is a hazardous waste.

Used oils can be mixed together and stored in the same container. Label all used oil storage containers. "Used Oils." Mix together only those fluids defined in the beginning of this section as used oils.

Note: Dielectric oils that contain Polychlorinated Biphenyl compounds (PCBs) are dually regulated as a hazardous waste and a TSCA waste. Contact the Hazardous Waste Management Group at (302) 739-3689 and EPA Region III at (215) 814-2132 for further management and disposal information.

Store used oil in leak-proof, closed containers, such as drums, underground or above-ground storage tanks placed on a curbed, coated or lined, concrete surface with spill controls, including drip-pans and absorbents. If an underground tank is used, contact the Underground Storage Tank Branch at (302) 395-2500 for specific requirements.

Regularly check all used oil storage containers for leaks and fluid levels. If an underground storage tank is used, the amount of used oil stored should not exceed 75% of the tanks capacity.

Keep all storage containers closed when not in use and remove open topped funnels after filling tanks. Otherwise, the container may become contaminated with rain, which can cause used oil to overflow.



Recycling Used Oil:

1) Reuse:

Used oil can be reused in vehicles if it has been properly filtered to remove metal particles and other contaminants.

2) Hauling:

Transporters hauling more than 55 gallons of used oil must have a valid Delaware Hazardous Waste Transporter's permit.

Used oil generators may transport used oil in quantities of 55 gallons or less provided they transport the oil to a used oil collection center or to a collection site owned by the used oil generator.

While a hazardous waste manifest is not required for shipments of used oil being recycled, always keep receipts and records of your used oil shipments.

3) Burning on-site:

Used oil can be burned on-site in a used oil space heater. You will need to contact the Air Quality Management Branch (AQMB) at (302) 739-4791 in order to obtain a permit. The Hazardous Waste Management Group does not require a permit provided:

- a) The used oil space heater is rated at less than 500,000 BTU's per hour;
- b) The consumption of used oil does not exceed five hundred (500) gallons per year.
- c) The used oil space heater burns used oil generated at the facility or used oil accepted directly from "do-it-yourself" oil changers.
- d) The height of the exhaust stack complies with good engineering practices.
- e) The exhaust stack is constructed with minimum flow restrictions, the use of conic or other flow-restricting vent caps are prohibited.
- f) Used oil may be diluted or mixed with #2 fuel oil prior to burning on-site in a used oil space heater. However, for safety reasons do not mix used oil with gasoline prior to burning on-site in a space heater.

PLEASE DO NOT:

- * Do not pour used oil down the drain or into sanitary and storm-water sewer system or septic systems.
- * Do not leave open topped funnels in oil storage drums or tanks.
- * Do not spread used oil on roads to control dust.
- * Do not spray used oil to control weeds.
- * Do not burn used oil unless it is used in an approved boiler, furnace or used oil space heater and appropriate permits have been obtained.



Figure 5. Used Oil Recycling Tank -No Antifreeze, Gasoline, Paint Thinners or other Materials

Additional Information can be found in the Appendix. See the following documents:
List of Hazardous Waste Transporters
Spill Notification

USED OIL FILTERS

Used oil filters are a potential source of pollution if the engine oil contained in them is spilled during draining, crushing or storage. This section outlines environmentally safe steps for handling used oil filters.

The Delaware Regulations Governing Hazardous Waste allows most drained and crushed used oil filters to be disposed of as a solid waste. For further information or regulatory requirements, please call the Solid and Hazardous Waste Management Branch at (302) 739-3689.

Oil Filter Care:

1. Design an oil filter draining area on a coated or lined, concrete surface. Include spill controls, such as drip-pans and absorbents.
2. Drain oil filters of all free flowing oil by poking holes in the top of the filter, and draining it with the filter threads facing up. This method bypasses the check valves in the filter, ensuring that most of the oil is removed.
3. Store drained oil filters in a closed, leak-proof appropriately labeled storage container or drum.
4. Recycle used oil filters that have been drained. Oil filters should be transported in drums or other leak proof containers.

5. Oil filters that have not been drained are considered used oil and must be managed as such. The Hazardous Waste Management Group at (302) 739-3689 can provide additional information on used oil.
6. Participate in the used oil filter program established by the Delaware Solid Waste Authority (DSWA). The DSWA will provide a used oil filter container and schedule pick-ups. The DSWA requests that filters not be crushed prior to disposal. For further information, call the DSWA recycling manager in Dover at (302) 739-5361.
7. Keep receipts of used oil filter shipments.

PLEASE DO NOT:

- * Do not leave oil filters on engines.
- * Do not drain, crush or store used oil filters on unprotected ground.
- * Do not store used oil filters outdoors in uncovered containers.
- * Do not dispose of used oil filters without draining oil first.