

Dissolved Organic Carbon (DOC)

(For Private Water and Health Regulated Public Water Supplies)

What Is Dissolved Organic Carbon?

Dissolved organic carbon (DOC) is a general description of the organic material dissolved in water. Organic carbon occurs as the result of decomposition of plant or animal material. Organic carbon present in soil or water bodies may then dissolve when contacted by water. This dissolved organic carbon moves with both surface water and ground water.

How Does Dissolved Organic Carbon Get Into Water?

Organic material (including carbon) results from decomposition of plants or animals. Once this decomposed organic material contacts water it may partially dissolve.

How Does Dissolved Organic Carbon Affect My Health?

DOC does not pose health risk itself but may become potentially harmful when in combination with other aspects of your water. When water with high DOC is chlorinated, harmful byproducts called trihalomethanes may be produced (see SaskH₂O factsheet on trihalomethanes). Trihalomethanes may have long-term effects on health and they should be considered when chlorinating drinking water high in DOC. According to Health Canada, the benefits of chlorinating drinking water are much greater than the health risks associated with chlorination by-products such as trihalomethanes

DOC can interfere with the effectiveness of disinfection processes such as chlorination, ultraviolet and ozone sterilization. DOC can also promote the growth of microorganisms by providing a food source.

Other Considerations

Organic material in water can cause aesthetic problems such as an unpleasant taste, odour and colour. Organic content is usually higher in surface water than ground water.

How Can I Remove Dissolved Organic Carbon From My Drinking Water?

It is far more cost effective to prevent organic material from entering the raw water supply than to remove it afterwards. Treatment methods effective in removing DOC from water include: coagulation/flocculation processes, biological filtration, granulated activated charcoal and distillation. Professional advice should be sought in order to ensure appropriate water treatment.

What Is The Standard For Dissolved Organic Carbon In Drinking Water?

DOC concentrations greater than 5 mg/L will complicate water treatment and may result in disinfection by-products, such as trihalomethanes, to be formed in amounts exceeding the standards. DOC will also increase colour in the finished water. Although there is no concentration limit for DOC, water treatment costs will dramatically increase as DOC increases. Source water with less than 2 mg/L of DOC tend to be easily treated for disinfection by-products and do not increase finished water colour.

How Can I Find Out If There Is Dissolved Organic Carbon In My Water?

Most water quality testing laboratories can determine how much DOC is present in a water supply. For information on sampling instructions and containers, you should contact an accredited laboratory.

Acknowledgement:

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

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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 Dissolved Organic Carbon impacts on human health contact your local health region office. For information on how Dissolved Organic Carbon 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>).

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| <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</p> <p>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>Health Canada Website: http://www.hc-sc.gc.ca First Nation and Inuit Health – Saskatchewan Phone: (306) 780-6561//FAX (306) 780-7733</p> <p>First Nations Environmental Health Providers <i>BTC Indian Health Services Inc.</i> Phone: (306) 937-6700 <i>File Hills Qu'Appelle Tribal Council Health Services</i> Phone: (306) 332-8241 <i>Meadow Lake Tribal Council, Health and Social Development</i> Phone: (306) 236-8261 <i>Northern Inter-Tribal Health Authority</i> Phone: (306) 765-2421 <i>Prince Albert Grand Council, Health and Social Development</i> Phone: (306) 953-7248 <i>Saskatoon Tribal Council, Health, and Family Services Inc.</i> Phone: (306) 956-6100</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>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>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>Sask Water Corporation Head Office, Moose Jaw Customer Service 1-888-230-1111 Website: http://www.saskwater.com</p> | <p>Saskatchewan Ministry of Environment Toll-Free 1-800-567-4224 or (306) 953-3750 Spill Emergency Toll-Free 1-800-667-7525 Website: http://www.environment.gov.sk.ca</p> |