IOWA

State Hygienic Laboratory

Cooling Tower Environmental Sample Collection

Environmental Sample Testing Approval Procedure
Testing of environmental samples requires PRIOR APPROVAL from the Iowa Department of Health and Human Services and the State Hygienic Laboratory.

Container #49 (1L) and/or #81 (120mL), Swab

Preservative Added

DO NOT RINSE OUT PRESERVATIVE

Environmental Testing Method
Legionella is a slow growing organism that requires specialized media and growth conditions for it to grow. *Legionella* culture results are typically released in 7-10 days but can take up to 14 days to be completed. Culture for environmental samples follows CDC **ELITE** requirements.

Pre-populated Environmental Sample Test Request Form (TRF)

- An Environmental Sample TRF will be sent pre-populated to the submitting laboratory. Complete one Environmental Sample TRF per facility.

Pre-populated Environmental Sample Log Form

- A pre-populated Environmental Sample Log Form may be sent to the submitter at the same time as the pre-populated Environmental Sample TRF.
- Complete one Environmental Sample Log Form per facility to accompany the Environmental Sample TRF. Enter information for one sample per row. Up to seven samples can be logged per Environmental Sample Log Form. If you collect more than seven samples within a facility, make a copy of the Environmental Sample Log Form and complete with the additional samples.

Table 1. Acceptable Environmental Sample Types

Sample Type[1]	Sample Source	Minimum Sample Volume	Sample Storage	Shipping Requirements
Environmental Samples	Cooling tower water	1 L	2-8°C	Ship overnight within 24 hours of collection (to ensure arrival at SHL within 2 days of collection)[2]. Ship with frozen ice packs in insulated coolers.
	Biofilm swab	N/A		

[1]Unacceptable sample types include broken containers and frozen samples.
[2]Samples received after 48 hours of collection will still be accepted, however, the final report will indicate that samples were received outside of acceptable limits.

Table 2. Cooling Tower Sampling Sites†

Site	Approximate # of samples	Type of samples
Make-up water (water added to replace water loss because of evaporation, drift, or leakage)	1	1L bulk water
Collection basin§ (an area below the tower where cooled water is collected and directed to the sump)	2	1L bulk water and a biofilm swab* at the water line
Sump (a depressed chamber contiguous to the basin, where water flows to facilitate pump suction; may also be used as collection point for silt and sludge)	2	1L bulk water and a biofilm swab at the water line
Storage tank or reservoir in the system	1	1L bulk water
Drift eliminators or other surfaces that remain moist	1	1 biofilm swab
Heat sources (e.g., chillers)	1	1L bulk water
Fill (the media that water flows down before entering the basin)	1	1L bulk water

† Not all cooling towers have all listed components. Engage an engineer or maintenance technician familiar with the facility to identify appropriate sampling sites for a particular cooling tower. Collection sites depend on the sampling purpose (routine surveillance, outbreak initial, post-remediation, etc.).
§ If available, collect an additional first draw water sample from the collection basin drain.
* Biofilm swabs may be more helpful than bulk water in evaluating the effectiveness of the remediation.

Additional resources specific for sampling cooling towers can be found on the CDC website:

- **Sampling Procedure and Potential Sampling Sites**
- **How to Sample Cooling Towers**

Shipping conditions:

- Samples must be transported cool in insulated containers.
- Place the bottles and swabs in the bottom of cooler. Avoid direct contact between sample and ice packs by insulating samples with bubble-wrap or other packing material. Tubes with swabs should be placed together in a Ziplock bag prior to adding to the cooler. Consider taping the cap to prevent leakage.
- If necessary, use multiple boxes to ship a large quantity of bulk water samples.
- **Samples should be shipped overnight, preferably the same day as collected, otherwise within 24 hours of collection (avoid Fridays, weekends, and holidays) and received cool but not frozen.**
- **Sample should be received in the lab within 2 days of collection.**
- Shipping address:

  State Hygienic Laboratory at the University of Iowa
  U of I Research Park
  2490 Crosspark Road,
  Coralville, IA 52241-4721
  Phone: 319-335-4500