

# Loss Prevention

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## Waste Oil Heaters and Furnaces

Waste (or used) oil heaters are process heaters, boilers, furnaces, and space heaters fuelled by waste oil products. These products can be transmission oils, cooking and vegetable oils, hydraulic oils, combustible synthetic oils, or any oils up to 50 S.A.E.

### Considerations

As with most products, there are varying opinions on them. Some authorities state waste oil burners are the best way to dispose of this by-product; others maintain these burners are using fuels containing contaminants which result in toxic or environmentally unfriendly products being released into the environment.

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. 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 the unit is designed to meet current requirements. These units must also meet any national and provincial building and fire codes and all other applicable laws, regulations, and bylaws.

In addition, 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 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.





## Issues

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

### 1. The Fuel Source

As mentioned previously, these units are fuelled by waste oil, primarily collected on the premises of the customer. 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 fuel oil, 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 into 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. These contaminants have been proven to harm the environment and human health. For this reason, the Branch requires every burner operator have their used oil tested annually to ensure arsenic, cadmium, chromium, lead, and total organic halogens do not occur in unsafe levels.

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 handle the oil and/or the burner, and by accepting used oil only from trusted sources.

## 2. Maintenance

The maintenance of this equipment is essential. The 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 good operating condition. Annual verification that this has been done should be required.

## More Information

There are positives and negatives to these heating appliances. 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 operation, or a restaurant. According to the manufacturers, the BTU production with waste oil heaters can be double that of gas. They also state their products do not produce smoke or odours and exceed all EPA requirements for such devices.

However, 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 a 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 because complete combustion of these fuels may not occur.

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?

**Talk to a Loss Prevention Consultant - your best source for information and advice.**

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