

# PathCon<sup>®</sup> Laboratories

## *Legionella* in Building Water Systems

### Protocol for Sample Collection

This protocol is suggested to assist the on-site investigator in developing an overall sampling strategy. PathCon Laboratories does not assume responsibility for selection of the appropriate sampling protocol or interpretation of the findings. These decisions must be made by the on-site investigator. The samples should be collected by a trained environmental health professional with experience in sampling for microorganisms; therefore, this protocol is not a complete sampling guide.

#### The On-Site Inspection

The potential sampling sites in buildings are any water sources that may possibly be aerosolized. Some water sources implicated in legionellosis are cooling towers, evaporative condensers, potable water heaters and holding tanks, pipes containing stagnant warm water, shower heads, decorative fountains, faucet aerators, nebulizers, mister reservoirs, and whirlpool baths.

#### Sample Collection

**COOLING TOWERS OR EVAPORATIVE CONDENSERS.** Legionellosis is primarily spread by airborne transmission. Consequently, individuals who collect samples should avoid breathing aerosols contaminated with *Legionella* bacteria. This can be accomplished by:

- \* Having the cooling tower fan turned off when samples are taken.

- \* If the above is not possible, individuals collecting samples should wear a fit-tested, half-face or full-face mask that is equipped with a bacteriologic filter that has a H.E.P.A. efficiency rating.

Collect samples from each reservoir in 250-milliliter sterile screw-capped polypropylene bottles. Collect a sample by inverting the bottle and moving it in a single-direction subsurface motion, making sure that the water entering the bottle has not been contaminated by the water moving over the hand. When sampling, use sterile, disposable gloves and change gloves between each sample. Avoid collecting excessive sediment. Record temperature. If chlorine is used as a biocide, request bottles containing sodium thiosulfate.

**POTABLE WATERS.** Samples should be collected in 250-milliliter sterile screw-capped polypropylene bottles. Potable hot water outlets may be analyzed by taking two samples -- the pre-flush sample and the post-flush sample. This will allow assessment as to whether amplification of *Legionella* is due to terminal line amplification or upstream amplification in or near the hot water source. For sampling purposes, the plumbing system may be divided into those portions primarily served by individual hot water heaters (mini-systems). Each mini-system may be considered as a separate system for sampling purposes.

- \* For potable hot water lines, turn on the hot water tap and collect the first 250 milliliters from sinks, showers, hoses, etc. (pre-flush). Then allow the hot water to run at full force for 1 minute (or when the water is hot) and take a second 250-milliliter sample (post-flush). Mark the first sample "pre-flush" and the second sample "post-flush". Record temperature of hot water. Each of them should be analyzed as separate samples.

- \* For potable (drinkable) water in cold water lines, such as from drinking fountains, or from wash basin faucets, showers, and hot water heaters, collect 250 milliliters of water that comes from the spigot or outlet. Record water temperature.

**OTHER NON-POTABLE WATERS.** For waters from other sources such as basin water, condensation drip pan water, surface water in reservoirs, cisterns, and fire sprinkler systems, decorative fountains, whirl-pools, etc., collect 250 milliliters. When possible, include water near side or bottom of vessel or reservoir. Avoid collecting excessive sediment. Record water temperature.

#### Sample Identification Record

Complete the Sample Identification Record on the back of this page for each sample. Number the bottles with an identification number. Describe sample associated with each sample number on the sample identification sheet. If biocides were used, indicate in the space provided, the type of biocide, such as halogen, phenolic, "quat", etc., rather than a trade or brand name.

#### Shipment of Samples to the Laboratory

Place bottles in insulated boxes to protect the samples from extremes in temperature during transport. Samples should be packed in such a manner that leakage of water does not occur during shipment. The following is recommended:

- \* Screw the cap tightly on each bottle. Place each bottle in a plastic bag that contains absorbent paper and close the bag.

- \* Place the sealed plastic bags containing the samples in a cardboard box or other rigid container and add sufficient packing (e.g., paper or styrofoam chips) to cushion and hold the bottles firmly in place during shipment and to provide insulation.

- \* **Send the samples at ambient temperature, by an overnight carrier, preferably Federal Express, on the same day the samples are collected. The samples should be in transit only overnight. Notify PathCon Laboratories regarding shipping information, e.g., date of shipment, date of arrival, airbill numbers, etc.**

#### Send samples to:

**PathCon Laboratories  
270 Scientific Drive, Suite 3  
Norcross GA 30092  
Phone # (770) 446-0540**

PathCon Laboratories - Project Number \_\_\_\_\_

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**Sample Identification Record**

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For client signature:

Released by: \_\_\_\_\_

Date: \_\_\_\_\_ Time: \_\_\_\_\_

For PathCon signature:

Received by: \_\_\_\_\_

Date: \_\_\_\_\_ Time: \_\_\_\_\_

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Sample # \_\_\_\_\_ Description: \_\_\_\_\_  
( ) Potable ( ) Cooling Tower ( ) Other non-potable

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Sample # \_\_\_\_\_ Description: \_\_\_\_\_  
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Biocide Used (Indicate Sample # and Biocide): \_\_\_\_\_

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PathCon Number: \_\_\_\_\_ Date: \_\_\_\_\_ Purchase Order or Reference Number: \_\_\_\_\_

Investigator: \_\_\_\_\_ Telephone/Fax: \_\_\_\_\_

Company or Affiliation: \_\_\_\_\_

Address for Report: \_\_\_\_\_

Address for Invoice: \_\_\_\_\_