



H P E N V I R O N M E N T A L
I N C O R P O R A T E D

Understanding Legionella Test Results

Bacteria in the family Legionellaceae, including Legionella pneumophila, are ubiquitous in surface water, groundwater & estuarine environments. Legionella are also frequently present in low concentrations in evaporative condenser water (e.g. cooling towers). When healthy individuals are exposed to water mists (aerosols) containing a low concentration of Legionella the health risk is LOW. However, as the concentration increases, the health risk also increases. Elderly & hospitalized patients are at greater risk than healthy individuals.

Reading & Interpreting HPE’s Legionella Lab Report: Lab reports are designed to convey detailed technical information. These reports can be confusing if you are not familiar with the underlying science. To assist you in reading and understanding these reports we provide the following guidance. It is important that you seek expert advice if the data are confusing or suggest a problem condition. An example report is attached for your consideration.

For the test “Bacteria Culture – 37°C/BCYE/CCVC – Legionella pneumophila” you will notice 4 entries under the heading “Analyte” as seen below. (Note: If Legionella is not present in the sample, only the 1st & 4th entries appear on the report.)

- Legionella pneumophila
 - L. pneumophila serogroup 1
 - L. pneumophila serogroup 2-14
- Legionella not-pneumophila

You should focus on the first line result, “Legionella pneumophila”. The 2nd & 3rd lines (serogroups 1 & 2-14), if they appear at all, are only relevant if the total Legionella pneumophila concentration (Line 1) is greater than 100 CFU/mL and there is indication of exposure. In addition to the Line 1 result for “Legionella pneumophila”, on Line 4 we also report the concentration for “Legionella not-pneumophila”. If the reported concentration of “Legionella not-pneumophila” is greater than 10 you should contact the laboratory for additional information & interpretation.

When comparing the results in the attached report against the recommendation table provided below, the result of “No Growth” for Sample 2 is equated to a recommendation for continued testing at a normal interval. For the Sample 1 result of 200 CFU/mL, the recommendation is “Contact experts in system maintenance and treatment and, in conjunction with these experts, devise and execute a plan to maintain Legionella concentrations at <10. Retest as soon as possible to monitor the effectiveness of maintenance and biocide program revisions”.

Result-based Recommendations: Testing water to monitor the concentration of Legionella bacteria is important to insure a safe condition. Additional measures are also important, including: (1) maintaining appropriate biocide treatment, and (2) periodically cleaning water reservoirs. Taken together, these and other measures decrease the risk for exposure to Legionella bacteria. The following table provides recommendations based on culture results for the bacteria Legionella pneumophila.

Level	CFU/mL	Recommendation
1	No Growth to <10	Retest at normal interval.
2	10-99	Review biocide program and modify treatment as necessary to maintain Legionella bacteria at <10. Retest as soon as possible to monitor the effectiveness of biocide treatment.
3	100-999	Contact experts in system maintenance and treatment and, in conjunction with these experts, devise and execute a plan to maintain Legionella concentrations at <10. Retest as soon as possible to monitor the effectiveness of maintenance and biocide program revisions.
4	>1,000	Urgent response is required. Immediately clean and disinfect the water system. Contact experts in system maintenance and treatment and, in conjunction with these experts, devise and execute a plan to maintain Legionella concentrations at <10. Retest as soon as possible to monitor the effectiveness of maintenance and biocide program revisions. Increase the frequency of testing during the current cooling season.



Report Number: **113647**

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Certificate of Laboratory Analysis

ACME Corporation
Attn: Chuck Maltese
123 Main Street
Snowflake, AZ 85937

Date Received: 06/03/11
Date Reported: 06/13/11
Project Location: Regional Office

EXAMPLE

1. Client Sample No.: **CT-060211-01** HPE Sample Number: 113647-01
 Sample Matrix: Cooling Tower Water Date Collected: 06/02/11
 Sample Location: Cooling Tower #1, Bldg. 100 upper level roof

Bacterial Culture - 37°C/BCYE/CCVC - Legionella pneumophila See footnotes: 1

Preparation Method: CDC Protocol Date Prepared: 06/03/11
Analysis Method: SM 9260J Date Analyzed: 06/13/11 Container Tested: EPA 100 mL

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Reporting Limit</u>	<u>Qualifier</u>
Legionella pneumophila	200	CFU/mL	10	
L. pneumophila Serogroup 1	160	CFU/mL	10	
L. pneumophila Serogroup 2-14	40	CFU/mL	10	
Legionella not-pneumophila	No Growth	CFU/mL	10	

2. Client Sample No.: **CT-060211-02** HPE Sample Number: 113647-02
 Sample Matrix: Cooling Tower Water Date Collected: 06/02/11
 Sample Location: Cooling Tower #2, Bldg. 100 upper level roof

Bacterial Culture - 37°C/BCYE/CCVC - Legionella pneumophila See footnotes: 1

Preparation Method: CDC Protocol Date Prepared: 06/03/11
Analysis Method: SM 9260J Date Analyzed: 06/13/11 Container Tested: EPA 100 mL

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Reporting Limit</u>	<u>Qualifier</u>
Legionella pneumophila	No Growth	CFU/mL	10	
Legionella not-pneumophila	No Growth	CFU/mL	10	

Report Notes:

- (1) Whenever water contains Legionella greater than 10 CFU/mL (>10), review biocide program and modify treatment as necessary to maintain Legionella bacteria at <10. Whenever water contains Legionella greater than 100 CFU/mL (>100), contact experts in system maintenance and treatment and, in conjunction with these experts, devise and execute a plan to maintain Legionella concentrations at <10. Whenever water contains Legionella greater than 1000 CFU/mL (>1000), urgent response is required. Immediately clean and disinfect the water system. Contact experts in system maintenance and treatment and, in conjunction with these experts, devise and execute a plan to maintain Legionella concentrations at <10. Increase the frequency of testing during the current cooling season. In all cases whenever water contains Legionella greater than 10 CFU/mL (>10), retest as soon as possible to monitor the effectiveness of maintenance and biocide program revisions.

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