

# Groundwater & Nitrates

Best practices to prevent nitrates from contaminating groundwater

## What are nitrates?

Nitrates and nitrites are chemicals which are formed from the decomposition of organic matter. Water sources, especially shallow groundwater aquifers are at risk of contamination by nitrates.

There are some health concerns for consuming higher levels of nitrates in drinking water. Please refer to the HealthLinkBC “Nitrate in Well Water” for a more detailed description of the health effects of nitrate in drinking water.

[www.healthlinkbc.ca/healthlinkbc-files/nitrates-well-water](http://www.healthlinkbc.ca/healthlinkbc-files/nitrates-well-water)

## What are the sources of nitrates?

Common sources of nitrates are fertilizers, barnyard wastes, leachate from garbage dumps, pit privies, leaking sewage lines, and poorly maintained septic systems.

## Safe levels of nitrates in drinking water

In water, nitrate has no taste or scent and can only be detected through a chemical test. The Maximum Acceptable Concentration (MAC) for nitrate (reported as nitrate-nitrogen: NO<sub>3</sub>-N) in drinking water is 10 milligrams per litre (mg/L). The nitrate level in most ambient groundwater in British Columbia is very low, generally much less than 1 mg/L. Therefore, the presence of nitrate in groundwater greater than 3 mg/L usually reflects the impact of human activities on groundwater quality.

## How to remove nitrates from drinking water

Boiling water will not remove nitrate from drinking water, nor will most counter-top filtration units.

There are treatment technologies to reduce nitrates in drinking water to safe levels. The technologies exist for both individual home applications as well as the larger scale of a community water treatment plant. In either case, the nitrate removal technologies can be very expensive to install and maintain. Depending on the extent of nitrate contamination, an alternate source of water (e.g. drilling a new well) may need to be found, and this also an expensive or impractical undertaking.

It is most prudent to prevent nitrates from getting into groundwater in the first place.

## How to prevent nitrates from contaminating groundwater

In areas with sensitive groundwater aquifers, local residents can take action to prevent nitrate levels building up in local groundwater used for drinking water. The following recommendations are offered:

- Ensure your septic system is properly maintained and inspected.
- Most conventional septic tanks need to be pumped out every 3-5 years.
- If you have an open pit privy, decommission its use.
- Avoid spreading manure or fertilizers on the ground.
- Avoid storing decomposing vegetable matter on the ground.
- Avoid keeping any livestock.

## For more information, please contact the undersigned:

**Darren Molder**  
Senior Environmental Health Officer  
Drinking Water Officer  
tel: 604-885-8711  
e-mail: [darren.molder@vch.ca](mailto:darren.molder@vch.ca)

**Michael Nguyen**  
Environmental Health Officer  
Drinking Water Officer  
tel: 604-485-3324  
e-mail: [michael.nguyen@vch.ca](mailto:michael.nguyen@vch.ca)