CENTRAL ENVIRONMENTAL LABORATORIES
taiwhanga aroturuki taiao

Central Environmental Laboratories
Module 2, Batchelar Centre, Batchelar Road
P.O. Box 8017
Palmerston North, New Zealand

P: +64 6 351 4475 F: +64 6 351 6302
E: cenlab@cenlab.co.nz

Guidelines for the Sampling & Submission of Water Samples

There are numerous reasons for having testing performed and a large number of tests to choose from. To assist you in making the best decision with regards to your testing requirements, we ask that you consider the following prior to discussing your testing needs with our Laboratory staff:

- ✓ Do you have a specific issue such as a health concern, tastes, odours or physical problems?
- ✓ Are you just curious, have you been advised, have a consent, or have you contacted someone about some tests?
- ✓ Do you know someone else with similar concerns?
- ✓ Where does the sample come from and what is it used for? Or, what are you intending to use it for?
- ✓ Is there some history available for your area or the sample you are about to send to us?
- ✓ What is in the immediate surroundings of the sample you wish to take?

We also may be able to provide you with history of the area you are taking the sample from, or direct you to a suitable authority or person with specific expertise that may be able to provide you with more information. Please contact us for assistance.

Following the correct sampling process is essential to ensuring that the samples we receive at the Laboratory are representative of the site that has been sampled. The way in which the samples are packed and then transported to the Laboratory is also important to ensure that samples have not deteriorated, become contaminated or otherwise compromised before analysis.

As stated in *APHA Standard Methods for the Examination of Water & Wastewater*:

"….the result of any testing method can be no better than the sample on which it is performed…"

Sampling should be performed so as to obtain a portion of material that is as representative of the whole as is practical. Before taking the sample it is important to consider the following:

- ✓ The location where the sample is taken could impact on results.
- ✓ The way a sample is taken could impact on results.
- ✓ Suitable sample containers are crucial and certain tests require special preservatives.
- ✓ The size of the sample is important.
- ✓ The type of sample may change the way it should be handled.
- ✓ Certain compounds are likely to change more rapidly than others.
- ✓ The sample should be kept chilled and out of the sun.
- ✓ Each sample must be clearly labeled.
- ✓ Delivery to the laboratory must be within certain timeframes.

Our staff can help to ensure sample integrity is maintained by providing directions on the most appropriate containers and techniques required for specific samples.

Sample Containers

The Laboratory can provide suitable sample containers. Please contact us to discuss your requirements.

- For ***Microbiological Analysis***, a sterile container must be used. These bottles can be obtained from the laboratory. If you have provided your own sample bottle, you must provide some indication that the sample was collected in a sterile container.

  If the water you are sampling contains chlorine, you **MUST** use a container that contains Sodium thiosulphate – this acts to neutralize the chlorine in the water.

- For ***Chemical Analysis,*** new plastic or polythene containers should be used for sampling unless otherwise advised.

  There are situations where immediate preservation on sampling is recommended. This applies specifically when analysis is required for the following:

  - Cyanides
  - Dissolved oxygen
  - Sulphides
  - Metal species
  - Oil & Grease
  - Phenols

If you require analysis for any of these, please contact the Laboratory for further advice and suitable sample containers.

Taking the Sample

In General:

For ***Microbiological*** Analysis:

- Keep the sample container closed until it is to be filled.
- Do not place the container lid down on any surface as this may contaminate the sample.
- Avoid contact between the neck of the bottle and the outside surface of the tap.
- Avoid touching the inside of the bottle and lid.
- **Do not** rinse the bottle.
- Take at least 500 mL of sample.
- Leave sufficient air-space in the bottle (at least 2.5 cm) to allow mixing by shaking.

For ***Chemical*** Analysis:

- The container should be filled to the brim without overflowing. The sample should then be chilled and dispatched immediately.
- One (1) Litre of sample will usually be sufficient for most analysis.

Reticulated Water Supplies / Potable Water

- Ensure that all visible foreign matter such as cobwebs, insects etc have been removed from the tap.
- Disinfect by cleaning the outside of the tap, wiping with meths or alcohol wipes (any other antibacterial agent e.g. bleach etc is also be suitable)
- Run the tap for 2 - 3 minutes at medium to maximum flow – this is to ensure that the water being collected from the tap is representative of the water at source. Turn the tap off.
- If sampling from a mixed faucet, remove faucet attachments such as screen or splash guard, run hot water for 2 minutes, then cold water for 2 - 3 minutes and collect sample as indicated.
- Re-sterilise the tap by either using an alcohol wipe, bleach solution or by flaming with a cigarette lighter or portable burner.
- Turn the tap on and run at a medium flow rate for a further 1 minute.
- Reduce the flow (to avoid splashing) .
- Take the sample, ensuring that the tap does not come into contact with the inside neck of the bottle. Fill the bottle, ensuring that sufficient head space is left.
- Replace the lid

Note: <u>Do not</u> sample from leaking taps that allow water to flow over the outside of the tap.

Wells or Bores

Where there is a hand or mechanical pump:

- Pump the water to waste for about 5 - 10 mins or until the water temperature has stabilized.
- Collect the sample.

Rivers, Lakes & Reservoirs (Non-potable Water)

- Hold the bottle in the hand near its base.
- Plunge the bottle neck downward below the surface.
- Turn the bottle until the neck points slightly upward and the mouth is directed toward the current.
- If there is no current, create a current artificially by pushing the bottle forward horizontally in a direction away from the hand.

If it is not possible to collec the sample in this way:

- Attach a weight to the base of the bottle and lower it into the water

Note: Take care to avoid contact with the bank or stream bed as this may cause fouling of the water and sample.

Swimming Pools

- Take the sample from a depth of approximately 300 mm below the surface and at one of the points furthest from the sparge pipes/inlets (where the returning water is re-entering the pool).
- Store the sample in the dark at a temperature of 2 - 6^{O}C. Analyse within 6 hours if possible, but no longer than 24 hours after sampling.

Labeling the Sample & Completing the Submission Form

Ensure that the samples are clearly labeled with:

- The sample identification
- The time of sampling
- The name of the sampler

This information should also be completed on the submission form – it is especially required for samples collected for regulatory purposes e.g. NZ Drinking Water Standards, testing under the Meat Act 1981 etc.

As mentioned previously, it would be of great help if you can provide us with any additional information about the sample. This will assist us in ensuring that testing is carried out as required.

For Example:

- Your sample has been sent to determine compliance with a resource consent. Your consent states that your discharge must have <100 *E.coli* per 100 mL. (this information is of great use to the laboratory)
- You require your sample to be tested by "*Fred's Water*" method .
- There is other information about the sampling site that may be relevant.
- The temperature of the water at time of sampling was (*for example*) 18^{O}C
- This is especially relevant if the temperature of the sample upon receipt at the Laboratory is above 10^{O}C and there has not been time to cool the sample adequately i.e. the sample has been taken within the last 30 minutes.

Put the submission form in a plastic bag and send it with the samples.

Packaging & Transportation of the Samples

Pack the samples into a chilly bin as soon as possible. It is important that samples for Microbiological analysis arrive at the Laboratory so that testing can commence within 24 hours of sampling. The sample temperature should be less than 10^{O}C, so that there is no possibility of further bacterial growth or decline in numbers. Samples that require microbiological analysis should not be frozen.

Where possible, use either Envirofreeze cubes or slika pads (or similar) – it is preferable not to use loose ice or dry ice as this may lead to contamination of the samples.

Seal the chilly bin to prevent tampering during transport.

Samples requiring ***microbiological analysis*** for ***regulatory compliance*** purposes often have strict time and temperature requirements that must be adhered to. To fail to do so will result in your sample being rejected upon arrival at the laboratory.

These requirements are as follows:

- ***Potable Water (LAS) Testing – Meat Industry***

  For Meat Premises licensed under the Meat Act 1981, or approved by NZFSA under IS3/IAS3 Section 4.2.5:

  "If the sample cannot be delivered to the laboratory within one (1) hour of collection, then you **must**:

  Chill the sample to **below 10^{o}C** and ensure delivery to the laboratory within **six (6)** hours of collection

  OR

  Chill the sample to **2 - 5^{o}C** and ensure delivery to the laboratory **within 24 hours** of collection."

- ***Potable / Drinking Water***

  For water that needs to meet the requirements of NZDWS and where results need to be submitted to the Ministry of Health WINZ Database.

  The Standard states that:

  "You **must** chill the sample to **less than 10^{o}C** and ensure that the sample is delivered to the laboratory within 24 hours of collection

- ***Swimming & Spa Pools***

  Your sample must meet the requirements of NZS 5826:2000 Pool Water Quality; Section 4.3.3.

  The Standard states that:

  "You **must** chill the sample to **2 - 6^{o}C** and ensure delivery of the sample to the laboratory **within 24 hours**."

- ***All Other Samples for Microbiological Analysis***

  Chill the sample to **less than 10^{o}C** and ensure delivery to the laboratory **within 24 hours**.

If these time and temperature requirements are not met, we cannot guarantee the accuracy of the test results.

We will contact you for further instructions to "test the sample as received" or ask that you submit another sample.