Used Oil Recycling
Michigan State University
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Michigan's cooperative approach works.

Used motor oil pollution is a quiet but dangerous problem. The used oil from your automobile contains toxic substances that can kill plants and animals, spoil water supplies and even cause cancer if it is disposed of improperly. Used motor oil is also a renewable resource. Motor oil is a lubricant that can be recycled over and over again.

Motor oil is a lubricant that can be recycled over and over again.

More than 600 million gallons of used motor oil are generated each year in this country.[1] Commercial waste oil haulers pick up part of this oil from service stations, quick oil change garages and fleet maintenance shops. Most of it, however, is in the hands of people who change their own oil. Do-it-yourselfers generally own more vehicles and change the oil in those vehicles more frequently than people who take their cars to be serviced. Approximately two-thirds of all the used motor oil generated in the United States is produced by the do-it-yourselfers. This amounts to about 400 million gallons per year.[2]

When people change their own oil, they want to get rid of the used oil. They seldom have the facilities or the desire to store much of their used crankcase oil. Some pour the used oil on the ground, spread it over their gravel or dirt road, bury it in the backyard or, worse yet, pour it down a storm drain. In fact, a recent survey found that 61 percent of the do-it-yourselfers improperly dispose of their used oil.[3] This includes those who innocently dispose of their used oil in the trash to be picked up and taken to a landfill. As a result, more than 240 million gallons of used oil enter and pollute the environment each year. This is equivalent to an inch of used oil covering about 12,000 acres of land each year.

Used motor oil must be handled properly because it contains carcinogenic and other toxic substances. Among the more serious health hazards is the large amount of lead in used motor oil. Lead and other dangerous compounds accumulate through the combustion process in the engine of a vehicle. Used motor oil must be processed to remove the lead and other contaminants even before it may be safely reused.

When used motor oil is spread on land, soil productivity is reduced and surface or groundwater supplies may be contaminated. One quart of oil will foul the taste of 250,000 gallons of water.[4] Taste, however, is not the most important concern. Oil in surface waters severely disrupts the life-support capacity of the water. Oil encourages the growth of organisms that deplete the dissolved oxygen supply available to aquatic life, such as fish. Without oxygen, they die. Oily films on the surface block

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sunlight, affecting the growth of plants and the direct entry of airborne oxygen. The toxic substances in used oil kill the small organisms that support the rest of the food chain.

Contamination by the toxic substances in used oil can be a serious health hazard to humans in three ways. *First,* people may consume contaminated water directly. *Second,* the toxic substances in used oil become concentrated in water plants and animals and poison people who may eventually eat them. *Third,* direct skin contact over an extended period of time has been identified as a potential cause of cancer. Michigan and federal laws covering the disposal of potentially dangerous wastes make it illegal to dump used motor oil.

Michigan's approach works because it combines government and citizens' groups with private support.

In a unique combination of knowledge and resources a county used oil recycling program in Michigan expanded statewide through the coordinated efforts of the West Michigan Environmental Action Council (WMEAC), the Michigan State University Cooperative Extension Service (CES) and the Michigan Energy Administration.

WMEAC, a private citizens' not-for-profit environmental organization, initially established a countywide used oil recycling program as an energy conservation and water quality project. The Michigan Energy Administration then awarded the WMEAC a grant to expand the project and provided information to the public via its Energy Clearinghouse. MSU Extension staff members recruited and coordinated the efforts of volunteers in most counties. By the end of the first year (1981), the WMEAC-CES team had organized oil recycling programs in 18 of Michigan's 83 counties. Coordination with state government agencies and continuing grants from private foundations, such as the American Petroleum Institute (API), enabled the team to expand the program to 62 counties by 1982. More than 700,000 gallons of used motor oil were collected in 1983.[5]

Communities are the key.

The oil recycling program functions on the community level. Most county-level coordinators in the program are MSU-CES field staff members. Each county coordinator recruits volunteers and establishes a network of collection stations in local communities. Most of the collection centers are at local businesses, such as gas stations, auto dealerships or chain stores (for example Meijer, K-Mart and Sears) where oil products are sold or automobiles are serviced. The number of volunteers on the county level ranges from one person to several dozen, depending on the population in the county.

Some county programs are coordinated by other organizations, such as the Michigan Audubon Society, the Rouge River Watershed Council and the Shade Tree Council. Some civic groups and local recycling programs have also taken responsibility for oil recycling. The local community base and the statewide network make the program in Michigan widespread and successful.

Local participation continues to grow. A major goal is to have programs in every county. A renewed effort to publicize and promote used oil recycling is being undertaken in 1985. Public education, increased accessibility and availability of used oil collection centers, and continued program support by CES are keys to the success of the program.

Oil recycling recovers a valuable resource.

Used oil is not just an environmental problem. It is a valuable resource that can be re-refined—cleaned up and purified—into high quality motor oil again. Motor oil is used as a lubricant to keep engines running. It isn't burned up or changed completely, as gasoline is—it just gets dirty. Re-refining this oil is easier and cheaper than producing it from crude oil pumped out of our oil reserves. Out of a 42-gallon barrel of crude oil, one can get only 2-1/2 quarts of virgin motor oil, along with other petroleum products. It takes only 1 gallon of used motor oil to get the same 2-1/2 quarts of equally high quality motor oil.[6]

Motor oil can also be burned as fuel oil after it is processed to remove the dangerous contaminants. If all of the approximately 600 million gallons of used motor oil that are generated in the United States each year could be collected

and burned to produce electricity, it would produce enough to meet the needs of about 900,000 homes each year.[7] That is one reason why collecting and recycling your dirty motor oil makes sense. At present, however, much oil is sold for burning without processing.

A system of collecting, hauling and storing used oil is well established. Used oil is collected by local businesses, especially local service stations or garages, which store it in large underground tanks or above-ground barrels. A used oil hauler, frequently an independent business person, buys the used oil from a number of locations, including the community used oil collection centers, and usually transports it for sale to a processor, re-refiner or fuel broker.

Re-refining this oil is easier and cheaper than producing it from crude oil pumped out of our oil reserves.

Making money is a definite benefit of this program. Used oil has always been valuable, but its dispersion—a gallon here, a gallon there—made it hard to manage and use. Now, however, when the used oil is collected in community tanks at gas stations, auto dealerships, agricultural co-ops or industries, it becomes possible and profitable for individuals or community groups to sell the used oil, and for the haulers to pick it up. Currently, haulers pay 15 to 25 cents a gallon for used oil. Several Michigan collection site owners stand to gain thousands of dollars each year, while the remainder of Michigan's 1,500 smaller collection sites will take in several hundred dollars each.

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How recycling programs work.

A recent survey[8] found that three factors strongly influenced participation in a used oil recycling program: convenience, availability of special containers and education.

Convenience. In urban areas, curbside pickup of used oil, either by the city sanitation department or a private refuse collector, is the most convenient and most successful means of collecting used oil for recycling. Where curbside pickup does not exist, or in rural areas, used oil collection stations should be located as conveniently as possible. In addition, the survey found that approximately 75 percent of all individuals who change their own oil would always or usually recycle their used oil if they could take it to a store where they shop, a neighborhood service station, or the store where they buy motor oil (usually a discount or auto supply store).[9]

Special Containers. Reusable containers should be available for the individual vehicle owners to collect, store and transport their used oil cleanly and conveniently to the collection station. Nearly 80 percent of the survey's respondents said they would always or usually recycle their used oil if they had a special container that would protect their cars from messy spills.[10]

Education. Vehicle operators, especially those who change their own oil, must be informed. In addition to knowledge about the location of collection stations, the availability of convenient containers and the wasteful and harmful effects of improper disposal, people should be informed about the quality and usefulness of recycled motor oil. The survey found that a significant factor in people's willingness to recycle their oil was the realization that the oil would be put to a high quality use.[11]

Michigan's program is successful.

Used oil is constantly being collected in barrels and tanks and being recycled throughout Michigan. The results are impressive: less pollution, fewer environmental and health hazards, and some money making by community groups. Coordination, hard work, community support and the economics of reusing used motor oil are making used oil recycling a reality in Michigan.

Information and help are available.

Advice from your state, county or local coordinator may be in the form of technical advice and information, supplies of printed materials—such as signs, a logo, etc.—or an appearance at your organizing meeting as a resource person. One important publication is "Recycle Used Motor Oil: A Model Program," produced by the American Petroleum Institute, and based on the MSU-CES experience. The publication details the steps involved in setting up a progam in your community. It summarizes the experience gained from successful programs in Michigan and in other states to help your effort avoid some of the problems that others have experienced. "Recycling Used Motor Oil" can be ordered directly from the American Petroleum Institute (API) at 1220 L Street NW, Washington, D.C. 20005.

Does this program sound like something you can support? If so, here are some questions to think about before contacting your local or state oil recycling coordinator:

- Who is in charge of my local or county program?
- Is the program functioning as it should?
- Do people in my area know of the program?
- Are there enough convenient locations to drop off the used oil, and are they clearly marked?
- Are convenient containers available for taking the used oil to the recycling centers?
- Does everyone who generates used oil use the program? (What about owners of farm machinery, the local garage, the high school auto shop, the police department, the county road commission?)
- How much oil is being collected?
- Who are the used oil haulers?
- Are the used oil haulers paying a fair price for the used oil?
- Where can more information on setting up or strengthening our local program be found?

We hope you will follow through on your concerns.

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3 ***Ibid.,*** p. 42

4 U.S. Environmental Protection Agency, "Waste Oil Study," Report to Congress, US-EPA, Washington, D.C., April 1974, p. 2.

5 West Michigan Environmental Action Council, "Used Oil Recycling Update," WMEAC, 1324 Lake Drive, S.E., Grand Rapids, MI. April 1984.

6 Rick Newberry, Used Oil Recycling Coordinator, West Michigan Environmental Action Council. Personal communication, June 1984.

7 Based on 12,000 Btu/kwh; 1.31 x 10^5 Btu/gal oil; and 7,300 kwh/home/year.

8 Gottlieb, p. 27.

9 ***Ibid.,*** p. 28.

10 ***Ibid.,*** p. 59.

11 ***Ibid.,***

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