

Technical Summary: **Aquifer contamination**

Environmental health perspective

Bore and well water – groundwater – comes from rain and rivers, seeping down through layers of soil and rock which hold the water and allow its slow movement underground. These areas of ‘held’ water are called aquifers. An aquifer may be confined or unconfined.

An aquifer is confined (secure) when a layer of solid material, like rock, overlays and confines the aquifer, forming a closed, protected collection of water. Contamination is unlikely to enter, unless a spring emerges at the surface.

An aquifer is unconfined (insecure) when it does not have an upper protective layer, making it possible for surface water to seep in. It is often no safer to use than surface water, especially in shingle aquifers overlain by shallow soils.

Microbiological contamination of an aquifer, or an aquifer’s recharge zone, is the primary health concern in most instances.

Chemical contamination from agriculture, industry, leaching of contaminants (e.g. from unsealed landfills, petrol stations, timber treatment sites) can also pose a range of health risks.

Situations likely to be of interest to the Auckland Regional Public Health Service (ARPHS)

- Any proposal for the development of an aquifer as a new drinking water source for a drinking water supply.
- Any discharge to ground of any material which could contaminate groundwater used for drinking-water suppliers, including: landfill sites; industrial sites near to an aquifer used -or likely to be used in future -for water extraction; fertilisers or hazardous substances storage or processing sites; and mines (especially if tailings are toxic).
- Disposal of effluent to land posing a risk of microbiological contamination of aquifers used for drinking-water supplies.
- Any proposal for industrial/commercial activity which could contaminate an aquifer used for drinking-water supplies.

Framework for assessment

- [Resource Management Act \(RMA\) 1991](http://www.legislation.govt.nz) (www.legislation.govt.nz)
- [Auckland Council Draft Annual Plan: Air, Land, Water](http://www.aucklandcouncil.govt.nz) (www.aucklandcouncil.govt.nz)
- [MFE National Environmental Standard for Sources of Human Drinking-Water](http://www.mfe.govt.nz/publications) (www.mfe.govt.nz/publications)
- [Health Act 1956](http://www.legislation.govt.nz) (www.legislation.govt.nz)

- [Drinking water Standards for New Zealand 2005 \(Revised 2008\)](http://www.health.govt.nz) (www.health.govt.nz)
- [The Guidelines for Drinking Water Quality Management for New Zealand](http://www.health.govt.nz) (www.health.govt.nz)
- [Water Safety Plan Guides for Drinking Water Supplies](http://www.health.govt.nz) (www.health.govt.nz)
- [Secure Groundwater Bores and Wells for Safe Household Water](http://www.healthed.govt.nz) (www.healthed.govt.nz)

References

- Health Act 1956
- Ministry of Health. Drinking-water Standards for New Zealand 2005 (Revised 2008)

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