

Waste Oil Heaters and Furnaces

Fact Sheet

The following provides information pertaining to Waste Oil Heaters and some of the associated characteristics, hazards and safeguards. It also provides an overview of some of the standards pertaining to this subject.

Description and Use:

Waste (or used) oil heaters are exactly what they sound like.... process heaters, boilers, furnaces and space heaters which are fuelled by waste oil products. These furnaces will run on any type of waste oil products such as transmission oils, cooking and vegetable oils, hydraulic oils combustible synthetic oils or any oils up to 50 S.A.E.

As with most products, there are varying opinions on waste oil heaters ranging from "good source of heat for less cost" to "bad for the environment".

While some authorities state that waste oil burners are the best way to dispose of this by-product, others maintain that these burners are using fuels which contain contaminants which result in toxic or environmentally unfriendly products being released into the environment.

When these waste oil heaters first became popular, they were not recommended as the technology and testing methods were not established. In recent years, their use has increased and the technology has greatly improved. Depending on the location of the heater, its installation and use is controlled by various government regulations. The Yukon, Northwest Territories, Saskatchewan and Ontario are areas where new legislation is pending or already in place. Various installation regulations may already control the installation in some areas, but not in others.

Although the technology has improved with these units, the standard of measurement is that any waste oil appliance in use must be approved by the Canadian Standards Association (CSA) and the Underwriters' Laboratory (UL) or the Underwriters' Laboratory of Canada (ULC). This is the only way of ensuring that the unit is well designed to modern day requirements. It should also be remembered that these units must meet any national and provincial building and fire codes and all other applicable laws, regulations and bylaws.

In addition to the above requirements, users must be aware of regional restrictions. For example, in Saskatchewan, users of Waste Oil Burning Equipment for space heating must ensure:

- the installation of waste oil burning equipment or combination of burners must not exceed the allowable heating capacity. In this case, 500,000 BTU/hr
- waste oil burning equipment must not be used in or within 100 metres of residences, including cottages or other secondary residences,
- waste oil burning equipment should only burn waste oil that the owner or operator generates; or receives from individuals who generate waste oil through the maintenance of personal vehicles,

While the above information applies directly to Saskatchewan, the suggested requirements are good practice for all installations.

The Problems:

The main issue with these furnaces/heaters continues to be two-fold:

- The source and type of the fuel being burned
- Maintenance of the equipment.

The Fuel Source:

As mentioned previously, these units are fuelled by waste oil, primarily collected on the premises of the insured. However some areas now allow for the purchase and transportation of waste oil from one location to another providing government permits have been obtained.

The requirements laid out in the Yukon provide insight into the problems created with used oil, such as:

- It is illegal and can be dangerous to mix special wastes with used oil that will be burned in a furnace. When aqueous substances like antifreeze are mixed with the furnace's feedstock, they can clog up the jets in the burner and repairs can be costly. When mixed with used oil fuel, solvents and other flammable liquids decrease the flashpoint of the fuel. This may result in a fire or explosion hazard.
- Burning brake fluid or chlorinated solvents like methyl-ethyl ketone results in the production of hydrochloric acid, which in turn can corrode parts of the furnace. When released to the atmosphere, chlorine from brake fluid and some solvents can deplete the ozone layer. Burning any substance other than oil in an oil furnace may void the manufacturer's warranty.

To control this situation in the Yukon, the Environmental Programs Branch has a policy that disallows burning of used oil that contains specific contaminants in excess of allowable levels. Burning oil containing these contaminants results in their release to the environment. These contaminants have been proven to be harmful to the health of both humans and the environment. For this reason, the Branch requires **that every burner operator have their used oil tested annually** to ensure that arsenic, cadmium, chromium, lead and total organic halogens do not occur in levels that are unsafe.

Used oil analysis may seem costly, but when you compare the cost of regular heating fuel, analysis costs are relatively low. Operators can avoid contaminating used oil by not accepting used aircraft engine oil, not mixing special wastes, educating staff who deals with oil and/or the burner, and by accepting used oil only from trusted sources."

Here again, this information applies directly to installations in the Yukon Territory, however the guidelines are good practice in all locations.



Typical Waste Oil Boiler



Typical Waste Oil Furnace

Maintenance:

The maintenance of this equipment is essential. The maintenance requirements provided by the manufacturer must be closely followed to ensure the safe operation of the equipment. Maintenance procedures can be very involved and may require cleaning of the fire box, stack, etc at intervals specified by the manufacturer. As these requirements will change from unit to unit, it is recommended that these units be serviced annually by a qualified service contractor or manufacturer's representative to be sure they are in top operating condition. Annual verification that this has been done should be required.

Summary:

Considering the above information, there are good and bad things about these heating appliances.

On The Positive Side: Waste oil heaters installed properly will safely burn waste oil. If you have a good source of waste oil products, your cost is zero according to manufacturers. Even if you don't have a good supply of used oils you can buy them from a recycler, small business like a mechanics shop, oil/lube place or a restaurant. According to the manufacturers, the BTU production with waste oil heaters can be double that of LP gas. They also state their products do not produce smoke or odours and exceed all EPA requirements for such devices.

On The Negative Side: Some governments have decided burning waste oil is not a good thing for a couple of reasons:

- Burning used oil in space heaters is considered less than state-of-the-art option for used oil. Lubricating oil is specially formulated with chemical additives designed for individual applications and not as a fuel. Used lubricating oil is typically contaminated with elevated levels of additives, heavy metals and organic compounds when compared to natural gas or other commercially available heating fuels.
- In addition, it is unlikely that these heaters have emission control equipment to mitigate release into the atmosphere. As a result harmful chemicals such as chromium, arsenic and zinc may be released in much greater quantities than normally allowed. This is primarily due to the fact that full combustion of these fuels may not occur.

As a result the Ontario Government currently has proposed legislation that, if passed, will disallow the use of these types of heating units in Southern Ontario beginning in June 2009.

When considering an installation of a Waste Oil Heater or Furnace, remember to consider:

- Is the unit CSA and UL/ULC listed?
- Is there a reliable clean fuel supply available on premises?
- Is fuel being transferred to the location of installation and if so, is it being done under permit?
- Has the Waste Oil been tested for contaminants? What were the test results?
- Was the unit installed by the manufacturer's representative or qualified contractor?
- Is there an annual agreement in place requiring proper maintenance of the equipment?