Nitrate in Drinking Water: “Blue Baby” Syndrome

“Blue Baby Syndrome” or methaemoglobinaemia can affect babies less than six months of age or in the womb.

Exposure to high nitrate levels in drinking water may prevent the blood from delivering oxygen effectively in the body.

An infant may develop blueness around the mouth, hands and feet because of this exposure. The condition can affect breathing if severe and may be life-threatening.

About nitrate and where it comes from

Nitrate (NO_3) is made up of Nitrogen and Oxygen.

Land uses such as farming and sewage disposal systems release nitrate to the soil. Nitrate is highly soluble, so is easily transported through the soil into groundwater.

How to know if your water is high in nitrate

Council water networks in Canterbury currently have safe levels of nitrate in their water.

If you have your own drinking-water well, you can check risk for your area on maps that identify where nitrate levels in drinking water may be a concern.

View the latest nitrate maps for Canterbury on the Environment Canterbury website.

If you live in an area with moderate to high risk, you need to get your drinking water tested.

Several laboratories can test for nitrate in a water sample. The laboratory must be contacted first because they provide special sampling containers and recommendations.

The Drinking Water Standards give a Maximum Acceptable Value (MAV) of 50mg/L for nitrate, which is equivalent to 11.3mg/L nitrate-nitrogen.

Check with the laboratory or talk to the Environmental Health Officer at your local council for help interpreting the results of your testing.

Nitrate levels do vary over the year. They are often highest in spring, and in areas where there is extensive irrigation, high nitrate levels can be found in late summer.

What to do if your well water is high in nitrate

Nitrate is difficult to remove from water. Household cartridge or carbon filters, chemical treatment and boiling will not remove nitrate.

Reverse osmosis and ion exchange can remove nitrate however these are expensive options.

If your drinking water has a nitrate level exceeding the health limits:

- **find an alternative water source;**
- **use bottled water; or**
- **investigate effective treatment options.**

If your water is high in nitrate, contamination is occurring. This means bacteria could also be in the water. Bacteria can increase the likelihood of methaemoglobinaemia and cause other diseases, so don't forget to test for the bacteria E.coli at the same time.

Those most at risk of methaemoglobinaemia

High risk groups include:

- bottle fed babies less than six months old;
- babies given boiled water; and
- pregnant women.

Exclusively breastfed babies are not at risk because nitrate does not pass into breast milk.

People in high risk groups should not consume water that is high in nitrate.

Where to get your water tested

Testing for nitrate and bacterial contamination should be carried out at an approved laboratory.

View the list of approved drinking water testing laboratories on the Taumata Arowai website.

Prices for nitrate analysis range from $11 plus GST to $30.

Prices for *E. coli* analysis range from $20 plus GST to $35.

Testing results should not exceed 50mg/L nitrate (which is equivalent to 11.3mg/L nitrate-nitrogen). Please check how the results are expressed.

E. coli results should be less than 1/100ml water.

Call your local council and talk to the Environmental Health Officer if you want to discuss the results of your testing.

Find what Environment Canterbury is doing about nitrate contamination of waterways in our region.

For further information, contact:

- The Environmental Health Officer at your local council; or
- Environment Canterbury (03 353 9007 or 0800 324 636).