
OUR ENVIRONMENT

The "Other" Oil Crisis

While the search for new sources of virgin oil intensifies, conservationists are peering at the "double-barreled" nature of the oil crisis to try to figure out what to do about all the oil that is being thrown away, observes Richard Morris, of the National Wildlife Federation.

Many motorists are a significant part of this little-thought-about, throw-away problem. As do-it-yourself oil changers faced with the dilemma of disposing of the slimy substance periodically coaxed from their car's crankcase, these motorists contribute to both environmental pollution and the energy crisis. Some localities are now beginning innovative programs to help.

More than two billion gallons of lubricating oil are sold annually in the United States. According to U.S. Environmental Protection Agency (EPA) estimates, approximately half of this lube oil is consumed or otherwise lost in use. The remaining one billion become "waste oil" after it gets dirty and is replaced. What happens to all this waste oil?

A large amount of waste oil, primarily that taken from use in industrial machinery, is reused, often as a fuel. However, almost 60 percent of the waste oil generated yearly comes from the crankcases of automobiles. Some of this is mixed with virgin fuel oil to be burned for heating purposes. But without proper treatment and proper air pollution control devices, this mixture, which is a few cents a gallon cheaper than pure virgin heating oil, releases contaminating particles to the environment, lowering air quality. The principal contaminant in this case is lead from gasoline additives. Unfortunately, only a small percentage of waste oil used as a fuel is reprocessed, removing the contaminants. However, increasingly tougher restrictions on lead emissions promulgated by EPA are expected to help curtail this form of pollution in the future.

Another 20 percent of waste oil

is used in asphalt manufacture to control dust on roads. This application has been found to be environmentally questionable since the oil can eventually leave the road surface in the form of rainwater runoff and contaminate nearby soils and streams. Currently, little more than one-tenth is refined again for reuse as a lubricating oil. A frightening one-third of all the waste oil is unaccounted for. This vast amount is inevitably dumped on the land where it contaminates the soil, and down sewers, where it eventually flows into nearby streams and other bodies of water, spreading its contaminants to drinking supplies and taking a heavy toll on water quality and aquatic life. The largest source of the oil pollution of our waters, according to recent reports, comes from motor vehicle.

Used motor oil is usually collected from service stations by small independent collectors, operating primarily in urban areas. They make their money through collection fees or by selling waste oil to reprocessors or re-refiners. When petroleum prices are high, waste oil is likely to find its way back into use. When the price is not high enough to allow profits for collectors and reprocessors, it will more likely be dumped in the environment.

Extensive efforts to recover this valuable resource are cropping up throughout the country. Last summer, Fairfax County, VA, initiated a used motor oil recycling program designed exclusively to provide an environmentally beneficial disposal alternative for do-it-yourself oil changers. Under this program, motorists who change their own oil are encouraged to bring their old oil in a clean plastic jug or other appropriate container to one of approximately 300 participating service stations and auto supply centers where it will be held in underground storage tanks until it is sold to be re-refined or reprocessed. The program was developed at the modest cost of \$300 in a joint effort by the Fairfax County Office of Consumer Affairs, the Northern Virginia Gasoline Retailers Associa-

tion, and major oil companies. Neighboring Falls Church and Arlington County are readying plans to follow suit. Similar programs are either being developed or are in progress in other areas of the country. For example, used motor oil is being recycled in Minneapolis by one oil company through its service stations there. In Milwaukee, nine oil recycling centers have been set up at municipal yards. And more than 20 states now are exploring the possibility of setting up state-wide used oil recycling programs. Oregon's Used Oil Recycling Act, which took effect at the beginning of this year, declares that "... used oil shall be collected and recycled to the maximum extent possible ... to conserve irreplaceable petroleum resources, preserve and enhance the quality of natural and human environments, and protect public health and welfare."

According to recent figures, almost a third of all motor oil sold in the U.S. is purchased at retail stores, most of it by individuals who change their own oil. Since they traditionally have had no ready avenue for recycling their old oil, they have been stuck with a sticky disposal dilemma. Even sealing used motor oil in a container for eventual disposal in a sanitary landfill is not a comforting solution for the do-it-yourselfer who is also concerned about environmental quality.

Recycling used oil from the service station where it is stored in bulk simplifies the task of collection and therefore makes economic sense. This practice has been on the upswing in recent years with the skyrocketing rise of oil prices. What is necessary now is to bring the do-it-yourselfer into the recycling system.

As late as 1960, more than 150 oil re-refiners were producing some 300 million gallons, or 18 percent of the nation's lube oil. Today, less than 30 companies survive. Many re-refiners blame their decline on governmental actions. These include a 1965 tax law which in effect gave a small but significant advantage to virgin oil use in the

off-highway market (railroad trains, industrial machinery, etc.) and the failure of re-refined lube oil products to meet Defense Department specifications, thus effectively prohibiting government purchase. These developments, along with a Federal Trade Commission ruling requiring a "previously used" label on all re-refined automotive lube oil products, confirmed an image of inferior product quality in the mind of the American consumer.

that oil retains its lubricating properties no matter how much dust, lead, and other impurities it picks up. "Old oil doesn't wear out," they say, "It just gets dirty." And even the dirtiest oil can be re-refined—usually by mixing the oil with sulfuric acid and passing it through clay—into a product often claimed to be equal to and even superior to most virgin lube oils. Even the residual acid sludge may be recyclable, if prices for sulfuric acid and other by-

The Energy Policy and Conservation Act of 1975 specifies that current federal purchasing and labelling policies affecting re-refining motor oil will be reexamined. It also requires the National Bureau of Standards to establish tests to determine equivalency between virgin and re-refined oils. The results from these tests are not yet in; however, preliminary reports from other tests are encouraging. Results from a field test conducted on San Diego public



Steve Sack

Courtesy the Minnesota Daily

"... Advance token to nearest railroad, derail, spill noxious chemicals, and evacuate all houses and hotels in the nearby vicinity."

Other factors have also contributed to the difficulties faced by re-refiners. Growing numbers of motorists changing their own oil and a mushrooming of alternative waste oil uses have combined to reduce the flow of waste oil feedstock to the industry. More sophisticated lube oil formulation necessary to produce detergent and multiviscosity oils for high performance engines has made the re-refining process more difficult and more expensive. In addition, the traditional re-refining process itself produces an oily acidic sludge which presents a sticky disposal problem of its own.

Advocates of oil re-refining emphasize what many of us fail to appreciate—

products of the re-refining process continue to rise. Newer methods of re-refining which do not produce the hazardous sludge are in various stages of development and use.

With the advent of the oil crisis and the nationwide focus on energy and resource conservation, the federal government has decided to take a second look at the prospects for waste oil recovery. The re-refining of oil for reuse as a lubricant appears to be the most energy-conserving of all available waste oil utilization options. According to recent EPA figures, as much as 50,000 barrels of oil per day could be saved if waste oil were re-refined to its original use as a lubricant.

works department vehicles showed performance and engine wear after two years (and over 100,000 miles) to be equivalent if not superior for those cars using exclusively re-refined oil as opposed to those using virgin lubricating oil.

In order to stimulate the recycling of used motor oil, the U.S. Department of Energy operates a Used Oil Recycling Program, which handles informational requests and processes grant applications for research and implementation of oil recycling efforts.

In Congress, a bill introduced by Representative Charles Vanik of Ohio, entitled the "National Oil Recycling Act," provides for an internal govern-

ment oil recycling program, grants to states implementing waste oil management plans, the use of resealable containers with mandatory deposits for retail oil sales, and an oil recycling consumer education program.

Economic factors and increasingly stringent environmental regulations are forcing the larger consumers of lubricating oil to cease polluting to just dumping their used oil. If we are ever to close the gap left open by the do-it-yourselfer, concludes Richard Morris, then consumer education will play a key role in the resolution of the "other" oil crisis.

Mississippi Water Birds Decline

Waterbird colonies along the upper Mississippi River floodplain are declining, according to the conclusions of a year-long pilot study, conducted by biologist David H. Thompson of the University of Wisconsin. Thompson's goal was to determine the colony locations and populations of larger colonial waterbirds nesting within the 4-6 mile wide floodplain of the upper Mississippi River between Minneapolis and St. Louis.

Counts and population estimates were made by two complete aerial surveys, which covered every sandbar, island, and backwater of the 624 mile long study area. After each survey, colonies were visited on the ground to verify population counts, sample vegetation, and look for disturbances. Results of these studies indicate a substantial population decline of great blue herons and egrets in the southern half of the study area, a decline which has probably been occurring over several decades.

Comparison of data showed fewer and smaller colonies in the southern half than the northern half (average 20 nesting pairs per colony in the northern half versus 7 pairs per colony in the southern half). The southernmost great blue heron colony has decreased from 15 to 4 pairs in recent years, and six great egret colonies south of Clinton, IA, have disappeared. Two colonies of cormorants, which are on the endangered species lists of Wisconsin, Illinois, and Missouri, are also known to have disappeared in the southern portion.

No new colonies were found. Of the seven colonial species found or formerly occurring, says Thompson, four are declining in population and least terns have probably been extirpated from the study area. Only two species, Forster's terns and yellow-crowned night herons, were found to be expanding their ranges. The great differences in present populations between the two regions, says Thompson, indicate a substantial population decline in the southern half, which is likely to spread to the northern half as development proceeds. Drainage and diking, development of navigation facilities on the river, and the establishment of more industry along its banks is of main concern.

Few undisturbed or undeveloped refuges for herons and egrets are found outside of the Mississippi floodplain, underscoring the significance of Thompson's findings.

The first step toward reversing the population decline, says Thompson, is identification of the causes, and, secondly, designation of critical feeding and nesting areas for preservation and management. Features Thompson identified as critical regarding location of colonies were: tall trees (particularly sycamores) for nesting; proximity to dams, marshland, water, and river junctions; and barriers to human disturbance.

This study was timely since no studies of colony sites and populations of colonial water birds along the upper Mississippi have been published. However, Thompson warns that with only one year's data on hand and incomplete

knowledge about populations outside of the floodplain these results should be taken as preliminary. Nevertheless, these findings provide a warning of an advancing environmental degradation of the river and the surrounding floodplain. Says Thompson, "The birds are apparently warning us of an environmental problem in this area, which should be investigated." — *Hermann Sveinbjornsson, Conservation News*

Slime Saves Time

The mucus on the surface of a fish's skin or scales is a material that sharply cuts friction as the fish speeds through the water. Ship designers are now studying this film, and the way it adheres to fish, to see if a similar system could be made available for ships. Skin friction causes drag on ships, slowing them and forcing greater fuel needs. One artificial material currently under study for this purpose is polyethylene oxide.

Tree-Savers Outnumber Tree-Sellers, Reports Opinion Poll

A study commissioned by the industry-related American Forest Institute shows that Americans prefer to have forest trees preserved rather than cut for timber, reports the National Wildlife Federation. The study, undertaken to measure attitudes toward forest-related recreation vs. development, especially towards wilderness, was conducted in September, 1977 by the Opinion Research Corporation, Princeton, NJ.





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