

**D N R**

# Water

**F A C T S**

## Sampling your water supply

### Introduction

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

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 methods employed and the time elapsed between sampling and analysis. This note 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 polythene or glass and should hold one litre.

Polythene bottles are available from DNR offices, chemists and certain retail outlets. Softdrink, 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). Then 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. Other information that may be required is listed on forms available from DNR offices.

### 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 or layering of the body of water due to seasonal temperature differences and chemical content can result in greatly varying 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 started.

Some bores may have more than one water bearing zone. Should samples from different depths be required, specific techniques must be used. Information on these techniques can be obtained from DNR offices.

### Sampling for specific analyses

#### Standard chemical analysis

Use a one litre polythene bottle and follow the general procedure outlined above.

If possible take conductivity and pH measurements at the time of sampling.

Send in the sample for analysis promptly.

#### 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 note, however some of the more common ions and the procedures required are listed below. Before sampling for a specific ion, you should contact the testing laboratory or DNR 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.

Should you want the sample analysed for a specific ion you should 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 analyst. 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 (eg. 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 your samples**

### **1. Department of Natural Resources**

The Agricultural Chemist located at Indooroopilly, Brisbane will analyse water samples for chemical composition to determine suitability for stock and irrigation purposes. Analyses for domestic purposes are not carried out. Samples may be sent direct or submitted through any DNR office.

### **2. Queensland Health Department**

Landholders concerned with the quality of their water supply can arrange a bacteriological or chemical analysis through the Health Department in George Street, Brisbane. Arrangements must be made prior to the sampling being carried out.

### **3. Government Chemical Laboratory**

The Government Chemical Laboratory located at Coopers Plains, Brisbane will analyse water samples to determine suitability for domestic, stock and irrigation uses. Samples may be sent direct or submitted through any DNR office.

### **4. Local Authorities**

Sampling for chemical or bacteriological analyses can be arranged through the Council Health Surveyor in your area. Some Local Authorities maintain testing facilities, but this service is generally limited to water for domestic and drinking purposes.

### **5. 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.

## **Assistance**

Assistance with all aspects of your water supply, irrigation or drainage scheme is available from the Rural Water Advisory Services of the Department. Full details of the available services and associated charges can be obtained from your local Natural Resources office. ■