

## Fact Sheet – Why Does My Well Water Smell Like Rotten Eggs?

A "rotten egg" smell, from your tap water could be caused by several different things which may or may not be directly related to the water supply. If you only notice the smell from your kitchen faucet for example, it could be the result of a partially clogged drain or decaying remains that may be found in your sink's trap. Keeping your kitchen sink clean by regularly disinfecting would solve this problem. Another source for this smell may come from water treatment devices. Water treatment devices such as sediment filters and water softeners which may be used to treat a specific faucet or at the water's point of entry to a house could also be the cause of an unpleasant smell if not maintained properly. Water treatment devices often required regular maintenance such as filter changes. If left alone for long periods of time, they could begin to harbour bacteria or become a place for organic matter to accumulate which would in turn produce an unpleasant smell. Proper maintenance of such devices would likely correct/prevent this problem.

### How to find the source and cause of the smell:

- If the smell is only detectable from the hot water side of your system, **the problem is likely to be in the water heater.**
  - If the smell is detectable in both hot and cold water but only from water that has been treated by a water softener or other water treatment device, **the problem is likely to be bacteria and organic matter build up inside the device.**
  - If the smell is detectable in both hot and cold water but diminishes if you let the water run for a few minutes, **then the problem may be sulphate reducing bacteria in the well or distribution system.**
  - If the smell is present in both hot and cold water and is more or less constant and persists when water is being used, **then the problem is likely to be hydrogen sulphide gas in the groundwater.**
1. **Sulphate Reducing Bacteria:** Sulphate reducing bacteria, which use sulphur as an energy source, are the primary producers of large quantities of hydrogen sulphide. These bacteria chemically reduce natural sulphates found in water into hydrogen sulphide. Sulphate reducing bacteria live in oxygen-deficient environments such as deep wells, plumbing systems, water softeners and water heaters. These bacteria usually flourish on the hot water side of a water distribution system. The standard treatment for sulphate reducing bacteria involves shock chlorination. There are no tests available at this time for sulphate reducing bacteria. If a shock treatment solves the problem (even for a few months), then bacteria was likely the cause. If the smell returns quickly, the problem may be the magnesium rod in your hot water tank or naturally occurring hydrogen sulphide in your ground water.
  2. **Hydrogen Sulphide in Groundwater:** Hydrogen sulphide is a gas that smells like rotten eggs and will also give drinking water an unpleasant taste. It corrodes piping, creates unpleasant odors and may turn silverware black instantly. Hydrogen sulphide gas can occur naturally in some groundwater. It is formed from decomposing underground deposits of organic matter such as decaying plant material. Hydrogen sulphide is often found in wells drilled in shale or sandstone, or near coal or peat deposits or oil fields.

**3. Hydrogen Sulphide in Hot Water Heaters:** Occasionally, a hot water heater can be the source of hydrogen sulphide odor, especially if the smell is only noticeable when you are using hot water and it occurs often in newer hot water heaters. The magnesium corrosion control rods present in newer hot water heaters help protect the tank lining from corrosion but under the right conditions, can also chemically reduce naturally occurring sulphates into hydrogen sulphide.

#### **Treatment Options:**

1. First try shock chlorinating the well and distribution system (which would include the water heater). This should at least temporarily remove sulphate reducing bacteria. Please see [How to Chlorinate Your Well Water](#) for more info. If you suspect the problem may be coming from your water treatment device, call the provider for information on how to maintain and treat this device.
2. If shock chlorination does not make a difference and the smell returns quickly and is only noticeable in the hot water, then, you can try changing the magnesium rod with another type. Removing the magnesium rod without replacing it with a different type of rod will void the warranty on the water heater because it could lead to earlier deterioration of the tank. If you rent your water heater from NB Power, you can contact them to request information on the type of rod in your water heater and make a request to have them replace it by something other than magnesium.
3. If the problem is still present after trying the above, a treatment system may be necessary. If you are considering a treatment system, you should first have a water sample analyzed to determine the amount of hydrogen sulphide present. The amount present may determine which treatment system will work best. The treatment devices available for treating hydrogen sulphide may include any or a combination of the following:
  - Chlorination
  - Sand filter
  - Activated carbon filter
  - Manganese green sand filter
  - Aeration
  - Adsorption media

**How to test for Hydrogen Sulphide:** Not all labs can test for presence of hydrogen sulphide. Since hydrogen sulphide is a gas that is dissolved in water and can vaporize (escape) from it, laboratory analysis of hydrogen sulphide in water requires the sample be stabilized using a special sample bottle that would contain a preservative or be processed immediately following collection. RPC Analytical Services in Fredericton and Moncton can perform this test.

For information on the health effects of hydrogen sulphide in drinking water, please visit the following website: <http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/sulphide-sulfure/index-eng.php>