MARLBOROUGH DISTRICT COUNCIL

Groundwater Factsheet

ARSENIC

Key points

- Arsenic is naturally occurring but can also be a result of manmade substances
- High levels of arsenic are present in some of Marlborough's aquifers
- Arsenic levels fluctuate as a result of a change in local biochemical conditions
- Arsenic can enter the groundwater from vineyard posts, but only at very low levels with little to no risk to human health
- Council conducts routine sampling for arsenic at 15 sites around the region
- If you have high levels of arsenic in your domestic water supply you should treat it or find an alternate supply.

Arsenic is a naturally occurring chemical that can enter groundwater through the weathering of the earth but also through the leaching of man-made substances i.e. sheep dip chemicals.

Arsenic is a carcinogen and harmful to human health above certain levels. The 'Drinking-Water Standards for New Zealand 2000' sets a Maximum Acceptable Value (MAV) for arsenic of 0.01mg/litre, and was derived on the basis of an acceptable lifetime risk from skin cancer.

Elevated levels of arsenic in groundwater have been detected in some parts of Marlborough, including Rarangi and Wairau Valley. The aquifers in these areas are susceptible to higher levels of arsenic due to their proximity to wetlands and fault lines which alter the chemical makeup of the water. Arsenic is also commonly found in old sheep dip sites and landfills.

Since 2001 the Council has been looking at when and where arsenic may cause a health risk to drinking waters. In addition to this, targeted surveys and research has been conducted.

In 2003 and 2005 a comprehensive survey of all drinking water sourced from the Rarangi Shallow Aquifer was undertaken by the Council and Public Health Unit. Around a fifth of water supplies had arsenic levels above the MAV. These supplies were clustered around wetland areas.

In 2004 a monthly arsenic monitoring programme was initiated at four domestic Rarangi water supplies which had varying levels of arsenic detected in the 2003 survey. The monitoring programme ran for four years and showed that arsenic levels at all sites fluctuated. It was concluded that changes in arsenic levels may be caused by local rainfall or aquifer level affecting the local biochemical conditions.

ARSENIC

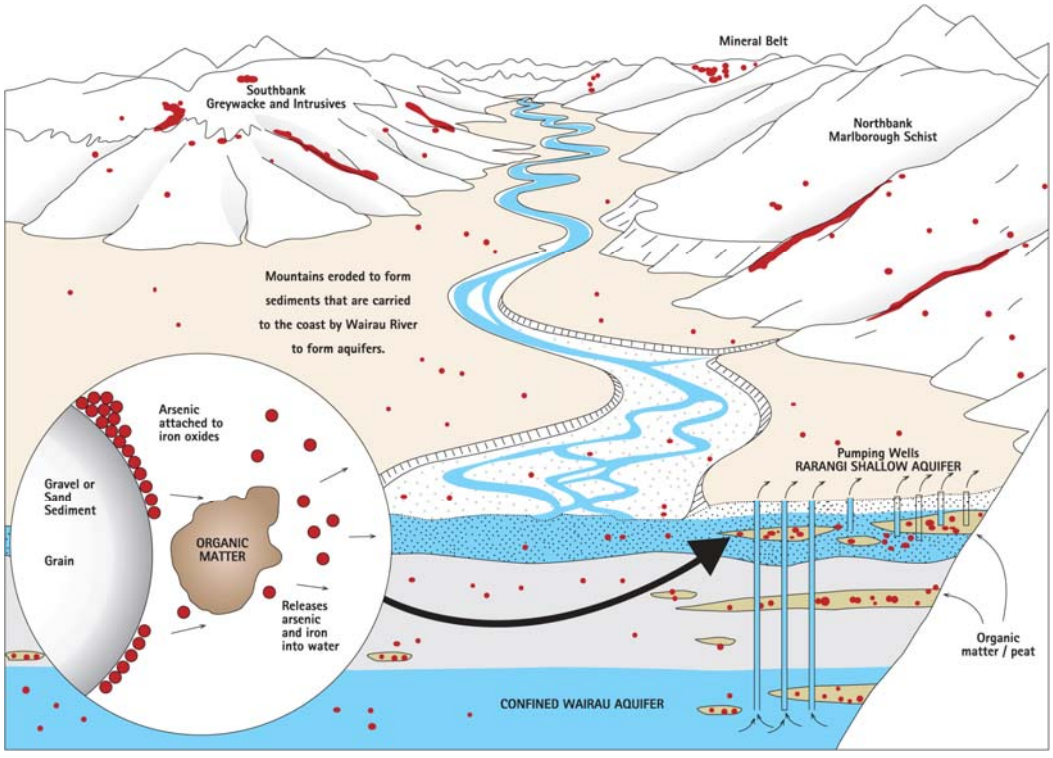
In 2003 Council commissioned research into the environmental impact from chemicals used to preserve vineyard support posts (chromium, copper and arsenic). Because Marlborough is home to the largest area of vineyards in New Zealand, there was a lot of public concern about the effect of the posts on the environment. The results of this research showed that a small amount of these chemicals could enter the groundwater but this depended on depth from the post to the water table.

In an area such as Rarangi where posts in low lying areas have their base in the water table at some times of the year the risk is higher than for western parts of the Wairau Plain. However, modelling predicts that concentrations will remain low in Marlborough aquifers and should pose no risk to human health.

The Council monitors arsenic levels at 15 sites around Marlborough four times a year to identify any long term changes in the groundwater.

If you have taken water samples and found that arsenic levels are high, you may want to consider taking further samples to identify the variations in arsenic concentrations at different times.

In areas where arsenic levels have been identified as high, or potentially high, residents have been advised to treat their water or find an alternative water supply.



All rocks contain some arsenic. As these rocks slowly erode the particles containing arsenic are carried along rivers and into coastal aquifers.

The arsenic is relatively harmless in the aquifer until under certain chemical conditions (such as in a wetland type environment) the arsenic becomes detached from the particle. This dissolved form of arsenic affects the quality of the local groundwater.

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For more information on groundwater quality go to

www.marlborough.govt.nz

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