



SULPHATE

WHAT IS SULPHATE?

Sulphate is a naturally occurring substance that contains sulphur and oxygen. It is present in various mineral salts that are found in soil. Sulphate forms salts with a variety of elements including barium, calcium, magnesium, potassium and sodium.

Sulphate should not be confused with *sulphite*. Sulphite also contains sulphur and oxygen, but is chemically different than sulphate. Sulphite is sometimes used as a food preservative. Some people are severely allergic to sulphite.

HOW DOES SULPHATE GET INTO WATER?

Sulphate may be leached from the soil and is commonly found in most water supplies. Magnesium, potassium and sodium sulphate salts are all soluble in water. Calcium and barium sulphates are not very easily dissolved in water.

There are several other sources of sulphate in water. Decaying plant and animal matter may release sulphate into water. Numerous chemical products including ammonium sulphate fertilizers contain sulphate in a variety of forms. The treatment of water with aluminum sulphate (alum) or copper sulphate also introduces sulphate into a water supply. Human activities such as the combustion of fossil fuels and sour gas processing release sulphur oxides to the atmosphere, some of which is converted to sulphate.

HOW DOES SULPHATE AFFECT MY HEALTH?

Sulphate is generally considered to be non-toxic. The consumption of drinking water containing high amounts of magnesium or sodium sulphate may result in intestinal discomfort, diarrhea and consequently dehydration. This laxative effect is often observed when someone drinks water that contains greater than 500 milligrams per litre (mg/L) of sulphate. Over time, individuals appear to develop a tolerance to higher concentrations of sulphate. Diarrhea and dehydration are often observed when individuals accustomed to drinking water with low concentrations of sulphate consume water with high amounts of sulphate. It is not advisable to use water that contains high concentrations of sulphate for infant feeding.

OTHER CONSIDERATIONS

High amounts of various sulphate salts may give drinking water an offensive taste. Depending upon the type of sulphate salt(s) present in the water, most people begin to notice an offensive taste at concentrations ranging from 250 to 1,000 mg/L.

High concentrations of sulphate may interfere in the efficiency of chlorination in some water supplies. Also, sulphate salts may increase the corrosive properties of water.

Sulphate-reducing bacteria are often sometimes encountered in water supplies. These bacteria produce hydrogen sulphide that results in an unpleasant taste and odour (rotten egg smell). Hydrogen sulphide also increases the corrosive properties of water.

HOW CAN I REMOVE SULPHATE FROM MY DRINKING WATER?

Sulphate can only be removed from water by demineralization through the use of reverse osmosis or distillation.

WHAT IS THE GUIDELINE FOR SULPHATE IN DRINKING WATER?

The Saskatchewan Drinking Water Quality Standards and Objectives has established an aesthetic objective of less than 500 mg/L of sulphate based upon offensive taste and the potential for laxative effects.

HOW CAN I FIND OUT IF THERE IS SULPHATE IN MY WATER?

Most water quality testing laboratories can determine the level of sulphate present in a water supply.

NEED MORE INFORMATION?

For specific information on this factsheet contact your local public health office. For information on how sulphate impacts agricultural operations contact Saskatchewan Agriculture through your local Rural Service Centre. Additional factsheets are available from PFRA through their website at www.agr.gc.ca/pfra/water.

ACKNOWLEDGEMENT

This factsheet is one of a series of factsheets developed by an interagency committee with representatives from Saskatchewan Health, Health Regions, Saskatchewan Watershed Authority, Sask Agriculture Food and Rural Revitalization, Agriculture and Agri-food Canada –PFRA. For more information on water quality issues call the Saskatchewan Watershed Authority Rural Water Quality office toll free at 1-866-TESTH20 (1-866-387-8420), or www.saskh20.ca, or any of the following offices.

Sask Watershed Authority Offices:

Sask. Watershed Authority
Ph: (306) 933-7442

Weyburn Water Resource Office
Ph: (306) 848-2345

Nipawin Water Resource Office
Ph: (306) 862-1750

Swift Current Water Resource Office
Ph: (306) 778-8257

Yorkton Water Resource Office
Ph: (306) 786-1490

Health Region Offices:

Saskatoon Health Region
Ph: (306) 655-4605

Sunrise Health Region
Ph: (306) 786-0600

Kelsey Trail Health Region
Ph: (306) 752-6310

Five Hills Health Region
Ph: (306) 691-6400

Sun Country Health Region
Ph: (306) 842-8618

Regina Qu'Appelle Health Region
Ph: (306) 766-7777

Heartland Health Region
Ph: (306) 882-6413

Prairie North Health Region
Ph: (306) 446-6400

Prince Albert Parkland Health Region
Ph: (306) 765-6600

Cypress Health Region
Ph: (306) 778-5280

Mamawetan Churchill River
Health Region
Ph: (306) 425-8512

Keewatin Yatthé Health Region
Ph: (306) 235-5811

PFRA Offices:

North Battleford District Office
Ph: (306) 446-4050

Rosetown District Office
Ph: (306) 882-4272

Watrous District Office
Ph: (306) 946-8722

Melfort District Office
Ph: (306) 752-6403

Maple Creek District Office
Ph: (306) 662-5520

Swift Current District Office
Ph: (306) 778-5000

Gravelbourg District Office
Ph: (306) 648-2214

Moose Jaw District Office
Ph: (306) 691-3370

Weyburn District Office
Ph: (306) 848-4488

Melville District Office
Ph: (306) 728-5790

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