

Hydrogen Sulfide, (H₂S)

USEPA Contaminant Classification:	Not classified
EPA Maximum "Safe" Levels:	None set
"Odor Threshold", Human Detection Limit:	0.025-0.25 parts/billion

Source: Sulfur in the form of Hydrogen Sulfide is present in most ground water, but is particularly abundant in hot springs, swampy, marshy areas, and water with an elevated Iron content. Its signature characteristic is a "rotten egg smell". There are three main sources for Hydrogen Sulfide: the decomposition of plant and animal matter, seepage of human and industrial waste, and most commonly from the bacterial reduction of Sulfate. Hydrogen Sulfide is mainly a taste and smell nuisance but can effect pH in higher concentrations. The Hydrogen Sulfide smell is usually more pronounced in the hot water supply of a home.

Health Effects: While Hydrogen Sulfide has not been linked to specific health problems, its presence in high concentrations can make the water so foul-smelling as to render it undrinkable. High concentrations of Hydrogen Sulfide usually, (although not always) indicate a bacterial presence, (mainly Coliform or iron bacteria). Most of the bacteria that reduce Sulfate are not known to be harmful to humans. High Sulfate levels, (the oxidized form of Sulfide) in drinking water may have a laxative effect when consumed.

Home Damage Effects: High Hydrogen Sulfide levels in water are usually accompanied by elevated Iron levels that may stain plumbing fixtures reddish-orange or brown. Hydrogen Sulfide is oxidized by bacteria into Sulfuric acid (H₂SO₄) which acidifies water lowering the pH. Acidic water causes corrosion, pitting and dissolving of the plumbing system and can also dissolve harmful metals, (Lead/Copper) into the drinking water.

How to Fix Contaminated Water:

1. Well Chlorination- A thorough chlorinating of the water system will significantly reduce the amount of bacteria reducing Sulfate to Sulfide. This will not however stop the reoccurrence of bacteria and may need to be repeated on a regular basis.

2. Whole house "specialized" media systems- Similar in operation to a softener; these systems utilize a Manganese Dioxide resin to bind the Hydrogen Sulfide removing it from the water. These systems regenerate either with raw water or bleach to cleanse the resin and improve efficiency.

3. Aeration and Ozonation Systems- These systems inject Oxygen in various forms (aerators = O₂, Ozone systems = O₃-) to oxidize Sulfides to Sulfates. These Sulfates may be grouped together and precipitated out by micron filtration. These systems are effective at removing the problem causing smells associated with Hydrogen Sulfide.