

# Sources of Hydrogen Sulfide in Monroe County: Aquifers

56% of Michigan residents get their drinking water from surface water and 44% get their drinking water from groundwater. If you are a private residential well owner, your drinking water comes from groundwater. The groundwater comes from a reservoir below the ground called an aquifer. The aquifer in Monroe County holds groundwater that contains naturally occurring hydrogen sulfide ( $H_2S$ ), a colorless gas that has a rotten-egg odor.

## What is an aquifer and how is it used?

Aquifers are huge reservoirs of water below the surface. They are made up of rock, sand and stones and are filled with groundwater. Groundwater enters an aquifer as rain or snow seeps through the soil. The water can then move through the aquifer through small holes and cracks within the rock, sand and stones. The movement of the water through these small spaces acts as a natural filtering process to remove some substances from the water.

Groundwater in an aquifer can be naturally released at springs and in wetlands. The water can also be accessed by drilling a hole to the aquifer and creating a well that will pump the water out. That water can then be used in households for showering, washing dishes and clothes and as drinking water.

## Monroe County's aquifer

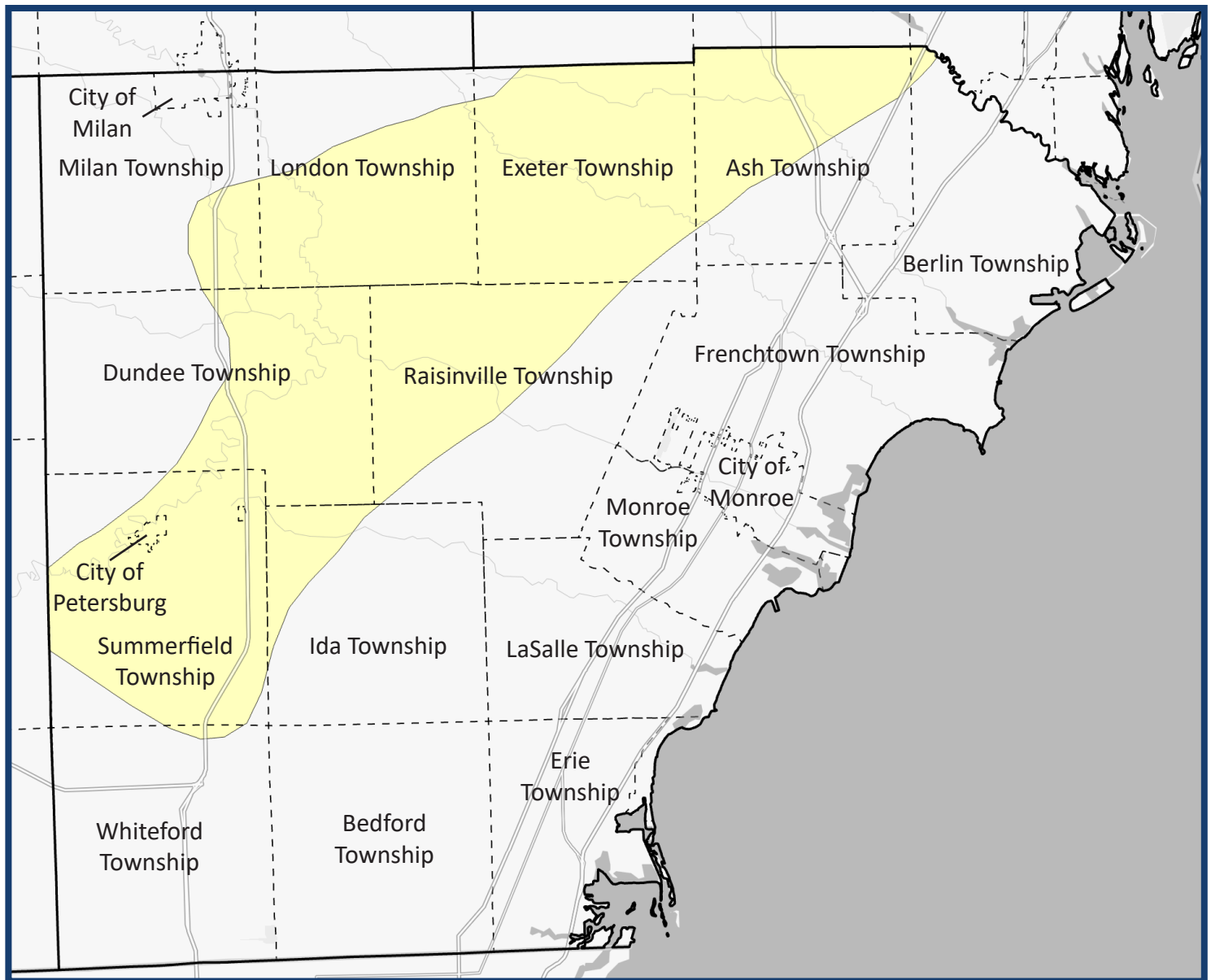
Monroe County has an aquifer primarily made up of limestone, sandstone and dolostone. The aquifer in Monroe County contains naturally occurring  $H_2S$ . The  $H_2S$  in this aquifer is made by naturally occurring bacteria living in the aquifer.

The  $H_2S$  in the aquifer can be released into the air when the groundwater is used.  $H_2S$  can be released into the air through:

- Large capacity groundwater wells used for processes like irrigation.
- Household use such as showering, washing clothes and watering the lawn.
- Oil and gas fields when groundwater is pumped out of the ground.
- Mining and construction areas where large amounts of water are used.

## A closer look at the Monroe County aquifer

The area of the aquifer impacted by the elevated  $\text{H}_2\text{S}$  levels in Monroe County can be seen in the map below. The yellow area represents groundwater known to have elevated levels of  $\text{H}_2\text{S}$  in it. However, based on previous groundwater testing and what is known about groundwater movement, it is possible that  $\text{H}_2\text{S}$  can be present at varying levels in locations outside of the yellow area.



It is important to note that smelling  $\text{H}_2\text{S}$  does not mean that it will affect your health. People can often smell  $\text{H}_2\text{S}$  at levels below those that can increase risk of harmful health effects. Sensitivity to  $\text{H}_2\text{S}$  odor can be different for each person.

## H<sub>2</sub>S in your home's water

H<sub>2</sub>S in drinking water is typically considered a nuisance because most people don't like the taste or smell, but it is not dangerous to swallow. However, when your water has H<sub>2</sub>S in it, it can create vapors that may build up in small spaces and affect your health. For instance, showering with H<sub>2</sub>S water may lead to irritation of the eyes, nose and throat.

H<sub>2</sub>S is corrosive to metals, meaning that H<sub>2</sub>S can cause a breakdown of iron, steel, copper and brass. This can cause discoloration or damage to metal fixtures as well as any items washed in the water or exposed to H<sub>2</sub>S in the air, including laundry.

H<sub>2</sub>S is not routinely tested for in drinking water. For more information on testing your water for H<sub>2</sub>S, call the Michigan Department of Health and Human Services' (MDHHS) Environmental Health Hotline at **800-648-6942**.

## H<sub>2</sub>S and your health

H<sub>2</sub>S is a colorless gas that has a rotten-egg odor. You are most likely to be exposed by breathing it in when it is released into the air. People can smell H<sub>2</sub>S at very low levels, and sensitivity to that smell can be different for each person. Depending on the level of H<sub>2</sub>S in the air, breathing it in over a period of time can cause:

- Nose and throat irritation, nausea and headaches when there are low amounts of H<sub>2</sub>S in the air.
- Difficulty breathing and dizziness when there are higher amounts of H<sub>2</sub>S in the air.
- Loss of consciousness when there are extremely high amounts of H<sub>2</sub>S in the air.

H<sub>2</sub>S does not cause asthma. However, people with asthma may find that breathing in high levels of H<sub>2</sub>S may trigger an asthma attack.

More information about H<sub>2</sub>S and your health can be found in the MDHHS [Hydrogen Sulfide factsheet](#).

## How to reduce H<sub>2</sub>S exposure from your private well water

Your exposure to H<sub>2</sub>S from private well water is dependent on the level of H<sub>2</sub>S in the water, how you use the water, how long the water is used, the temperature of the water and how much ventilation you have while using the water.

To reduce your exposure to H<sub>2</sub>S from private well water, you can increase ventilation by opening windows and running exhaust fans anywhere water is being used.

Other actions that may help reduce exposure to H<sub>2</sub>S include reducing the length of your showers to 10 minutes or less and lowering the temperature of the water you're using.

**For any questions about H<sub>2</sub>S odors in your home or water, contact the MDHHS Environmental Health Hotline at 800-648-6942.**

