What should NOT go through a separator

Antifreeze, degreasers, and detergents will emulsify (break up) oil into small droplets so it
will not float to the surface and will allow the oil to pass through the separator and into the sewer
system. Fuels, brake fluid, alcohols or solvents not only can emulsify oil, but accumulated
vapors can pose a threat to maintenance workers at the sewage pump stations or treatment plant.

Concentrated amounts of oily products can overload the baffles or plates and pass through to the sewer. The smaller capacity of coalescing units may cause more turbulent flows. This “flushing” action, combined with a concentration of any emulsifier, can wash off the residual oils clinging to the plates and release large amounts of emulsified oils to the sewer. Any use of emulsifiers, especially excessive amounts, could result in a violation of Tacoma’s Total Petroleum Hydrocarbon discharge limit of 50 parts per million (equivalent to 1/2 teaspoon of oil
in 13 gallons of water!) Floating oils that are not skimmed from the surface of the separator will eventually become emulsified and appear lighter in color.

Hot water/steam is the most sewer-friendly cleaning alternative, followed by mild detergents such as sodium metasilicate. If you must use detergent, use as little as possible and remember: all detergents and soaps are eventually “biodegradable.” That doesn’t necessarily mean they are beneficial to the environment. They are certainly not beneficial to oil/water separation.

Oil/water separators are not designed to treat heavy metal-bearing wastewater. This type of wastewater will require chemical treatment or special equipment to be acceptable for discharge to the sanitary sewer. Some potential examples of metal-bearing wastewater:

- Hot tank and cabinet washer solutions from auto repair or machine shops
- Pressure-wash water from ship and boat yards
- ANY metal finishing, plating, or metal recovery water
- Water soluble machine coolant.

All discharges must meet the requirements of the Tacoma Municipal Code, Chapter 12.08.

For more information regarding wastewater discharge regulations within the City of Tacoma, please contact Environmental Services at (253) 591-5588 or look up related best management practices (BMP’s) at www.cityoftacoma.org/manual, Volume 4, Chapter 4. Published February 2005, revised July 2009 City of Tacoma Public Works Department, with thanks to King County-Metro.

(Footnotes) 1 Associated Petroleum Institute

Oil/Water Separator Facts

Types of oil/water separators

There are two common types of oil/water separator units. Both are designed to separate sediment and oil from wastewater. Oil and sediment are stored within the unit until properly collected and disposed. The water discharges to the sanitary sewer.

When they are needed

Any business that plans to discharge oily or sediment-laden wastewater to the sanitary sewer must install, use, and maintain an oil/water separator.

 API–type oil/water separators are typically large-capacity, underground cement vaults designed with baffles to trap sediments and retain floating oils. The large capacity of the vaults slows down the wastewater, allowing oil to float to the surface and solid material to settle to the bottom. Floating oil may be skimmed off or mechanically removed. (Figure 1)

A coalescing plate separator (CPS) has a smaller capacity and employs a series of oil-attracting plates. Oil droplets collect on the plates and float to the surface where they can be skimmed off or mechanically removed (Figure 2).

Businesses that typically need oil/water separators include:

- Fuel Islands
- Quick-lube stations
- Transportation fueling facilities
- Vehicle/heavy equipment repair
- Businesses that wash equipment or vehicles
**Installation guidelines**

Before an oil/water separator is installed, the sewer contractor must submit plans to the City of Tacoma for review and approval. For new buildings or tenant improvements, the plans may be submitted to the Building and Land Use Division with building and plumbing diagrams. Contact the Permit Counter at (253) 591-5030.

Include the following information when submitting your plans:

- Name and address of the facility, and the telephone number and mailing address of the person legally responsible for operation and maintenance.
- A drawing of the oil/water separator with model number, capacity and dimensions. The outlet to the sewer must have a sampling “T” installed (see Figure 1) and some installations require positive shut-off valves at the discharge end.
- Site map detailing all drains and the location of the separator. Indicate if any drainage is from rain water runoff; this should be limited to a maximum of 300 square feet. Exceptions may be made, based on specific needs or situations.
- Location of water sources and maximum flows (in gallons per minute) from all potential service areas, bulk storage areas, and equipment discharging to the oil/water separator (including rainwater).
- Calculations used to establish the size or type of oil/water separator needed for your facility.

Flow rate/capacity guidelines are available. For information regarding specifications and approval, please call 591-5588 and ask to speak with a Source Control Representative.

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**Protecting the oil/water separator**

You can save maintenance costs by diverting oils and sludge out of your separator. The sooner oils are removed, the less chance they have to become emulsified. Free-floating oils can be carefully vacuumed off with a wet/dry vacuum. Store this oil in a separate drum and consult your vendor on how to properly dispose of it. Be careful of what you discharge to the separator. When mixed with the oil, cleaners and solvents that contain certain chemicals could make the mixture a hazardous waste.

In the event of an oil spill to the separator, check the separator and oil storage tank (if provided) immediately to make sure there is space to contain the oil and close the discharge valve if one is provided. Oil may be removed by pumping into additional storage tanks or by contracting with a licensed disposal company.

Caked-on grease and oily dirt form a sludge layer at the bottom of the separator that is expensive to dispose of and difficult to clean out. A catch basin installed before the separator will trap most solids before they enter the separator vault (figure 3), and can be easily shoveled out. This can be very helpful to businesses cleaning muddy equipment.

Make sure you do not exceed your separator’s design flow. It is important for water to stay in the unit long enough for separation to occur.

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**Pumping into the separator**

If you pump into an oil/water separator, you may be mechanically emulsifying the oil before it enters the unit. If you find that the separator effluent does not meet the 50 mg/L total petroleum hydrocarbon (TPH) discharge limit, you may need to re-evaluate your system.

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**Inspecting the oil/water separator**

Many think that if the separator is still draining, it’s working. But, like any “filter,” an oil/water separator needs occasional cleaning. A separator’s efficiency is most affected by settled solids and by oils. We recommend that you inspect your separator at least once every month. Depending on its use, more frequent inspection may be needed.

To determine whether your separator needs to be cleaned:

- Open the inspection plates and look in each chamber. Make sure the outlet chamber (usually the side closest to the street) has a sampling “T.” The “T” should extend at least 6 inches below the water surface. There should be no visible oil sheen in the effluent leaving the “T.”
- Use a long stick (about 8 feet) to touch the bottom. Any resistance to push through to the bottom indicates a sludge buildup. Service the oil/water separator when the buildup is 20% of the total depth, or about 8 inches in the inlet chamber (typically the one closest to the wastewater source).
- Use water-finding paste or hollow tube to measure the oil layer.
- Measure oil floating on top of the water. When there is 2 inches or more of oil in any chamber, it should be removed. Older oil may become emulsified.
- For coalescing plate separators, it is critical to remove and clean the plates before they get “blinded” or coated with silt or solids. Blinding allows oils to pass through to the sewer and the discharge may exceed Tacoma’s discharge limit of 50 mg/L for Total Petroleum Hydrocarbons.
- Record your findings in a log with the date and your initials.

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**Cleaning companies**

Look in the Yellow Pages under “ Tanks – Cleaning” or “Oils-Waste” for companies that pump out and clean oil/water separators. These firms have special vacuum trucks to pump out the materials. Never use a septic tank service to clean an oil/water separator or catch basin.

Since vendors may have different requirements and/or treatment methods, costs can vary. Fees may include:

- Lab analysis of a sample of the separator’s contents
- Wastewater disposal charges
- Surcharge for excessive oil and sludge
- Truck time, figured door to door, with a 2-4 hour minimum
- Tank truck rinse-out at the treatment facility

Choose a licensed tank cleaning contractor who knows how to properly handle and dispose of oily wastes. Ask if they are licensed to work in your municipality.

Ask your contractor how he intends to dispose of the solid material (sludge) he removes. Even though it may not be “hazardous waste,” it still may not be acceptable for local landfill disposal. The sludge should be collected in a drum and tested to determine proper disposal methods.

Make sure your contractor’s equipment is right for your situation. Some equipment requires sludge to be a pumpable slurry.

A lot of water may be needed to break up compacted sludge and to rinse out the truck’s tank at the treatment facility. Both will involve extra time and expense.

Specialized equipment can handle sludges more efficiently without requiring the use of extra water. This may cost more, but you may save money if the sludge buildup is excessive.

Make sure the vendor vacuums out all of the sludge in each chamber. Inspect, then fill up the separator (from the discharge end) with clean water before you begin discharging again. Keep a copy of the receipt.