

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 and Food, Agriculture and Agri-Food Canada – PFRA and Saskatchewan Environment.

Responsibility for interpretation of the content of this fact sheet rests with the user. Information in this fact sheet is provided solely for the users information and, while thought to be accurate, is provided strictly as is and with out warranty of any kind, either express or implied. The Province of Saskatchewan hereby disclaims any liability or responsibility for any injury or damage resulting from the use, directly or indirectly, of the information contained herein.

Dec/07



Government of
Saskatchewan

Manganese

(For Private Water and Health Regulated Public Water Supplies)

What Is Manganese?

Manganese occurs naturally in ground water and can be found in many types of rocks. Pure manganese does not occur naturally. As it combines with other elements such as oxygen, sulfur, or chlorine, it can be found in the reduced and oxidized states in groundwater. It can be found in food, such as grains, cereal, seafood, or tea.

Manganese combines with carbon to form organic compounds, which commonly used in are pesticides, and fuel additives in some gasoline. Manganese compounds are also commonly used in the manufacturing of metal alloys and dry cell batteries, and in paints, varnishes, inks, dyes, glass, ceramics, matches, fireworks & fertilizers.

How Does Manganese Get Into Water?

Manganese exists naturally in rivers, lakes, and underground water. It may also be released to water from natural deposits, industrial wastes (iron, steel, acid mine drainage), and the use of pesticides. Iron and steel plants also release manganese into the atmosphere.

How Does Manganese Affect My Health?

Manganese is an essential trace element for good health; it appears to lower blood pressure and to lower the risk of death from a heart attack. However, high levels of manganese for long periods of time can be harmful. Too much manganese will injure a part of the brain that helps control body movements may also cause respiratory problems and sexual dysfunction.

Small amounts of manganese are needed for growth and good health in children, but excess manganese can result in nervous system problems.

Other Considerations

High manganese concentrations can promote the growth of manganese bacteria. Manganese bacteria flourish best under dark conditions and in waters containing dissolved manganese and carbon dioxide. It can clog pipes and screens, and can leave brownish-black stains on laundry, dark-brown particles on fixtures, and can cause an unpleasant taste and odor in water. The stains caused by manganese are harder to remove than those caused by iron.

As manganese is present in pesticides that may be used around the home, it is important to discourage hand to mouth activity in young children.

How Can I Remove Manganese From My Drinking Water?

The basic approach to remove manganese is to convert the soluble or dissolved forms of manganese into insoluble or precipitate forms so that they can be filtered out. This is done by oxidation with a chemical such as chlorine prior to filtration. Other methodologies such as ion exchange (eg. greensand filtration) or reverse osmosis may be effective. In general, manganese is more difficult to remove than iron. Home treatment systems should be certified to the appropriate National Sanitation Foundation standard for manganese removal.

What Is The Standard For Manganese In Drinking Water?

Saskatchewan's Drinking Water Quality Standards and Objectives and Health Canada's Guidelines for Canadian Drinking Water Quality both establish an aesthetic objective (AO) of 0.05 mg/L of manganese in drinking water.

How Can I Find Out The Manganese Of My Water?

High concentrations of manganese may create a dark brown/black scale on the interior walls on your toilet tank.

Most water quality testing laboratories can determine how much manganese is present in 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 manganese impacts on human health contact your local health region office. For information on how manganese 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>