

Aquatic Facilities Microbiological Water Sampling Technique Environmental Health Guide

There are a number of important points to remember when taking aquatic facility water samples. Aseptic technique is essential to avoid contaminating the sample container and water sample.

1. General Rules of Sampling

Take extra care to avoid contaminating the sample container and water sample.

Do Not:

- ✗ Contaminate the bottle by touching the inside of the bottle.
- ✗ Contaminate the bottle lid by touching the inside rim.
- ✗ Put the bottle lid on the ground while sampling.
- ✗ Rinse the bottle.
- ✗ Transport aquatic facility water samples with other water samples, e.g. effluent or drinking water.

Always:

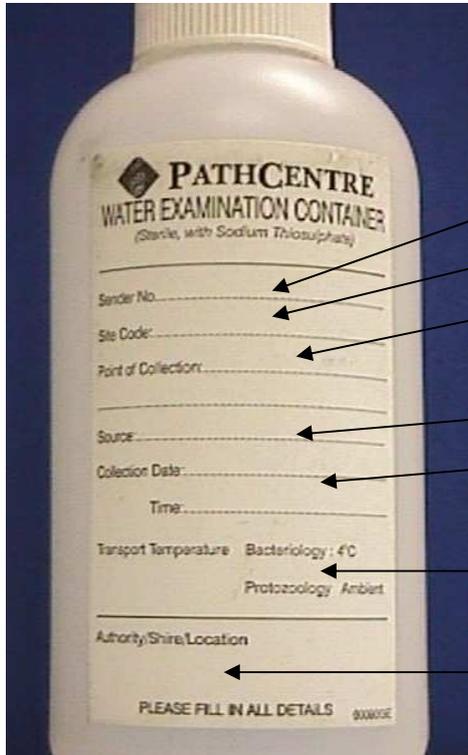
- ✓ Collect microbiological samples before collecting other samples.
- ✓ Label the bottle before sampling.
- ✓ Discard damaged or contaminated bottles. If in doubt throw it out and take sample in a new bottle.
- ✓ Wash your hands thoroughly before and after collecting samples.

Also:

- If there is any reason to suspect that contamination has occurred during sampling, discard the sample and take another sample using a new sampling bottle.



2. Sampling Bottle Labelling



Prior to taking a sample the following information should be provided on all sample bottles:

Sender reference number

Site code

Point of Collection

(Aquatic Facility Name and pool (ie toddler's pool))

Source (ie Pool outlet)

Date and time of collection

Transport temperature (4C or ambient)

Authority or Company Name

NOTES:

- Use a water proof pen when marking sample bottles so the information will not rub off in the water.
- Keep hands away from the mouth of the bottle at all times.
- Sampling action should be one continuous motion in a direction away from the body, but parallel to/against the water body (i.e. in, along and out). Sample depth should be consistent.

3. Sampling Collection Procedure

1. If wearing a long sleeve shirt, roll sleeves of shirt up past elbow
2. Take a labelled sterile 250ml sample bottle. Make sure you keep the lid on the bottle until you are ready to collect the sample.

Note: Preferably use pre-chilled bottles for bacteriological water sample collection.

3. Hold the sterile bottle in one hand near the base, and then carefully remove and hold the screw cap with the other hand. Be careful not to touch the inside of the screw-cap when sampling.
4. Walk to a location around the perimeter of the water body, near to where a skimmer box, scum-gutter, or wet-deck is located.
5. Bacteriological Water Samples
Squat down on one hand and knee beside at the edge of the water body, and then plunge the bottle downwards into the water with continuous motion and direction away from the body but parallel with the edge of the water body, to a depth of approximately 30 cm below the water surface and then continue to move the bottle in a horizontal motion until finally removing the bottle from the water body with the same continued action and motion when full.
6. Amoebae Water Samples
Repeat the process detailed for bacteriological water samples, except scrape the rim of the bottle against the interior water body wall, when moving the bottle horizontally through the water body.
7. Tip enough of the water from the bottle to leave an air space of about 1-2 cm from the rim of the bottle. This air space is necessary to facilitate mixing of the sample by the laboratory.
8. Carefully replace the screw-cap immediately and tightly.

4. Sample Transportation

Temperature

Bacteriological

Once water samples for bacteria are collected, they should be immediately stored within a chilled insulation container (esky) preferably at a temperature between 1°C and 4°C. To chill the samples/container, use freezer ice bricks if available, or loose ice. The chilled temperatures are used to prevent the multiplication of bacteria which may result in false bacterial counts. Cool and dark conditions should also be maintained throughout transportation to the laboratory.

Amoebae

Water samples for amoebae analysis should be transported in a non-chilled insulated container at ambient temperature. The esky must not contain an ice-brick as chilling the sample will kill any viable amoebae.

Time

Samples returned to the laboratory promptly after collection. Samples should be transported in an esky with ice bricks with the aim of delivering the samples to the laboratory as soon as possible, or within 6 hours of commencing sampling, whilst keeping the sample bottle temperatures at 4°C ±2°C.

Under exceptional circumstances (regional locations), the sampling and transport time may exceed 6 hours but should never exceed 24 hours.

5. Submitting Samples

It is essential that all samples be given a site code number before they are submitted for analysis. For more information regarding site code allocation refer to '[Site Code Identification System for Water Samples](#)', published by the Department of Health.

The chain of custody documentation should be supplied by the analytical laboratory. This is used to ensure the details of the sampling can be traced at all times. The person collecting the samples must fill out this form. Chain of custody forms will require information such as;

Company Name

Company Address

Sample Collection Date

Samplers name & signature

The form is titled 'WATER EXAMINATION LABORATORY REQUEST FORM'. It includes contact information for the Water Examination Laboratory (Ground Floor, K. Block, Hospital Ave, Nedlands, Locked Bag 2009, Nedlands WA 6909) and the PathCentre logo. The form is divided into several sections:

- Header:** Laboratory name, address, and contact details.
- Form Fields:**
 - Company Name (with arrow pointing to the field)
 - Company Address (with arrow pointing to the field)
 - Date sampled (with arrow pointing to the field)
 - Sampled by (with arrow pointing to the field)
 - Order No.
 - Sender's Comments
 - Facsimile of report required (checkbox)
 - Facsimile number
 - Copy to
 - Please specify test required if NOT routine.
- Checklist:**
 - Drinking Water (source to Consumer)
 - Treated Recreational Water (Pools, Spas, Hydros)
 - Natural Water
 - Sewage / Wastewater
 - Drain (Leach / Surface / Stormwater)
 - Industrial Process Water
 - Irrigation Effluent
 - Airconditioning / Cooling Towers
 - Other (specify in Senders Comments)
- Table:**

LABORATORY USE ONLY		SAMPLE DETAILS			TREATMENT			SAMPLE SUBMITTED (please tick)		LABORATORY USE ONLY	
Laboratory Number	Site Code	Description	Time Sampled	Type (CL: or etc.)	ppm	Temp (°C)	pH	Bacteria (chilled)	Amoebae (ambient)	Bacteria set up by / Date:	Amoebae set up by / Date:
Laboratory Comments			Authorised by	Date	Project Number						
- Footer:** © PathCentre Microbiology, PWF / Analysis Request, Issue #1, Release Date 01/03/2013, Authored by CJ Thompson.

Site Code

Site Description

Time of Sample Collection

Note: Always inform the laboratory if you suspect the samples are contaminated by faecal material.

6. Site Observation Details

It is important to take accurate records when conducting water sampling. Recording site details and other environmental factors will help when interpreting the sample results later on. It is suggested that field notes include the following details;

- Date
- Time of sampling
- Aquatic facility name
- Water body type
- Site code
- pH/free & total Cl/Br levels
- Total alkalinity, calcium hardness & total dissolved solids levels

Record environmental/other factors such as;

- Approximate number of bathers in the water
- Water clarity/turbidity (visual clarity in the water i.e. leaves, debris, algae)
- Weather conditions (temperature, wind, rainfall)
- Presence of animals (birds/ducks)
- Other comments (e.g. system problems i.e. disinfection/filtration equipment, faecal accidents)

Further Information

For further information please contact;

swimmingpools@health.wa.gov.au,

Environmental Health Directorate
Department of Health Western Australia
PO Box 8172, Perth Business Centre
PERTH WA 6849

Telephone (08) 9388 4999
Facsimile (08) 9388 4905