

# Freezing Problems with Onsite Sewage Treatment Systems

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## Why Might an Onsite System Freeze?

According to many onsite professionals this has been a very hard year for onsite septic systems due to the lack of snow cover combined with cold temperatures. Even in a normal Minnesota winter, freezing can occasionally be a problem. Identifying and correcting a potential freezing problem is far easier than dealing with a frozen system. Here are a few common causes of onsite system freeze-ups.

Lack of Snow Cover: Snow serves as an insulating blanket over the septic tank(s) and soil treatment area (trenches, drainfield or mound). Snow helps keep the heat of the sewage and the heat created by the treatment of the sewage in the soil. Lack of snow allows frost to go deeper into the ground, potentially freezing the system.

Compacted Snow: Compacted snow will not insulate as well as uncompacted snow. Driving any type of equipment over the system compacts snow and sends the frost down deeper. Automobiles, snowmobiles, ATV's, people, and large livestock should stay off the system all year long but especially in the winter. Anytime traffic over a sewer pipe, septic tank, or soil treatment area is anticipated, insulated pipe should be used.

Compacted Soils: Areas that have compacted soils, such as driveways, paths or livestock enclosures, tend to freeze deeper, affecting septic system components that may be in the area.

Lack of Plant Cover: This often occurs in new systems installed late in the fall where a vegetative cover could not be established before winter. The vegetative cover insulates the system and helps hold snow.

Irregular Use of System: When homes or cabins are unoccupied for long weekends or extended periods of time, no sewage is entering the system to keep it warm. This can also occur when very low volumes of sewage are being generated. In cases when only one or two people are living in a home, they may use only a small percentage of the designed flow rate of 150 gallons per bedroom. Low usage may not be sufficient to keep the system from freezing. Frequent use, warm water temperatures and total volume of sewage are all important in cold temperature stress situations.

Leaking Plumbing Fixtures: When a fixture such as a toilet or shower leaks, it sends a very small trickle of sewage to the system. This trickle can freeze within the pipe and eventually cause the pipe to freeze solid. Appliances such as high efficiency furnaces and humidifiers can also cause water to freeze in the pipes due to the small amount of discharge.

Pipes Not Draining Properly: A common cause of freeze-ups are sewer pipes and pump lines that are not installed with proper fall (change of elevation) or pipes that settle after installation. Anytime a dip or low spot occurs in a pipe, sewage can collect and freeze. Pump lines can develop a dip right next to or above the septic tank as a result of backfilled soil settling from the excavation during the tank installation. It is important that all sewage drains out of the pipe from a pump line.

Cold Air Entering the System: Open and uncapped riser or inspection pipes and manhole covers allow cold air into the system and can cause the system to freeze.

Water Logged System: If a system was hydraulically failing (e.g. water coming to surface or seeping out the side of a mound) in the fall, it is a prime candidate to freeze. This effluent will freeze and prevent further effluent from entering the soil.

## What Should You Do If Your Onsite System Freezes?

If your septic system is frozen, your first step is to call an onsite professional. If you have a pump and hear water constantly running in a pump tank (a possible indication of a frozen system) disconnect your pump and call an onsite professional. This will likely be a pumper or an installer who can help determine the cause of the problem and offer solutions. The U of M Onsite Program web site is one place to go to locate a professional - <http://septic.coafes.umn.edu/homeowner/index.html>.

Many pumpers and installers have devices called steamers and high-pressure jetters to try to unfreeze system piping. Unless the cause of freezing is corrected the piping will refreeze. Other methods used to help fix a freezing problem include adding heat tape and tank heaters. Cameras can be sent down the pipes to determine where the freezing is occurring and if repairs are needed. If the treatment area is full of ice, or there is evidence of leaking, there is no need to thaw the lines leading to the treatment area, as it cannot accept liquid until the area is thawed in spring.

If it is not feasible to correct the problem or equipment is not available in your area, the only other option is to use the septic tank(s) in the system as a holding tank until the system thaws naturally. You will need to contact a pumper who will empty out the tanks when they are full on a regular basis. This can be very costly, especially with normal volumes of water use (50 to 75 gallons per person per day). Reduce water use by limiting the number of toilet flushes, taking short showers, using the dishwasher at full capacity, limiting running water to get hot or cold and doing laundry at a laundromat. It is smart to find the cause of the freezing problem so that it can be addressed in the spring, preventing future freeze-ups.

There are many misconceptions about how to deal with a frozen onsite system.

- **Do NOT** add antifreeze, salt or a septic system additive into the system.
- **Do NOT** pump sewage onto the ground surface.
- **Do NOT** start a fire over the system to attempt to thaw it out.
- **Do NOT** run water continually to try to unfreeze system.

## What Can You Do to Prevent Your Onsite System From Freezing in the Future?

Depending on your system, location, and water use, you may never have a freezing problem. However, there are several steps that you can take if you are concerned about your onsite system freezing. Here are some precautions if you have had a past problem or are concerned about having a future problem. It is not necessary to do all of these, but you may pick and choose based on your situation:

1. Place a layer of mulch (8-12 inches) over the pipes, tank and soil treatment system to provide extra insulation. This mulch could be straw, leaves, hay or any other loose material that will not compact and stay in place. This is particularly important if you have had a new system installed late in the year and no vegetative cover has been established. If your system is currently frozen ignore this step, as it will delay thawing come spring.
2. Let the grass in your lawn get a little longer in the late summer/fall over the tank and soil treatment area. This will provide extra insulation and help hold any snow that may fall.
3. Use water; the warmer the better! The Onsite Sewage Treatment Program is usually an advocate of water conservation, but if freezing is a concern, increasing low use to a normal water use can help the system. This includes spreading out your laundry schedule to possibly doing one warm/hot load per day, using your dishwasher and maybe even taking a hot bath. DO NOT leave water running all the time, as this will hydraulically overload the system.
4. If you know you are going to be gone for an extended period, plan accordingly. This could include having someone use sufficient quantities of water in the home regularly or pumping out your tank before leaving. If you live in an area with a high water table, you should only pump out the tank if the tank was designed for high water table conditions. If a

tank is left full for several winter months, the sewage will get very cold in shallow tanks and can even freeze. If you then return home before temperatures start to rise, the effluent leaving the tank will be cold. By starting with an empty tank, you can then start fresh with warm effluent. If you use a cabin on a limited basis during the winter months, this may be a good idea as well.

5. Fix any leaky plumbing fixtures or appliances in your home. This will help prevent freezing problems and help your system work better year round. If you have appliances that generate very low flows such as high efficiency furnaces, you can put a heat tape in the pipe, and while on vacation have someone come by and run warm water for a while. Alternately, you could install a small condensate pump that holds and discharges 2 gallons per cycle.

6. Keep all types of vehicles and high traffic people activities off of the system. This is a good rule to follow year round.

7. Make sure all risers; inspection pipes and manholes have covers on them. Sealing them and adding insulation is a good idea. Insulation may be added during construction particularly if the top of the septic tank is within 2 feet of the surface.

8. Keep an eye on your system. If any seeping or ponding occurs contact an onsite professional to help determine the cause and remedy.

9. If these steps fail to solve a freezing problem, you may need to dig up the area where the system is freezing to determine if there is a problem with the slope of the pipe.

#### For More Information

Please see our website at: <http://septic.coafes.umn.edu/homeowner/index.html> for more information about proper operation of septic systems. Otherwise give us a call at (800) 322-8642.