

Editorial Why Do They Break Down?

Why Do They Break Down?

Here's a practical explanation for hydrogen sulfide erosion in septic tanks — and why some tanks are affected and others not

By Josh Swedlund May 2011 Special Feature [Social Media Icons]

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Filed Under: Tank Deterioration, Pump Tank, Hydrogen Sulfide

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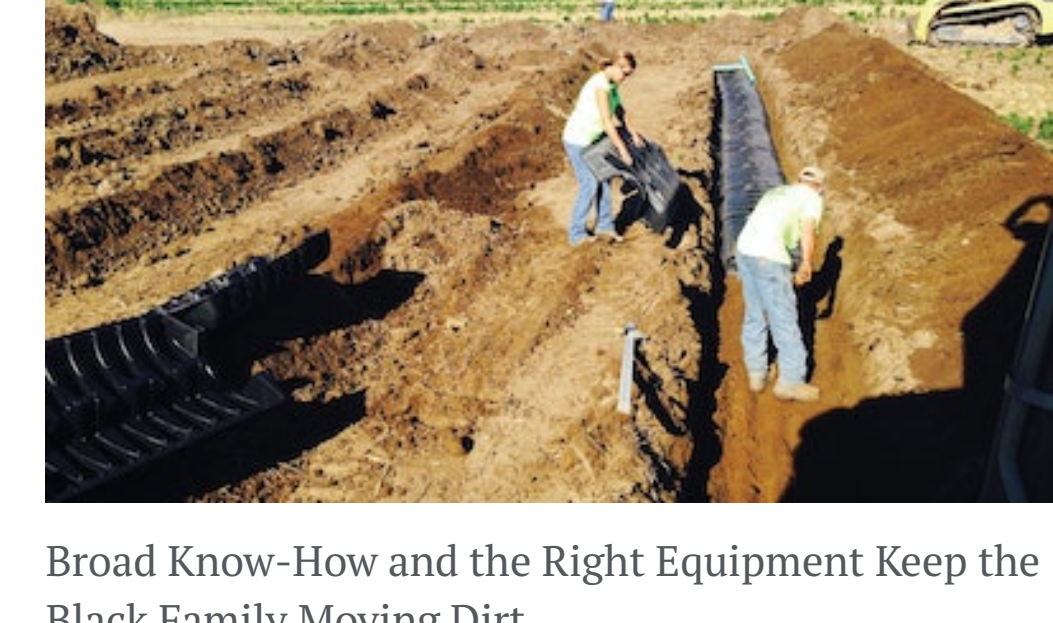
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It is a fact of chemistry and physics that hydrogen sulfide gas will be produced in all septic tanks as organic waste decomposes and breaks down.

Hydrogen sulfide is heavier than air, so it generally affects the concrete just above the waterline in the lowest part of the system.

The waste from every residence or business will produce hydrogen sulfide at different rates, depending on the organic volume of the waste, the temperature, and the retention time in the structure.

Running downhill

Think of it this way: hydrogen sulfide is heavier than air, so when it first begins to develop, it will lie right on the surface of the water. Being heavier than air, it will flow downhill, just as water does.

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Many people believe this gas follows the plumbing system back toward the house and out the roof vents. This is true of other gases in the tank, especially methane, which is lighter than air.

To escape, hydrogen sulfide needs to be able to flow out to the soil treatment area. Gases will follow the piping back from the drainfield to escape through the house vents, but this will not hinder the flow of hydrogen sulfide to the drainfield.

Flow blockages

The reason the gas attacks some tanks and not others is that in the systems being attacked, the gas is not able to flow freely to the soil treatment area and disperse into the soil.

- A sag in the outgoing pipe.

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- A pipe pitched in the wrong direction. A pipe pitched too steeply and inserted too far into the tank. An overloaded drainfield. Roots in the outlet line. Overly saturated or compacted soils.

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In other words, a hydrogen sulfide buildup could be caused by anything that hinders that gas from entering the soil.

This problem is likely to be more prevalent in today's systems installed under current codes. In the 1980s and earlier, mottled soils and groundwater were not much of a concern to installers when putting in septic systems.

In that era, you simply hooked onto the sewer line leaving the building and installed everything deeper from that point. Drainfields were installed as deep as they needed to be to keep the water flowing.

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What about pump tanks?

Next question: Why is the gas not reacting in all pump tanks? After all, the gas is trapped inside those tanks. The only explanation I can give is that in pump tanks the water level is always moving.

It is actually bacteria that cause the breakdown of the concrete, and this happens right on the surface. The water level in a pump tank is almost always moving up or down, and the reactions that break down concrete cannot occur underwater.

There is also increased airflow in and out of the tank during the pump cycles that may contribute to the slowing of the hydrogen sulfide attack. Hydrogen sulfide is present in pump tanks, so in time the tank will start to show signs of decomposition just above the high waterline.

If this theory is correct, there are two ways to solve the problem of concrete breakdown. The first is to figure out why the hydrogen sulfide gas is not able to make it to the soil treatment area and disperse into the soil.

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About the author

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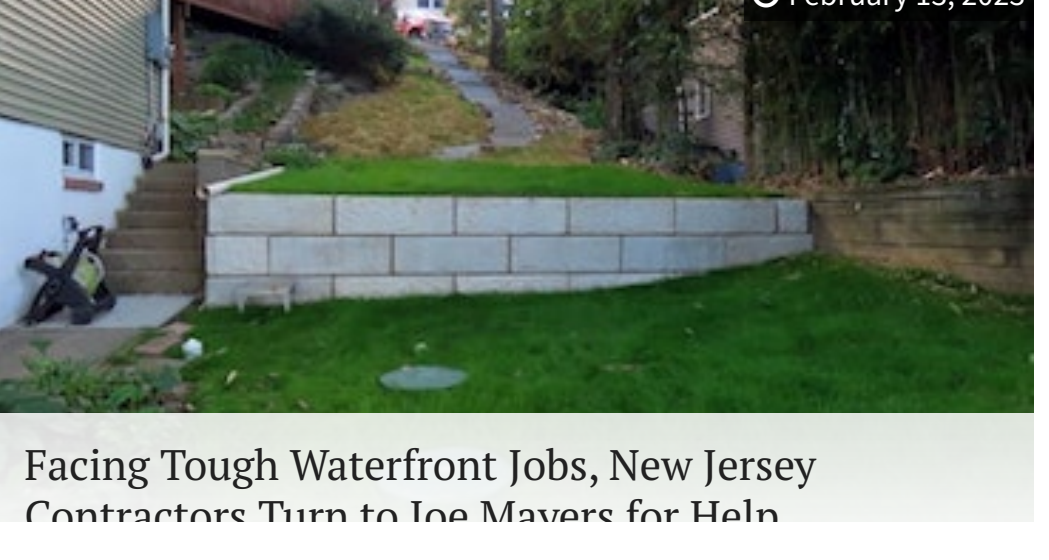
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