



Recycling Used Oil

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Consumers who change their oil at home are called “Do-It-Yourselfers” (DIYs). They generate at least 11 million gallons of used oil in Pennsylvania each year. DIYs typically dump their used oil on the ground (yielding plants unsuitable for forage), down storm drains, or in the trash. None of these disposal methods are environmentally sound and, according to the Pennsylvania Used Oil Recycling Act of 1982, most are illegal.

Due to the buildup of contaminants accumulated during engine wear, used oil causes more environmental damage than crude oil. Used oil from a single oil change can ruin a million gallons of fresh drinking water, polluting streams, groundwater, lakes, and oceans along the way. Mismanagement wastes a non-renewable resource, thus increasing our dependence on foreign oil.

How can DIYs manage their used oil in a safe, legal, and environmentally sound manner? One way is to recycle the used oil, which prevents this valuable resource from becoming an environmental pollutant and liability. By recycling two gallons of used oil, sufficient electricity can be generated to run the average household for 24 hours. If every DIY in Pennsylvania recycled their used oil, enough energy would be saved to heat over 17,000 homes per year.

Defining Used Oil

Used oil is any petroleum-based or synthetic oil that has been used and as a result is contaminated by physical or chemical impurities. This oil comes from many sources, including cars, tractors, lawnmowers, and other machines with internal combustion engines. Most people are unaware that oil does not wear out, but it does become contaminated by impurities such as heavy metals, sulfur, water, dirt, iron, steel, and toxic substances. If this oil is mixed with other substances, it is considered hazardous and cannot be recycled.



Changing Used Motor Oil

One way to prevent used oil pollution is to avoid leaks and spills while changing the oil. Try to stop spills as the oil is drained into the oil pan, pouring as much oil as possible from the old oil filter into the pan. Use absorbent materials such as kitty litter or saw dust to soak up minor oil spills, thereby keeping the repair area clean and hazard-free. After the new filter and oil are added, check for leaks around the drain plug and filter. The old filter, oily rags, and absorbent materials can be properly managed by placing them with municipal wastes.

Individuals who maintain commercial vehicles, including farm and construction equipment, buses, taxis, and trucks, should take extra precautionary steps when handling used oil. A lockable oil storage tank, which complies with local fire and safety regulations, will help prevent unauthorized dumping.

Preparing the Used Oil

After changing the oil, place it in a clean plastic container. When oil is purchased by the gallon, the new oil container becomes an excellent receptacle to put the used oil into, but a clean milk jug will work, too. Also, specialized used oil containers can be purchased at local automotive parts stores. The used oil may now be taken to a service station or other location that accepts it for recycling. If there is not a nearby site that will accept the oil, either package the material to be transported at your convenience to a site or contact your local solid waste authority to find out the preferred method of disposal.

The point to remember is to not mix the used oil with any other substance such as paint, gasoline, solvents, or antifreeze. Mixing these substances will change the chemical composition of the oil, making it a hazardous waste.

The Recycling Process: Giving Old Oil New Life

Even though it is dirty, used oil still contains the same properties that make it a valuable lubricant as well as an ideal product for recycling. There are two methods to recycle used oil:

Reprocessing

The most common method of recycling used oil is to reprocess it into fuel oil. At a reprocessing center, used oil is tested for certain types of contaminants, such as excess water, sediments, and polychlorinated biphenyls. If the used oil fails this testing, it must be specially treated and managed.

The uncontaminated used oil is slowly heated to separate the water from the oil. The water is sent to a wastewater treatment plant while the oil is filtered and blended with crude oil. This reprocessed oil can be sold as heating fuel oil to many industries, including asphalt plants, cement companies, and steel mills. In Pennsylvania, reprocessed oil is typically used as a fuel in high temperature furnaces that melt asphalt for road construction. It is also used in drying ovens for mined clay and for landfill liners. One of the greatest benefits of reprocessed oil is that it costs less than virgin fuel oil.

Rerefining

Another option is rerefining the oil to be reused as an automotive or industrial lubricant. During this process, hazardous materials are separated from the oil and sent to the proper hazardous waste facilities. The main products of rerefining are diesel fuel, high and low quality lubricants, and heavy fuel oils. About 65 percent of the used oil can be rerefined to have an identical composition as newly refined oil. The remaining oil and waste byproduct can be used as a fuel oil or asphalt extender. It takes 42 gallons of crude oil to get the same amount of lubricating oil that can be obtained by rerefining one gallon of used oil. In addition, rerefining uses only one-third of the energy as refining new oil, and this process allows the oil to be recycled many times without losing its lubricating quality.

Although rerefining is the preferred method of recycling used oil, only a very small percentage of used oil in Pennsylvania is rerefined. A lot of capital is required to start-up and operate a facility to rerefine oil compared to the cost of a facility that processes oil. In addition, there is a low demand for rerefined oil due to the perception that rerefined oil is lower in quality than newly refined oil. This prob-

lem currently prevents rerefining from becoming a common process. It should be noted, however, that rerefined oil is good for the environment and price competitive to regular motor oil.

Locating a Used Oil Recycling Site

The Pennsylvania Used Oil Recycling Act relies on a voluntary system of sites to collect used oil for recycling or disposal. These sites, called used oil collection sites (UOCs), are located throughout the state of Pennsylvania. One way to locate a UOC is to look for the amber and black “Recycle Oil” logo which is posted at participating service stations and other collection sites. A more direct method is to contact your local recycling coordinator or solid waste authority to find out about participating sites or an on-going program (Pennsylvanian’s use website <http://www.dep.state.pa.us/dep/deputate/airwaste/wm/RECYCLE/document/countylistnew.html>). In addition, the Department of Environmental Protection (DEP) maintains a Used Oil Collection Database, which provides interested consumers with the nearest UOCs and information about ways to start a used oil collection program. DEP’s Center can be contacted by going to http://www.dep.state.pa.us/cgi_apps/oil/.



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