

NORTH ISLAND LABORATORIES E-NEWSLETTER

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Nitrates and Groundwater

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Well Owners and water users may be potentially at risk from a colourless and odourless groundwater contaminant called ***nitrates***. Diet constitutes a large percent of natural intake of nitrates. Typical adults eat anywhere from 20-70 mg/L of nitrates in a day. Smoked meats are common sources of nitrates. Vegetables like lettuce, celery, beets and spinach also contain nitrates at varying concentrations depending upon growing conditions and the amount of fertiliser used etc. At the levels typically found in food, most health professionals do not consider nitrates to be harmful, especially when these foods are ingested as part of a healthy, balanced diet. (<http://dnr.wi.gov/org/water/dwg/nitrate.htm>)

Groundwater, naturally low in nitrates, can be at risk for excess levels of nitrate contamination from nearby sources and can thereby pose significant health risks. Some sources of nitrates include poorly functioning septic fields, sewage treatment plants, agricultural fertilisers and pesticides, and manure from farm animals. The maximum acceptable concentration (MAC) of nitrates in groundwater as established by Health Canada is **10 mg/L** (<http://www.bchealthguide.org/healthfiles/hfile05.stm>). Water sources containing nitrates in excess of this amount should **not** be used for drinking, and should be treated by an appropriate water purification system if used as a drinking water source. . It is important to remember that boiling the water merely aggravates the problem as it can actually increase the concentration of nitrates in the water source. See: http://www.bae.ncsu.edu/programs/extension/publicat/wqwm/ag473_4.html Water containing levels below 10 mg/L is recommended to be tested as often as once or twice a year for all groundwater/drinking water sources.

Nitrates are particularly risky for infants under 6 months old. Parents should protect their babies by testing their water for nitrates prior to pregnancy and birth. Nitrate poisoning in infants, called methemoglobinemia, causes a lack of oxygen in the baby's blood stream, leading to serious health issues. Treatment includes removing all contaminated water sources from the expectant mother and baby's diet and to **immediately** seek medical attention (<http://www.bchealthguide.org/healthfiles/hfile05.stm>). Do not boil the water. Potential health risks to the unborn fetus are not as well understood, but during pregnancy it is advisable to test your well water for nitrates and to avoid water contaminated with nitrates. It is important to remember that boiling the water merely aggravates the problem as it can actually increase the concentration of nitrates in the water source.

Water saturated soil provides an easy pathway for water-soluble nitrates/nitrites to pass through into groundwater. Hence, rainy season is a good time to test for nitrates, as their chance of penetration into the aquifer is enhanced at this time.

DID YOU KNOW?

An extremely useful Ministry of Environment initiative is available on the following website:

<http://srmapps.gov.bc.ca/apps/wrbc/>

Click on the "Launch WRBC Web Viewer". This site allows the public to access information about registered wells in BC and the geology surrounding them. A very useful tool!

Useful Web site links:

http://www.epa.gov/safewater/contaminants/dw_contamfs/nitrates.html

<http://www.cdc.gov/ncidod/dpd/healthywater/factsheets/nitrate.htm>

<http://www.bchealthguide.org/healthfiles/hfile05.stm>

<http://www.epa.gov/safewater/privatewells/faq.html>

<http://dnr.wi.gov/org/water/dwg/nitrate.htm>

<http://www.cias.wisc.edu/wicst/research/coretrial/envIRON.htm>