

Contamination of Buildings by Fuel Oil Due to Flooding

What are fuel oils?

Fuel oils are petroleum products that are used in many types of engines, lamps, heaters, furnaces, stoves, and as solvents. Fuel oils come from crude petroleum and are refined to meet specifications for each use. Fuel oils are mixtures of aliphatic (open chain and cyclic compounds that are similar to open chain compounds) and aromatic (benzene and compounds similar to benzene) petroleum hydrocarbons. In addition, they may contain small amounts of nitrogen, sulfur, and other elements as additives. The exact chemical composition may vary somewhat, depending on the source and other factors. Fuel oils are distinguished from each other primarily by their boiling point ranges, chemical additives, and uses.

How can fuel oils enter and leave a person's body?

Fuel oils can enter and leave your body when you breathe them in the air, when you drink water or eat food containing them, and when your skin comes in contact with them. We do not know how much of a fuel oil might be taken up by your body if you inhale fuel oil vapor, drink contaminated water, or come in contact with fuel oils. We have limited information about what happens to fuel oils once they enter your body.

How can fuel oils affect human health?

Researchers know very little about the human health effects caused by fuel oils. Breathing vapor from fuel oil no. 1 (also known as kerosene or JP-5) for periods as short as one hour may make you feel nauseous, irritate skin

and eyes, or affect the nervous system. Some other effects include headache, light-headedness, loss of appetite, poor coordination, and difficulty concentrating. Breathing diesel fuel vapors for a long time may damage kidneys, increase blood pressure, or lower the blood's ability to clot.

Persons with respiratory problems such as asthma, as well as young children, seniors, and persons with heightened sensitivity to chemicals may be more susceptible to illness from exposure from fuel oils. People may be especially concerned about young children and pets. If they touch contaminated soil or surfaces, may accidentally bring the fuel oil to their mouth or eyes. Several case studies have reported accidental poisoning and death in children as the result of drinking kerosene. People with open cuts or recently healed wounds should be careful to stay away from fuel oil.

What should I do?

1. **Stay safe. Keep children and pets away from the spill.** Consider staying at a motel or with relatives until the clean up is completed.
2. **Avoid ignition sources, because the spill is a potential fire hazard.**
 - a. Do not smoke or light matches near the area.
 - b. Turn off the gas and appliances, if safe to do so. Extinguish pilot lights on furnaces, water heaters and gas dryers. A specially-trained contractor may be required to turn the equipment back on safely.
 - c. Operate generators outdoors only.



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Contamination of Buildings by Fuel Oil Due to Flooding – page 2

3. **Report the spill** - Please notify the state Duty Officer at 651-649-5451 or 800-422-0798, who will contact or connect you to the Minnesota Pollution Control Agency (MPCA). The MPCA can provide more information on clean up efforts in your area.
4. **Ventilate** - If the fuel oil has spilled indoors, open a window near the area, like in an enclosed basement. Close vents, windows, and doors that permit the vapors to enter living and work areas.

Are buildings that have been flooded and contaminated with fuel oils safe?

Because little is known about the human health effects caused by fuel oils, the Minnesota Department of Health believes that a conservative approach should be taken to insure that everyone is protected from any adverse health effects. In buildings that have been flooded and contaminated by fuel oils, there are some options that will help minimize health problems.

1. **Clean** - It is very difficult to clean up spilled fuel oil completely. Cleaning will only work with non-porous building materials. Concrete, sheetrock and wood are very porous and will not clean up easily.

Since oil and water do not mix, normal flood cleanup techniques will not remove all of the fuel oils. Check with a fuel oil supplier for special cleaning procedures and materials such as sorbent pads. Absorbing the oil into the pads while the water is still draining will prevent oil from being absorbed by the concrete floor of the basement.

If you try to clean the area yourself, protect your skin. Use oil resistant gloves, as oil may dissolve latex gloves.

Wear old clothes and shoes that can be thrown away. Wash exposed skin with soap and warm water.

2. **Remove and replace porous materials**
Health risks in buildings that have been flooded and contaminated by fuel oils can be reduced by removal of porous materials that have absorbed oil. Fuel oil contaminated wooden framing or support structures, sheet rock walls, and some cements will off-gas fuel oils for long periods of time. Depending on the saturation level, this off-gassing could last for years. However, when major structural components of a house are impacted, costs for such activities may easily outweigh the value of the house. Check with local county officials for instructions on proper disposal of materials.
3. **Encapsulate** - Encapsulation is **not** recommended when surface contamination is extensive. This option involves cleaning and sealing surfaces with specialized coatings to prevent gases from escaping. If the fuel oil has not been completely removed, a health threat remains, and will delay off-gassing and potential health effects until a later date when the seal is broken, due to natural deterioration of the coating or due to remodeling.