

Collection of Water Samples for Microbiological Analysis

Samples of water for bacteriological testing must be collected in sterile bottles, and care must be taken to prevent accidental contamination of the water during its collection and transportation to the water testing laboratory. **Sampling Bottles** Glass or plastic bottles used for water sampling should have a capacity of at least 200 ml. They should be fitted with ground glass stoppers or screw caps. The stopper or cap and neck of the bottle should be protected from contamination by a suitable cover either of paper or thin aluminium foil. We can supply sterilized water bottles for sampling. **Information to be supplied with water samples** This should include:

- a) Code number of the sample
- b) Reasons for examination, for example whether a routine sample or otherwise.
- c) Source from where the water has been collected, for example whether from a well, spring, lake, reservoir, or piped supply. Mention also the exact place from where the water was taken. If the sample was collected from a house-tap, mention whether the water was drawn from a cistern or direct from the main.
 - d) Whether the water has been filtered, chlorinated, or treated in some other way.
 - e) If the water is from a well, give details of its depth, whether covered or uncovered, and whether recently constructed or altered.
 - f) If the sample is spring water, describe the stratum from which it issued and whether the sample was taken directly from spring or from a collecting chamber.
 - g) If the water is from a river or stream, mention the depth at which the sample was collected, whether from the side or the middle of the stream,
 - h) whether the water level was above or below average, and whether there had been heavy rainfall or flooding.
 - i) If the water is from a lake or reservoir, give the exact position and the depth at which it was collected.
 - j) Temperature of the source of the sample.
 - k) Mention any possible sources of pollution in the area and their approximate distance from the sampling point.
 - l) Date and time when the sample was taken and dispatched.

Aseptic collection of a water sample

The sterile bottle should be held by the base in one hand while the other hand is used to remove the stopper and cover together. The stopper and cover should be retained in the hand while the bottle is filled and then they should be replaced together. To prevent contamination, the person collecting the water must not touch, or allow any surface to touch, the screw thread of the bottle neck or the inside of the cap. If the bottle becomes contaminated, it must not be used. **Collecting a sample from a tap.**

- a) Remove any external fittings from the tap, such as anti-splash nozzle or rubber tube.
- b) Clean carefully the outside nozzle of the tap, especially any grease which has collected.
- c) Turn the tap on full, and **allow the water to run to waste for 1 minute**. This allows time for the nozzle of the tap to be flushed and any stagnant water in the service pipe to be discharged.
- d) Sterilize the tap using the flame of a blowlamp or gas torch, or by igniting a piece of cotton wool soaked in methylated spirit and holding it with a pair of tongs close to the nozzle until the whole tap is unbearably hot to the touch.
- e) Allow the tap to cool by running the water to waste for a few seconds.
- f) Fill the sample bottle from a gentle flow of water, and replace the cap of the bottle.
- g) Using a waterproof marker or grease pencil, number the bottle with the sample code number.

Note: Leaking taps may cause contamination of the sample from sources outside the water pipe therefore leaks should be reported when sampling. A bacteriological sample should not be taken until the leak is repaired. **Collecting a sample from a river, stream or other surface water**

- a) Aseptically remove the cap and cover of the sterile sample bottle, and face the mouth of the bottle upstream.

Note: To avoid entering the water, the bottle should be clamped to the end of a stick. One way of doing this is to fix the bottleneck in a retort stand clamp and mount this on a stick.

- b) Plunge the neck downwards about 30 cm below the water surface, and then tilt the neck slightly upwards to let it fill completely before carefully replacing the cap and cover. Where there is no current, push the bottle forward horizontally until it is filled.
- c) Label the bottle with the sample code number.

Collecting a sample from a tube well

- a) Continuously operate the hand pump for 5 minutes.
- b) Heat the mouth of the pump, preferably by means of a blowlamp or gas torch, and pump several gallons of water to waste.
- c) Aseptically collect a sample of water by allowing the water from the pump to flow directly into the sterile bottle. Carefully replace the bottle cap and cover.
- d) Label the bottle with the sample code number.

Collecting a sample from an open well

If the well is one from which water can be raised only by means of a bucket or can, use a weighted bottle to collect the sample as follows:

- a) Tie a sterile sample bottle on to a weighted length of rope or strong string. Use a stone or weight, and attach the bottle just above the weight.
- b) Aseptically remove the cap from the bottle, and lower the bottle into the well to a depth of about 1 meter.
- c) When no more air bubbles rise to the surface, raise the bottle out of the well and carefully replace the cap.

- d) Label the bottle with the sample code number.

Dispatch and transport of water samples to the laboratory

Immediately after collection, samples should be placed in an insulated cold box for transport to a water testing laboratory. Water samples should be examined as soon as possible on arrival and always within 6 hours of collection.