**PURPOSE**

To explain the proper procedures for collecting a sample so as to prevent analytical results from being affected, by ensuring that sampling is representative, and is done according to accepted and valid techniques.

**SCOPE**

This document is available as a sampling guide to any employee or client of Integral Laboratories.

**POLICY**

It is the policy to advise personnel and clients of proper sampling techniques, s that representative samples are obtained.

**PROCEDURE**

***NOTE:***

1. ***Using the correct sample bottles is critical for some analyses (eg. Microbiological analyses). Please consult the laboratory if in doubt.***
2. ***Capture as much information as possible for each sample. Environmental conditions (such as temperature, humidity, wind) sometimes assist in evaluating the validity of results.***

**1. MICROBIOLOGICAL CONSIDERATIONS**

- If the water to be sampled for bacteriological analysis contains residual chlorine, add 0.2ml of 10% sodium thiosulphate solution to a 250ml bottle (reduce volumes proportionately for smaller bottles) before sterilising. Alternatively, purchase bottles that already contain thiosulphate solution.

  (Sodium thiosulphate is already added to sterile containers obtained from the laboratories).

- When samples for bacteriological and chemical analysis are taken at the same point, collect the bacteriological sample FIRST to avoid contamination of the sampling point.
- Always keep the bottle closed, in a cool place and in a clean condition prior to sampling.
- Wear gloves (when possible), or wash hands thoroughly before taking each sample.
- Avoid hand contact with the neck of the bottle, or the inside of the lid of the bottle.
- **Do not rinse the bacteriological sample bottles prior to sampling.**
- When sampling from a tap or point in the distribution system, clean the tap or valve with methanol, 100mg/l sodium hypochlorite solution, or flame sterilise with a blowtorch (be considerate of private property prior to undertaking flame sterilisation).
- After sampling, place sample bottles in a cooler box containing ice or ice packs to keep samples below 10$^{o}$C.
- Samples must be delivered to the laboratory as soon as possible; ideally for analysis to be started within 24 hours of sampling.

  *Please keep in mind laboratory operating hours when planning a sampling day and time.*
- Attach a label containing the following information onto the sample bottle:
    - Name of Sample / Sampling point
    - Sampling date
    - Sampling time
    - Name of sampler
    - Chlorine results where applicable

## 2. SAMPLING FROM A TAP OR VALVE IN A DISTRIBUTION OR POINT-OF-USE SYSTEM

- Sterilise tap or valve with methanol, hypochlorite or flame.
- Open the tap and let the water run to waste for at least 3 minutes.

  (Be considerate of the scarcity of water.)
- Remove the cap from the sample bottle, taking care not to contaminate the inner surface of the cap or the neck of the bottle.
- Fill the bottle to the brim, to minimise any potential oxygen / head space that remains in the bottle.

  When sampling for ***microbiological purposes***, DO NOT RINSE the bottle.

  When sampling for ***chemical purposes***, rinse the bottle with the water source to be sampled.
- Label the bottle and place in a cooled container (preferably a cooler box with ice or ice packs).
- Rinse the sample bottles for Chemistry at least twice with the sample, add any preservative necessary, and fill the sample bottle leaving a 25mm gap to facilitate mixing.
- Close the tap.

## 3. SAMPLING FROM A RIVER, STREAM, LAKE, DAM OR RESERVOIR

- At the sampling point, remove cap of sample bottle, taking care to prevent contamination of lid and neck.
- Hold the bottle with the hand near the base, plunge the bottle neck downward below the water surface, ensuring that the neck is directed towards the current.
- Turn the bottle until the neck points slightly upwards with the neck directed towards the current.
- Pushing the bottle forward horizontally away from the hand can create an artificial current.

- Fill the sample bottle to the brim, to minimise any potential oxygen / head space that remains in the bottle. When sampling for ***microbiological purposes***, DO NOT RINSE the bottle.

  When sampling for ***chemical purposes***, rinse the bottle with the water source to be sampled.
- Attach the label as for sampling from a tap.
- Place in cooler box containing ice or ice packs.

**4. SAMPLING FROM SEWAGE TREATMENT PLANTS**

- In the event of a grab sample being taken, sample as per sampling from a river, stream, lake, dam or reservoir above.
- Always wear gloves when sampling.
- For areas that cannot be reached by hand, attach a sample bottle or clean container to a rope or sample container holder, and lower this into the sampling point. Rinse the container holder and container thoroughly before sampling next point.
- Wash hands thoroughly after sampling.

**5. SAMPLING FROM A BOREHOLE OR A WELL**

For boreholes and wells, it is preferred that sampling be done from the borehole pump outlet rather than directly from the borehole or well.

- Allow the water to pump to waste for 5-10 minutes before taking the sample.
- For new boreholes, purge the borehole for at least 2hours before sampling.

- Sample from the outlet as if sampling from a Tap (see above).
- Where there is no pump available, secure a weight under the sample bottle and lower the bottle into the borehole or well until the bottle is submerged.
- Fill the bottle the brim, to minimise any potential oxygen / head space that remains in the bottle.

  When sampling for ***microbiological*** purposes, DO NOT RINSE the bottle.

  When sampling for ***chemical*** purposes, rinse the bottle with the water source to be sampled.
- Raise the bottle to the surface, taking care that touching the walls of the borehole or well does not contaminate the bottle.
- After capping and labelling, store the bottle in a cooler box with ice or ice packs.

***NOTE: DETAILED PURGING INFORMATION CAN BE OBTAINED FROM REFERENCE 2 BELOW.***

**REFERENCES**

1. Standard Methods for the Examination of Water and Wastewater, Clesceri, Greenberg, Eaton, 20th edition, 1998, Collection and Preservation of Samples, 1060.

2. Quality of Domestic Water Supplies. Volume 2 Sampling Guide. WRC, DWAF, Dept of Health, 2000