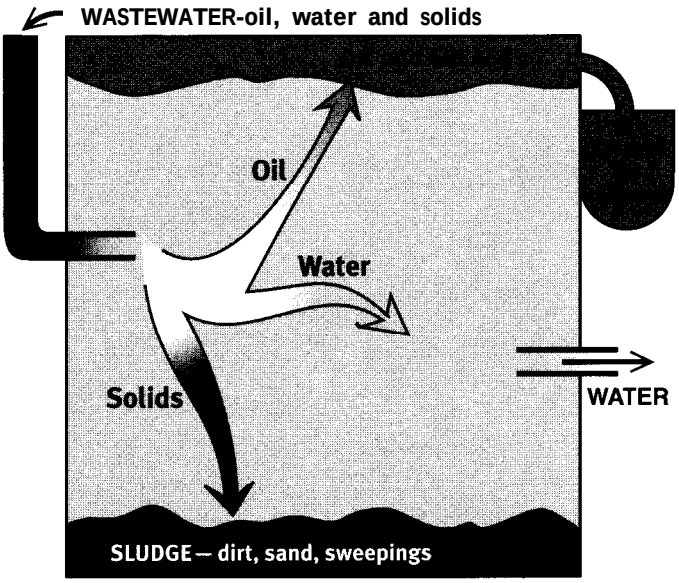
OIL/WATER SEPARATORS

Best Environmental Practices for Auto Repair and Fleet Maintenance • November 1999

Simplified diagram of OWS operation



Heavier or Lighter Than Water? *OWSs treat vehicle and floor wash water by allowing substances lighter than water to float and substances heavier than water to sink. Many OWSs also have baffles, coalescers, and oil skimmers to speed-up or enhance separation of these substances.*

Why be concerned about oil/water separators?

Oil/water separators (OWS) can be costly to maintain, and if not properly managed, can pollute surface and ground water, and lead to costly violations. Have you taken steps to minimize the effects of your OWS on your budget and the environment? This fact sheet discusses the basic operation of OWSs in handling vehicle and floor wash water, and techniques to improve OWS performance and reduce costs and liabilities. To make sure your OWS works properly, remember:

Eliminate contaminants: Don't rely on the OWS to handle wash water from fuel, coolant, solvent, oil, or paint spills. Instead, clean up spills when and where they occur with dry methods (see the *Floor Cleanup* fact sheet).

Wash without detergents: Emulsifying cleaning compounds disperse oil in wash water and make OWSs ineffective-oil passes right through to the sewer. High pressure water or non-emulsifying cleaners are sufficient for most cleaning applications.

Minimize Loading: Minimize the amount of solids and oils that enter your OWS. The less solids and oils that reach the OWS, the less frequently sludge and floating oil must be removed from the OWS and the better it will work. Also, minimize the amount of wash water reaching the OWS. Excessive water flow can flood an OWS, forcing wastewater through it too fast to allow separation; the result: oil and other contaminants pass right through to the sewer. *OWSs should not be used to treat storm water runoff.*

TROUBLE SITUATIONS	POTENTIAL IMPACT	REMEDY
Chemicals and spills reach OWS	• Sewer discharge violation • Sludge requires disposal as hazardous waste	• Eliminate floor drains from shop • Clean up spills when and where they occur • Use dry cleanup techniques in shop
Sludge builds up in OWS	• OWS is less effective because solids have less time to settle	• Eliminate storm water flow into the OWS using berms or curbs • Install additional grates and screens on drains • Use sloping pavement and sediment traps around drains
Excessive floating oil accumulates in OWS	• Oil discharged to sewer during high flow periods	• Pump out accumulated oil on a regular schedule • Use oil-only absorbent pads to remove and recycle oil • Use high-pressure, low-volume sprays for vehicle washing
Detergents reach OWS	• Oil is emulsified and flows out of OWS to sewer	• Do not use oil-emulsifying cleaning solutions (detergents) • Wash vehicles and engines less often

SITUATIONS AND REMEDIES p.1 | MAKING IT WORK p.2 | CASE STUDIES p.2

How do I keep oil and solids out?

Filter filter filter. The best way to reduce OWS sludge is to keep solids out of vehicle and floor wash water. Install progressively finer grates and screens over the drains to the OWS inlet in order to maximize solids separation:

- Begin with steel bars spaced 3/4 to 1-inch apart at the OWS drain inlet
- Add sequentially finer grates and screens (3/4 and I/4-inch screens or I/4-inch expanded steel mesh)
- Finish with reusable absorbent material to remove very small particles.

- **Use oil-only absorbents to separate and recycle oil from your OWS.** In some older OWSs, it is not easy to collect and remove separated oil. If your OWS does not have an oil trough or other oil collection device, you can use reusable absorbent pads that absorb only oil and grease. Put these pads on the water surface to collect floating oil. Once saturated, squeeze the oil from the pads; this oil can be managed with your used oil, if the squeezed oil is not contaminated with hazardous waste (get data on your wash water quality or analyze a sample at least once to verify). The squeezed absorbent pads can be reused.

- **Use microbes to digest oil in your OWS.** Bioremediation is a proven technique to minimize the oil content in OWS effluent and sludge and to reduce OWS cleanout frequency. Microbes added to an OWS break down petroleum products suspended or dissolved in the wastewater, floating oil, or sludge. Facilities using bioremediation have eliminated wastewater violations and have reported reducing their sludge petroleum content by more than 80 percent. Such reductions can lower the regulatory status of OWS sludge, which will affect the required disposal method and disposal costs. Bioremediation is typically performed under a vendor service contract. Microbes are added to an OWS or interceptor lines on a regular basis to replenish microbe populations. Microbes are nontoxic and completely safe; the main by-products of bioremediation are water and carbon dioxide. Vendor service contracts usually cover all materials and labor; monthly costs range from $75 to $130 depending on the size and contaminant loading of the OWS.

BIOREMEDIATION BENEFITS:

- Lower hydrocarbon levels in OWS effluent
- Less contaminated sludge and lower volume of sludge
- Reduction or elimination of odor

LIMITATIONS OF BIOREMEDIATION:

- Microbe populations can be killed by harsh chemicals or pH levels greater than 8.5; do not use detergents that are caustic or contain emulsifiers

Case studies:

Car Repair and Car Wash

Salem Boys Auto of Tempe, Arizona used sloping pavement, grates, and screens to minimize OWS loading. These controls, together with bioremediation, decreased the sludge cleanout frequency and cost by 75%.

U.S. Postal Service Fleet Maintenance Facility

The Huntington Beach, California facility used bioremediation to reduce OWS effluent hydrocarbon concentration by more than 80%.

Your state or Local government environmental agency has more information about compliance and pollution prevention for auto repair shops and fleet maintenance operations in your state or area. Additional fact sheets and information can be found at www.epa.gov/region09/p2/autofleet. This fact sheet is part of a package of fact sheets entitled either "The Pollution Prevention Tool Kit, Best Environmental Practices for Auto Repair" (publication number EPA-909-E-99-001) or "The Pollution Prevention Tool Kit, Best Environmental Practices for Fleet Maintenance" (publication number EPA-909-E-99-002). To obtain copies of either package, call (800) 490-9198. Accompanying videos, "Profit Through Prevention", are available at the same phone number for either auto repair (number EPA-909-V-99-001) or fleet maintenance (number EPA-909-V-99-002).