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Ask a Builder

By Cold Climate Housing Research Center Staff

The "Ask a Builder" series is dedicated to answering some of the many questions Fairbanks residents have about building, energy and the many other parts of home life.

My upstairs bathroom roof vent keeps plugging with ice. This causes a sewer smell in the house. I have to go up on the roof and clear the ice out of the vent about once a week when its gets very cold. I just put a 90-degree pipe on the roof vent but it still plugged up? Any suggestions?

This is one of those problems that plague many people, especially as it gets colder. Proper plumbing venting is critical to the operation of the drain system. Depending on the diameter of the drain lines, their location in the system relative to the roof vent, and the volume of waste water travelling through them, it may be possible for a trap to siphon dry when the roof vent is frozen shut. The vent allows pressure to equalize in the system by providing a path for air to be drawn in when wastewater is being sent down the drains. This pressure equalization keeps the P – traps of all the drains in your house from being siphoned dry. It's the water in those P- traps that makes a seal to prevent sewer gas from entering your house. This seal also allows the septic system to vent outdoors, rather than into the house -- this is the problem you have, and it often becomes more pronounced in winter. As hot air rises and escapes, or if fans are exhausting air, the replacement air has to come from somewhere. If the main vent stack is plugged and has caused a P-trap to be siphoned dry, replacement air can sometimes be drawn into the house from the septic system. .

If you haven't used a sink, a shower, or a garage drain in a while, the water in the trap can dry out too. This will open up a path for sewer gases to enter the house. The other place it can occasionally happen is with your Heat Recovery Ventilator (HRV). Your HRV system drain may be tied into your plumbing system and have it's own separate trap which may occasionally dry out. This is an easy item to overlook, especially if it is in the crawlspace.

Often a roof vent is sized too small, especially in older homes. As a general rule, the size of the roof vent should be the size of the main sewer pipe, usually three inches. There are many exceptions to this rule, however a three-inch vent is going to be less likely to freeze up than a smaller vent. In some cases it may be necessary to upgrade to an even larger four-inch vent, depending on the number of fixtures (such as toilets, sinks and so forth) that are part of the line. How far the vent travels is also something to consider. You may also want to inspect the attic to see how much insulation is around the pipes. If a lot of piping is exposed, it can contribute to freezing, as the outgoing air is going to be more likely to condense and freeze in the pipe.

So to summarize the solutions: Make sure the traps have water in them, insulate the vent stack in the attic where it comes up through the ceiling all the way to the underside of the roof sheathing, and make sure the main vent pipe is large enough in diameter.

Alaska HomeWise articles promote home awareness for the Cold Climate Housing Research Center (CCHRC). If you have a question, e-mail us at akhomewise@cchrc.org. You can also call the CCHRC at (907) 457-3454.