

Monitoring Strategies for Management of Cyanobacteria (Blue-Green Algae)

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sampling (i.e. boat and two people), it is often only undertaken for high priority public health surveillance (i.e. drinking water supplies). Open water sampling may also be necessary for public health surveillance of deeper bathing waters in a lake or for ecological studies and monitoring.

If open water sampling is not possible due to a lack of resources, the second option for monitoring drinking water supplies is to sample from reservoir/lake shorelines or riverbanks. Such samples may not be representative of the 'true' cyanobacterial population as they may not capture the variations in the population (as discussed above). In choosing a location for sampling the likely effects of the prevailing winds and water currents should be considered.

In some circumstances, open water sampling may not be the preferred option. This is often the case for the monitoring of recreational waters, where the risk of exposure to cyanobacteria from bathing and water contact sports is higher adjacent to shorelines where scum forming species predominate.

Table 6: Recommendations for the design of a monitoring and sampling program for cyanobacteria based upon the purpose of the monitoring and the type of water body. The scale of sampling effort and procedures for monitoring are determined by the purpose of the monitoring.

Purpose of Monitoring	Confidence required from Results	Water Body Type	Sampling Effort required	Access required for Sampling	Sample Type (method) ¹	Number of Samples ²	Frequency of Sampling ³
Public health surveillance of drinking supplies: <i>in direct service</i>	Very High	Reservoirs & lakes	High	Supply offtake <i>and</i> Open water by boat	Discrete sample at offtake depth <i>and</i> Integrated depth	Both offtake location and multiple open water sites	Weekly or 2x-weekly
		Rivers and weir pools		Mid-stream by boat; from bridge or weir	Integrated depth		
Public health surveillance of drinking supplies: <i>bulk water storage / not in service</i>	High	Reservoirs & lakes	Moderate	Supply offtake location <i>and/or</i> Open water by boat	Discrete sample at offtake depth <i>and/or</i> integrated depth	Multiple sites	Weekly or 2x-weekly
		Rivers and weir pools		Mid-stream by boat; from bridge or weir	Integrated depth		
Public health surveillance of recreational water bodies & non-potable domestic supplies	Moderate	Reservoirs & lakes	Low	Shoreline	Surface Sample	Limited number of sites	Weekly or fortnightly
		Rivers and weir pools		River bank	Surface Sample		

1. Integrated depth samples are collected with a flexible or rigid hosepipe, depth (2-5m) depending on mixing depth; surface or depth samples are collected with a closing bottle sampler (van Dorn or Niskin sampler); shoreline or bank samples collected with a 2m sampling rod which holds a bottle at the end.
2. Multiple sites should be a minimum of 100m apart (except in smaller water bodies such as farm dams), including one near the offtake. Multiple samples can also be pooled and one composite sample obtained. River monitoring should include upstream sites for early warning. Samples from recreational waters should be collected adjacent to the water contact area.
3. Frequency of sampling is determined by a number of factors including the category of use, the current alert level status, the cost of monitoring, the season and the growth rate of the cyanobacteria being tracked. Sampling should be programmed at the same time of day for each location. Visual inspection for surface scums should be done in calm conditions, early in the morning.