Fact Sheet: The Oil Water Separator

How to select and maintain an oil water separator

Mission Statement

The mission of the Industrial Waste Pretreatment Program is to protect the environment, public health, biosolids quality, and Pocatello's sewerage system. We work cooperatively with our customers as we regulate industrial discharges, provide technical assistance, and monitor Pocatello's sewerage system.

Topic overview

For further information Call Water Pollution Control at 208-234-6256 or www.pocatello.us/wpc/wpc_pretreatment.htm

Introduction

For businesses that generate oily wastewater from use of petroleum products, an oil/water separator can be effective and economical means to treat wastewater to an acceptable level for discharge to the Pocatello sanitary sewer system. Because oil and water do not mix well, and as oil "floats" due to being lighter than water, effective treatment can be achieved if the correct oil-water separator is installed, routine maintenance is adhered to, and the separation of oil and water is not comprised by the excessive use of certain chemicals.

This fact sheet is designed to provide information for businesses that currently have an oil/water separator or are considering the purchase of an oil/water separator.

What is an oil/silt separator?

Standard oil/water separators are large-capacity, underground cement vaults installed between a drain and the connecting sewer pipe. These vaults are 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 out.

Another popular design is the coalescing plate separator which can be installed above or below ground. It has a smaller capacity and employs a series of oil-attracting plates. Oil droplets collect and float to the surface, where they can be skimmed off or removed mechanically.

Who needs an oil/silt separator?

Any business that plans to discharge oily or sediment laden wastewater to the sewer must install, use, and maintain an oil/silt separator. Businesses that typically need oil/silt separators include:

- Quick-lube stations
- Transportation fueling facilities
- Vehicle and/or heavy equipment repair washing or detailing
- Businesses using steam or pressure

washers and generally any business with vehicles on its premises

What are the installation guidelines?

Before installing an oil/water separator, all plans should be submitted to the City of Pocatello for review. Businesses will need a letter allowing discharge of wastewater from the properly installed oil/water separator. When submitting plans, include the following information:

- Name and address of the facility, and the phone number and mailing address of the person legally responsible for the operation and maintenance.
- Drawings of the oil/water separator with capacities and dimensions. The outlet to the sewer must have a sampling "T" installed.
- Site map detailing all drains and the separator location. Indicate how all drainage from rainwater runoff will be prevented from entering the sanitary sewer.
- Location of the water sources and maximum water flows, in gallons per minute (gpm) from all potential service areas and equipment discharging to the oil/water separator.

Standard oil/water separator capacity guidelines to hold the maximum discharge flow for 45 minutes, e.g., a 20-gpm flow would require a 900 gallon separator. For more information on specifications and approval, Call Water Pollution Control (WPC) 208-234-6256.

How do businesses inspect the oil/water separator to know when it is dirty?

Many think that if it 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 or sludge and oils.

WPC recommends that businesses inspect an oil/water separator at least every six months. Steps to inspect are:

- Open the inspection plates and look in each chamber. Make sure the outlet chamber (usually the side closet to the street) has a sampling "T". It should have a six-inch extension below the water surface.
- Take a long stick that will reach the bottom (about 8 feet). Any resistance in pushing through to the bottom will indicate a sludge buildup. Service the oil/water separator when the buildup is about 8 inches deep in the inlet chamber (typically the one closet to the drain).
- Measure oil floating on top of the water. When there are two inches or more of oil in any chamber, it should be removed. Older oil has a chance of becoming emulsified.
- For coalescing plate separators, it is critical to remove and clean the plates before they get "blinded" or coated with slit or solids. This will allow oils to pass through to the sewer, possibly exceeding Pocatello's discharge limits of 100 parts per million (ppm) for nonpolar Fats, Oils, and Grease (FOG).

Keeping logs of inspecting, cleaning and maintenance of all interceptors and waste disposals are required to discharge to the sewer and are important for waste management. Knowing when you last cleaned your interceptor and when it is due again can help keep your interceptor operating at maximum efficiency. Logs are necessary to track waste for future reference. Keeping a log demonstrates your business operates in good faith and may prevent escalating enforcement in the event an accidental spill or other sewer violation should occur.

Who do businesses call to clean out an oil/water separator?

There are firms that specialize in pumping out and cleaning oil/water separators. The phone book "yellow pages," for instance, lists these companies under "Septic Tanks & Systems – Cleaning." These firms have special vacuum trucks that pump out

materials with the consistency of anything from liquid slurry to solid dirt. The bulk liquid is shipped to a licensed treatment facility where oils, solids and heavy metals are treated and removed from the water before being discharged to the sewer.

Since vendors may have different requirements and/or treatment methods, costs could vary.

Fees can include:

- Lab analysis from a sample of the separator's contents
- Wastewater disposal charges
- Surcharges for excessive oil and sludge

For additional information about vendors that can pump out and clean oil/water separators you can call WPC at 234-6256.

How do businesses choose a oil/water separator cleaning company?

Businesses should choose a reliable firm by making sure that its equipment is right for the situation. Some equipment requires that incoming 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 steps will involve extra time and expense.

Make sure the vendor vacuums out all of the sludge in each chamber. Businesses should inspect and then fill up the separator with clean water before they begin discharging to the sanitary sewer.

Pollutant Sources

Identifying the sources of pollutants is the first step in a good prevention program. Pollutants can enter the sewer systems through a sink, floor drain, or any fixure that is connected to the sewer. Pollutants can enter the sewer as a result of many common activities performed in relation to vehicles. Some of the activities performed that may introduce pollutants are:

- Cleaning and washing floors, vehicles, and work areas.
- Changing and improper storage of fluids and chemicals.
- Removing parts that contain fluids or chemicals.
- Cleaning parts

What should not go through a separator?

- Antifreeze, degreaser and detergents will emulsify (break up) oil into small droplets so the oil does not float to the surface.
- Fuels, alcohols or solvents not only can emulsify oil, but accumulated vapors can pose a threat to line workers at the pump stations and/or the treatment plant and are prohibited discharges.
- Concentrated amounts of oily products can overload the separator and pass through to the sanitary sewer.
- Brake, transmission, power steering fluids, paints, and heavy metals are all also prohibited discharges.

The smaller capacity of coalescing units may have more turbulent flows. This "flushing" action, combined with a concentration of any emulsifier, can wash off the residual oils clinging to plates. Floating oils that are not skimmed from the surface of the separator will eventually become emulsified and appear to have a lighter color. Any use of emulsifiers could result in a violation of Pocatello's nonpolar FOG (Fats, Oils, and Grease) limits of 100 ppm (equivalent to one teaspoon of oil to 13 gallons of water!).

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

- Hot tank can cabinet washer solutions from auto repair or machine shops

- Any metal finishing, plating or metal recovery water
- Water soluble machine coolant

Spill Control and Prevention

To prevent the introduction of pollutants to the sewer system, secondary containment is required for all prohibited materials in volumes greater than on gallon. The containment volume should be able to contain 110% of the largest container in the containment area.

Containment can be a sealed bermed wall, an individual container, removal of the material to an area that does not have any drains, or special spill control equipment. The goal is to prevent these materials from entering floor drains, sinks, interceptors, or any fixture connected to the sewer system.

A spill containment kit should be assembled and stored in an assessable place in case of an uncontained spill. Any spills should be wiped up or absorbed and placed in spill container until it can be properly disposed of. Careful control and prevention of spills can reduce the discharge of pollutants to the sewer, increase the efficiency, and reduce the cost of maintaining an oil/water separator.

What can businesses do to maintain their oil/water separators?

Businesses can save maintenance costs by diverting oils and sludge out of their separators. The sooner oils are removed, the less the chance they will become emulsified. Oils that are free-floating should be carefully pumped out. Businesses should store this oil in a separate drum and consult their vendor on how to properly dispose of it. Cleaners may contain certain chemicals that, when mixed with the oil, could make it a hazardous waste.

Another way to remove oil is to use absorbent pads or socks, which float on top of the water and attract only oil. Place the pads in the inlet chamber to trap oils before they get a chance to migrate. Remove the pads often before they are saturated. These pads can be wrung out and re-used if handled properly. Absorbent products are available at most chemical and safety supply stores.

Sludge is oily dirt that builds up on the bottom of the separator. Sludges are expensive to dispose of and difficult to clean out. A catch basin, installed before the separator, can be shoveled out and will trap solids before they wash into the separator. This can be very helpful to businesses cleaning muddy equipment.

The sludge should be collected in a drum and tested to determine proper disposal methods. Sludges and other wastes may not be considered “hazardous wastes,” but they may not be acceptable for garbage disposal.

The cost of extra protection, when implementing a pollutant prevention program can be justified. A pollutant prevention program can help eliminate the constant problems and inconvenience of plugged, frothing sewer lines and potential health and safety risks. Potential costs of property damage or business shutdowns due to sewer backups or explosions can be extremely expensive. Any business responsible for property damage or damage to the sewer can be held liable for all cost.