

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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Feb/08



Government of
Saskatchewan

Nitrate

(For Private Water and Health Regulated Public Water Supplies)

What Is Nitrate?

Nitrate is one of the most common groundwater contaminants in rural areas. It occurs naturally in soil and water as a result of decaying plants and animal residues. Other common sources of nitrate include human sewage and livestock manure. Nitrate is also a common constituent of many chemical fertilizers.

How Does Nitrate Get Into The Water?

Nitrate is highly soluble and readily moves with water through the soil. In areas of excess rainfall or over-irrigation, nitrate will leach below the plant's root zone and may eventually reach the groundwater. Nitrate in ground water can be derived from natural sources or from point sources, such as sewage disposal systems and livestock facilities. Surface water runoff from fertilized farmland and animal feedlots is a major potential source of nitrate contamination.

How Does Nitrate Affect My Health?

Young infants, especially those under 6 months of age, are most at risk from nitrate levels above the maximum acceptable concentration in the drinking water. Pregnant women are also at risk due to their altered physiological state. The presence of nitrate in drinking water or formula (made with the drinking water) may create a condition where blood lacks the ability to carry sufficient oxygen to individual body cells. If a pregnant woman develops this condition, the health of the unborn child could also be affected. In infants, this condition is known as "blue baby syndrome". The most obvious symptom is bluish skin colour, particularly around the eyes and mouth. A baby with this symptom should be taken to an emergency medical facility immediately.

The potential health hazard for older children and adults depends on the individual's reaction to nitrate and the total nitrate ingested from all sources, including food.

A water test for nitrates is highly recommended, especially for households with infants, and pregnant women. Where the water demonstrates levels of nitrates over the maximum allowable concentration, it is recommended that infants less than 6 months of age and pregnant mothers not consume the water.

How Can I Remove Nitrate From My Drinking Water?

Boiling the water will NOT decrease nitrate concentration. Distillation units will remove all of the nitrate in the raw water. Some ion-exchange processes have also been found to successfully remove significant quantities of nitrate. Reverse Osmosis filters will remove some, but not all of the nitrate in the raw water. These types of treatment systems must be properly designed and installed, and tests of the concentration of nitrate in the treated water must be conducted on a regular basis. Home treatment systems should carry the National Sanitation Foundation certification for nitrate removal (NSF Standard 58 for reverse osmosis units, NSF Standard 62 for distillation units).

What Is The Standard For Nitrate In Drinking Water?

Both the Saskatchewan Drinking Water Quality Standards and Health Canada's Guidelines for Drinking Water Quality have established a maximum acceptable concentration (MAC) of 45 mg/L of nitrate (or 10 mg/L of nitrate-nitrogen).

It is recommended that infants under the age of 6 months as well as pregnant women not consume water containing more than 45 mg/L of nitrate.

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

Most water quality testing laboratories can determine nitrate for 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. It is recommended that drinking water supplies should be checked frequently, at least once or twice a year, to ensure that there is no significant increase in nitrate.

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 chloride impacts on human health contact your local health region office. For information on how chloride 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>