wellcare™ information for you about

Sulfur

What is SULFUR?

Two forms of sulfur are commonly found in drinking water: sulfate and hydrogen sulfide. Both forms are nuisances that usually do not pose a health risk at the concentrations found in domestic wells.

Sulfate is a combination of sulfur and oxygen, part of naturally occurring minerals in some soil and rock. The mineral dissolves over time and is released into ground water.

Hydrogen sulfide is produced by sulfur-reducing bacteria, which use sulfur as an energy source. The bacteria chemically change natural sulfate in water to hydrogen sulfide. Sulfur-reducing bacteria live in oxygen-deficient environments such as deep wells, plumbing systems, water softeners and water heaters.

Hydrogen sulfide gas also occurs naturally in some ground water. It is found in deep or shallow wells. Hydrogen sulfide often is present in wells drilled in shale or sandstone, or near coal or peat deposits or oil fields.

What are the health effects of Sulfur?

The EPA considers sulfur a secondary water contaminant, with no direct threat to human health. Sulfate gives water a bitter taste and can have a laxative effect that may lead to dehydration. Hydrogen sulfide gives water a “rotten egg” odor and taste, and can cause nausea.

The two forms of sulfur may damage your water distribution system. Sulfate causes scale buildup in pipes, producing a dark slime that can clog plumbing and stain clothing. Hydrogen sulfide is corrosive to metals such as iron, steel, copper and brass. It can tarnish silverware and discolor copper and brass utensils.

Hydrogen sulfide also can cause yellow or black stains on kitchen and bathroom fixtures. Coffee, tea and other beverages made with water containing hydrogen sulfide may be discolored and the appearance and taste of cooked foods can be affected. High concentrations of dissolved hydrogen sulfide also can foul the resin bed of an ion exchange water softener.

How do I test for Sulfur?

Sulfate testing is available from your local health department or a commercial laboratory. Testing for hydrogen sulfide is unnecessary, as the rotten egg odor clearly indicates the need for water treatment.

The EPA sets standards for secondary water contaminants based on taste, odor, color, corrosiveness, foaming and staining properties. The EPA limit for sulfate in drinking water is 250 parts per million. Hydrogen sulfide is not regulated because any concentration high enough to pose a health hazard will also make the water too unpalatable to drink.

What are the treatments for Sulfur in drinking water?

Treatment options depend on the form and quantities in which sulfates and/or hydrogen sulfide occur. Small quantities of sulfate may be removed using distillation or reverse osmosis, while large quantities may be removed using ion exchange treatment.

Hydrogen sulfide may be reduced or removed by shock chlorination, water heater modification, activated carbon filtration, oxidizing filtration or oxidizing chemical injection. Often treatment for hydrogen sulfide is the same as for iron and manganese, allowing the removal of all three contaminants in one process.

For more information on your ground water

Your local well contractor, health department, cooperative extension service and state environmental or natural resources department can provide more information about ground water in your area. Check the telephone directory or search the web under "water wells" or "government agencies."

For more information about wells and other wellcare™ publications

wellcare™ is a program of the **Water Systems Council (WSC). WSC** is a national nonprofit organization dedicated to promote the wider use of wells as modern and affordable safe drinking water systems and to protect ground water resources nationwide.

Contact us at 888-395-1033 or visit www.watersystemscouncil.org

Other wellcare™ publications:

A Consumer's Guide to Water Wells

A Consumer's Guide to Well Testing & Disinfection

wellcare™ Info Sheet: Home Drinking Water Treatment Devices

wellcare™ Info Sheet: Water Quality – arsenic, bacteria, chromium, iron, MTBE (methyl tertiary butyl ether), nitrate, radon, radium, sulfur and TCE (trichloroethylene)

Other organizations you may want to contact:

Water Quality Association	**630-505-0160**	**www.wqa.org**
The Ground Water Foundation	**800-858-4844**	**www.groundwater.org**
American Ground Water Trust	**603-228-5444**	**www.agwt.org**
National Ground Water Association	**800-551-7379**	**www.ngwa.org**

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