

Sampling your water supply

A water analysis is often essential before water is used for stock, domestic, or irrigation purposes. Chemical or biological composition can adversely affect crops, soils, humans, animals, or equipment.

Having an analysis carried out is not as simple as filling a bottle and giving it to an analyst. The accuracy of a water analysis is very much dependent on the sampling method used and the time elapsed between sampling and analysis.

This fact sheet outlines the basic requirements for water sampling, where to send samples for analysis and the types of analyses that can be made.

Collecting the sample

The most suitable bottles to use are made from polyethylene or glass and should hold one litre. Polyethylene bottles are available from water testing analysts, chemists and certain retail outlets. Soft drink, milk or chemical containers are not acceptable because residues are likely to remain in them, even if they have been washed out.

The bottle should be cleaned prior to sampling by rinsing the bottle three times in the water to be sampled (except in the case of sterile bottles used for bacteriological sampling). The bottle should be filled to the top with as little air as possible remaining, and sealed tightly.

All samples should be properly labelled with details of the source, date of sampling, your name and address and the intended use of the water.

Surface water samples

For flowing water the sample should be collected from mid-stream and mid-depth. This should ensure that the sample is representative of the entire flow in a stream or channel. A note should be made of the condition of flow in the stream (volume and/or velocity of flow etc.) as this often influences the quality of water at different times of the year.

For still waters such as lakes, reservoirs and dams, samples should be taken away from the water's edge and at a depth that represents normal pumping depth. Stratification (i.e. thermal and chemical layering of the

body of water due to seasonal changes and chemical content) can significantly affect results.

Groundwater samples

When sampling water from bores and wells, the first step is to remove the 'stale' water that lies inside the casing. It may not be representative of the water from the aquifer. It is usual to remove about three times the volume of the well storage. Take note of the pumping rate, the water level and the time of sampling after pumping has started.

Some bores may draw water from several aquifers. Should samples from different depths be required, specific techniques must be used. You should refer to your water analyst for these techniques.

Sampling for specific analyses

Standard chemical analysis

- ⇒ Use a one litre polyethylene bottle and follow the general procedure outlined above or by your water analyst
- ⇒ If possible take conductivity and pH measurements at the time of sampling
- ⇒ Send in the sample for analysis promptly (refer page 2 for more details).

Specific ions

Samples for specific ions often require a 'preservative' to be added to prevent precipitation or other chemical activity, which might give a false reading of relative concentrations. Treatments required are too numerous to list in this fact sheet, however some common ions and their collection procedures are listed below. Before sampling for a specific ion, you should contact an accredited testing laboratory to check if any special procedures are necessary.

- Iron, Manganese (and other metals) - add 5 ml concentrated nitric acid per litre of sample
- Nitrogen (Nitrate, Nitrite or Organic) - freeze or place in cold storage
- Sulphates - as for nitrogen

- Cyanide - add Sodium Hydroxide until pH is 11 or higher, then place in cold storage.

You must nominate the particular ion or metal to be determined when you submit the sample.

Bacteriological content

A sample for bacteriological analysis should be collected in a sterile container supplied by the analytical laboratory. A minimum volume of 200 ml is required. The sample should be placed in cold storage immediately. These samples should ideally be analysed within 6 hours, but certainly no longer than 24 hours after collection.

Algae

A sample taken for algae identification and cell count should be of one litre capacity, preferably in an opaque bottle. The bottle should be sealed with about 25mm air space at the top. The sample should not contain thick 'scum' algae as this makes the count inaccurate.

If the sample can be delivered to a laboratory within 24 hours, it need only be kept in the dark and in cool storage (e.g. in an esky). Otherwise it must be kept under refrigeration, preferably on ice, but not frozen.

For bacteriological or algae analyses it is usually necessary to make arrangements with the testing laboratory before sampling is carried out.

Where to send samples

Queensland Health

Landholders concerned with the quality of their water supply can arrange a bacteriological or chemical analysis through Queensland Health Scientific Services at Coopers Plains in Brisbane. Arrangements must be made prior to the sampling being carried out. Further information is available on their web site at www.health.qld.gov.au/ghpss

Local Authorities

Sampling for chemical or bacteriological analyses can be arranged through your local Council. Some Councils maintain testing facilities, but this service is generally limited to water for domestic and drinking purposes.

Private Companies

Samples collected for any purpose can be forwarded directly to private companies for analysis. They may be located in the yellow pages of the telephone book.

You can also search for accredited testing laboratories at the National Association of Testing Authorities, Australia (NATA) web site at www.nata.asn.au .

Further information

Fact sheets on water and other topics are available from Natural Resources, Mines and Energy (NRM&E) offices and service centres or can be downloaded at www.nrm.qld.gov.au/factsheets

Instructions for sampling water and other resources can also be downloaded from the Natural Resource Sciences Chemistry Centre web pages at www.nrme.qld.gov.au/science/labs/sampling.html .

You can also contact NRM&E on (07) 3896 3111; or Toll free (outside Brisbane metro) 1800 803 788 or send them an email at Enquiries@nrme.qld.gov.au ■

Fact sheets are available from NRM&E Service Centres and the NRM&E Information Centre, phone (07-3237 1435).

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