



**National Water Quality Laboratory
Pakistan Council of Research in Water Resources**

SAMPLING FOR MICROBIOLOGICAL ANALYSIS

In case of laboratory analysis for microbiological purpose, following guidelines are adopted to collect representative water samples:

Sample Bottles

- Pre-sterilized sampling bottles of 200 ml capacity made of pre-sterilized disposable/autoclavable plastic, or good quality soda / borosilicate glass.
- Prior to sampling all bottles should be checked for physically defects i.e. leakage etc.
- Clients can obtain pre-sterilized bottles from Customer Service Desk of NWQL

Dechlorination of Chlorinated water

1% of 0.1 ml sodium Thio-Sulfate under aseptic condition is added in sampling bottles for de-chlorination purpose. This chemical neutralizes any residual chlorine and prevents continuation of bactericidal action during sample transit.

Key Points: Preventing Contamination

Contamination is a real problem during water sampling. Most of the risks can be overcome by introducing basic aseptic techniques into the sampling procedure. The following points suggest the most obvious ways to reduce the chance of contamination:

- Contamination must be avoided during the sampling procedure as 92% error comes from sampling.
- Sampling points may often introduce contamination and therefore disinfection or flushing may be required to obtain a representative sample.
- Never touch the neck of the bottle, or inside the lid. When filling the bottle, the lid should not be placed on a surface, but remain in the hand.
- The sample bottle should not be rinsed out prior to filling.
- The flow rate of the tap should not be changed during sampling as this may dislodge bacterial films inside the tap.
- A small air gap should be left in the bottle.
- Once the bottle is filled and the lid replaced the sample should be placed in a cool box for transfer to the laboratory/testing point in field.
- If accidental contamination is suspected then the sample should be discarded and taken again using a fresh container.



**National Water Quality Laboratory
Pakistan Council of Research in Water Resources**

SAMPLING PROCEDURE

Step One

Choose a sample tap that represents the water in distribution system. Avoid poor sample sites such as swivel faucets, hot and cold mixing faucets (with a single lever), leaky or spraying faucets, drinking fountains, janitorial sinks and faucets below or near ground level.

Step Two

Remove any attachments from the faucet, including aerators, screens, washers, hoses, and water filters. Open the tap for 5 minutes to flush out the standing water and then spray a small quantity of spirit on surface of tap and flame it with match stick and let it cool down.

Step Three

After flaming open the tap again to turn the water down to a thin stream (about the width of a pencil) and let it run for one minute.

Step Four

There may be some liquid or powder in the sample bottle to neutralize any chlorine that may be present. **Do not** rinse it out.

Step Five

To avoid contamination while taking the sample, hold the bottle near the bottom with one hand, hold the top of the cap with the other, and then unscrew the cap. **Do not** place the cap on the ground.

Step Six

Hold the bottle under the stream of water, being careful not to let the bottle touch the sample tap. Fill the bottle to the neck (leave 1" from tap) but do not allow it to overflow. Remove the bottle from the water flow and replace the cap.

Step Seven

Complete the questionnaire/Performa. If there was anything unusual about the sample collection, note it down.

Step Eight

Label the bottle with permanent marker and deliver the sample to laboratory or to a designated drop-off location for the lab as soon as possible. Lab analysis must begin within 6 hours of sample collection.

SAMPLE LABELS (CHEMICAL & MICROBIOLOGY)

Correct labeling and accurate records are essential during water sampling due to the large number of people who will be processing the sample. If this practice is not followed



**National Water Quality Laboratory
Pakistan Council of Research in Water Resources**

carefully, then samples can be incorrectly reported or lost completely. The most important points are listed below.

Labeling is done with permanent ink. The label should contain the following information;

- Sample code
- The date and time of sampling,
- The exact location of a sampling point,
- The type of water to be tested (e.g. filtered, treated),

SAMPLE TRANSPORTATION

Chemical

- Samples collected for chemical analysis can be transported to laboratory without ice boxes without any further delay to ensure sample preservation with preservatives if not preserved in the field.

Microbiology

- Samples should immediately be transferred to dark storage between 2 and 8 °C. The most suitable containers for this purpose would be ice boxes.
- The boxes should be used exclusively for the transport of water samples, and should be regularly cleaned and disinfected.
- Ideally, samples should be analysed within 6 hours, and during this time should be stored in cool dark conditions.

The longer the delay between sampling and analysis, the more likely that changes will occur in the sample, which may no longer be representative.