Precautions Can Prevent Frozen Septic Systems

Take steps now to prevent your septic system from freezing this winter.

Every winter, many people have to deal with the frustration of a frozen septic system when the temperature drops well below zero.

Lack of snow cover, dry soil conditions and very cold air temperatures during an extended period of time all contribute to the problem, according to Tom Scherer, North Dakota State University Extension Service agricultural engineer for water quality and irrigation.

“A frozen septic system can be a real headache in the middle of the winter,” he says. “With a little effort now, many potential freezing problems can be eliminated. Take the time to examine your system.”

Fresh snow is an excellent insulator. Ten inches of fresh, fluffy snow containing about 7 percent water is approximately equal to a 6-inch layer of fiberglass insulation with an R-value of R-18.

“Of course, the insulating capacity of snow will decrease as it becomes compacted, but any accumulation over 12 inches will provide significant frost protection,” Scherer says. “So when there is very little snow to cover bare soil or mown areas, frost will penetrate deep into the ground.”

A typical septic system has four main parts where freezing problems can occur:

- The pipe from the house to the septic tank
- The septic tank and, for some systems, a pump lift station
- The pipe from the septic tank to the soil treatment system (often called the drainfield)
- The soil treatment system

A common problem area is the point where the pipe from the house to the septic system exits the basement wall. Often, the wind keeps snow from accumulating right next to the north and west sides of the house, allowing frost to penetrate deeper in those areas.

If the main sewer line from the house is on the north or west side, then water fixtures that produce continuous but low flow rates, such as dripping faucets, high-efficiency furnaces and leaking toilets, will freeze where the pipe leaves the basement wall. An ice dam will form until it blocks the pipe. This problem also occurs when people do some landscaping and remove soil above the house sewer line.

“If you have experienced this problem, first fix any leaky fixtures in the house,” Scherer advises. “Next, place some type of insulating material (hay, straw, bags of leaves, etc.) at least a foot thick and at least 5 feet wide over the sewer line exit point and shovel snow over the area or place a snow fence in the area to trap snow.”

Water holds a great deal of heat, and with daily use, septic tanks rarely freeze, even in the coldest weather. However, when the house is vacant for a week or more, water does not enter the tank to keep it warm and it may freeze.

If you have a septic system that is used infrequently during the winter, place a layer of insulating material at least a foot deep over the tank and extend the layer at least 5 feet past the edges of the tank. Using a snow fence to trap snow over the tank also will help.

The pipe from the septic tank to the soil treatment area is subject to the same problems as the pipe from the house to the septic tank. A lack of slope, which results in slow water movement, is another problem that may cause freezing in this pipe. Often, water will freeze in the distribution boxes for the drainfield laterals. An insulating layer above these critical places likely will prevent freezing problems.

Slumping of the pipe due to soil settling or vehicle traffic can form another place for water to collect and freeze. Often, the pipe slumps right next to the septic tank due to soil settling around the tank after construction.

The soil treatment system is subject to freezing if the area above it always is wet and soggy. This condition indicates that the effluent is not infiltrating properly and you may have other problems with the drainfield.

If your drainfield is soggy or wet, now is the time to have a septic system installer conduct a professional examination. The solution may be simple and inexpensive or it could be complicated and require extensive renovation of the drainfield.

A new septic system (tank and drainfield) where the soil is bare commonly has freezing problems the first year. A thick insulating layer over all bare soil generally will prevent a frozen system. Insulating distribution boxes and around exposed inspection pipes, risers and the manhole is especially important.

Don't drive any vehicles, such as ATVs, snowmobiles or automobiles, over any part of the septic system during the winter because compacted snow will not insulate nearly as well as undisturbed snow. For the winter months, place a snow fence or other suitable barrier around the drainfield to discourage any traffic in the area and help maintain a thicker layer of snow insulation.

“If we do happen to get a good layer of snow, don’t get carried away while plowing and remove the snow cover from any part of the septic system,” Scherer cautions.

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