

Acknowledgement:

This Fact Sheet is one of a series developed by an Interagency Committee with representatives from Saskatchewan Health, Regional Health Authorities, Saskatchewan Watershed Authority, Saskatchewan Agriculture, Agriculture and Agri-Food Canada – PFRA and Saskatchewan Environment.

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Government of
Saskatchewan

Hardness

(For Private Water and Health Regulated Public Water Supplies)

What Is Hardness?

Total hardness is defined as the sum of the calcium and magnesium concentrations both expressed as equivalents of calcium carbonate in mg/L. Sometimes the units of grains per gallon are encountered when expressing hardness, an approximate conversion is 17 mg/L CaCO₃ is equivalent to 1 grain per gallon. Hard water is characterized by the build up of scale on plumbing and fixtures.

The presence of hardness affects the solubility of soap (soap is an oil or fat that contains sodium). In hard water the sodium in soap is preferentially exchanged for calcium and magnesium from the water, producing insoluble compounds that do not allow the soap to dissolve and produce lather, and instead precipitate a soap curd. In soft water soap will lather easily when agitated, as the concentration of calcium and magnesium containing compounds is low, and the level of soluble sodium compounds dominates.

How Does Hardness Get Into Water?

The minerals that cause hardness in water leach from sedimentary rocks such as limestone or chalk in the case of calcium compounds or the mineral dolomite that contains both calcium and magnesium.

The Prairie Provinces contain higher quantities of the minerals that cause hardness in the soil in comparison with the rest of Canada.

How Does Hardness Affect My Health?

Water hardness is not considered a health risk in Canada although the methods used to remove hardness (see below) can result in increased sodium levels in water that may be of concern to those individuals on highly restricted sodium diets.

How Can I Remove Hardness From My Drinking Water?

Hardness can be reduced using a water softener or ion exchange column. A water softener replaces problematic calcium and magnesium ions that cause hardness and replaces them with sodium or potassium. After a time the softener will become saturated and will need to be regenerated. During the regeneration process the captured calcium and magnesium are flushed away and replenished with fresh sodium and potassium from salt.

What Is The Standard For Hardness In Drinking Water?

Hardness is not considered a health risk, as a result it is the aesthetic properties such as the ability to produce soap lather, the tendency for mineral deposits on plumbing fixtures and the effect on water taste that have been used in setting acceptable levels. In Saskatchewan the aesthetic objective for hardness has been set at 800 mg/L (CaCO₃). Generally, most people choose to soften their water when hardness levels are greater than 200 mg/L (CaCO₃) due to aesthetic concerns.

How Can I Find Out If There Is Hardness In My Water?

Most water quality testing laboratories can determine the water hardness of a water supply. For information on sampling instructions and containers, you should contact an accredited laboratory. If using the Saskatchewan Disease Control Laboratory, sample containers are available from the laboratory, local Health Regions, or rural municipalities.

Need More Information?

Health Regulated Public Water Supply

For more information on this fact sheet and/or other water quality issues relating to health regulated public water supplies contact your local health region public health inspector.

Private Water Supply

For more information on how hardness impacts on human health contact your local health region office. For information on how hardness impacts agricultural operations contact Saskatchewan Ministry of Agriculture through your Agricultural Business Centre or the Agricultural Knowledge Centre at 1-866-457-2377 or on the internet (<http://www.agriculture.gov.sk.ca/AKC>).

<p>Government of Saskatchewan Water Information website www.SaskH2O.ca</p>	<p>Water Inquiry Line Questions about water? Call 1-866-SASK H2O (1-866-727-5420) to be referred to proper agency.</p>
<p>Saskatchewan Ministry of Health http://www.health.gov.sk.ca/environmental-health Regional Health Offices Saskatoon: Saskatoon (306) 655-4605 Sunrise: Yorkton (306) 786-0600 Kelsey Trail: Melfort (306) 752-6310 Five Hills: Moose Jaw (306) 691-1500 Sun Country: Weyburn (306) 842-8618 Heartland: Rosetown (306) 882-6413 Prairie North: North Battleford (306) 446-6400 Prince Albert Parkland: Prince Albert (306) 765-6600 Cypress: Swift Current (306) 778-5280 Regina Qu'Appelle: Regina (306) 766-7755 Mamawetan Churchill River: La Ronge (306) 425-8512 Keewatin Yatthe: Buffalo Narrows (306) 235-5811</p>	<p>Saskatchewan Watershed Authority, Head Office, Moose Jaw (306) 694-3900 Website: www.swa.ca <i>Regional Offices:</i> http://www.swa.ca/AboutUs/Contact.asp?type=Offices</p> <p>Sask Water Corporation Head Office, Moose Jaw Customer Service 1-888-230-1111 Website: http://www.saskwater.com</p> <p>Prairie Farm Rehabilitation Administration (PFRA) - Agriculture and Agri-Food Canada Website http://www.agr.gc.ca/pfra/water/intro_e.htm <i>Regional Offices:</i> http://www.agr.gc.ca/pfra/sask_e.htm</p>
<p>Saskatchewan Ministry of Health Saskatchewan Disease Control Laboratory, Regina General Inquiry 1-866-450-0000 Phone: (306) 798-2125 // Fax (306) 798-0071 Website: http://www.health.gov.sk.ca/lab</p>	<p>Saskatchewan Ministry of Agriculture General Inquiry 1-866-457-2377 Agricultural Operations Regina (306) 787-4680 Irrigation Development Outlook (306) 867-5500 Website: www.agriculture.gov.sk.ca</p>
<p>Health Canada First Nation and Inuit Health Branch, Regina (306) 780-5434 Website: http://www.hc-sc.gc.ca</p>	<p>Saskatchewan Ministry of Environment Toll-Free 1-800-567-4224 Spill Emergency Toll-Free 1-800-667-7525 Website: http://www.environment.gov.sk.ca</p>