

Aerobiology Laboratory - VA
 43760 Trade Center Place
 Sterling, Virginia 20166
 Attn: Chris Blevins
 Project: **Legionella Test**
 Condition of Sample(s) Upon Receipt: Acceptable

Date Collected: 03/10/2021
 Date Received: 03/11/2021
 Date Analyzed: 03/21/2021
 Date Reported: 03/22/2021
 Project ID: 21021131
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Legionella Summary Sheet

| Client Sample # | Sample Location | Volume (mL) | MRL (CFU/mL) | Results (CFU/mL) | Legionella Isolated |
|-----------------|-----------------------------------|-------------|--------------|------------------|---|
| 1 | Kitchen Sink - Potable Water | 250 | 0.4 0.4 | <1 2 | Legionella pneumophila Serogroup 2-15 Legionella pneumophila Serogroup 1 |
| 2 | Kitchen Sink - Potable Water | 250 | 0.4 | 1 | Legionella pneumophila Serogroup 2-15 |
| 3 | Boiler Room 1 - Non-Potable Water | 250 | 0.8 0.8 | 2 2 | Legionella pneumophila Serogroup 1 Legionella species (not pneumophila) |
| 4 | Boiler Room 2 - Non-Potable Water | 250 | 0.8 | <1 | Legionella pneumophila Serogroup 2-15 |
| 5 | Cooling Tower 1 | 1 | 10 | 40 | Legionella pneumophila Serogroup 2-15 |
| 6 | Cooling Tower 2 | 1 | 10 | 30 | Legionella pneumophila Serogroup 1 |
| 7 | Cooling Tower 3 | 1 | 10 | N L I | |

N L I = No Legionella isolated



SunBun Bowling

SunBun Bowling
 Director of Quality Assurance

Suzanne S. Blevins

Suzanne Blevins
 Laboratory Director

Legionella Facts

1. TESTING METHODOLOGY: Culture remains the recommended method for Legionella monitoring. Standardized culture procedures include ISO 11731: *Detection and Enumeration of Legionella* and CDC: *Procedures for the Recovery of Legionella from the Environment*. Ref: BSR / ASHRAE Standard 188
2. Legionella species recovered from culture method include *Legionella pneumophila* and *Legionella* species not pneumophila. All *Legionella pneumophila* isolates are run against Serogroup 1 reagent and Serogroup 2-15 reagent. *Legionella* species not pneumophila isolates are screened in *Legionella* species reagent. (This species reagent includes *micdadei*, *bozemanii*, *dumoffi*, *longbeachae*, *jordanis*, *gormanii*, *anisa* and *felei*)

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Client Sample #: 1
Sample Location: Kitchen Sink - Potable Water
Test: 1015, WATER, Legionella Analysis, CDC Method: POTABLE SOP
2.35/SOP 2.22
Results: **2 CFU/mL**

Lab Sample #: 21021131-001

Liquid Volume: **250 (mL)**

| Organism(s) Isolated: | Raw Count | CFU/mL | % Total | MRL |
|---------------------------------------|-----------|--------|---------|------------|
| Legionella pneumophila Serogroup 1 | 4 | 2 | 67 | 0.4 CFU/mL |
| Legionella pneumophila Serogroup 2-15 | 2 | <1 | 33 | 0.4 CFU/mL |
| | 6 | 2 | ~100% | |

Client Sample #: 2
Sample Location: Kitchen Sink - Potable Water
Test: 1015, WATER, Legionella Analysis, CDC Method: POTABLE SOP
2.35/SOP 2.22
Results: **1 CFU/mL**

Lab Sample #: 21021131-002

Liquid Volume: **250 (mL)**

| Organism(s) Isolated: | Raw Count | CFU/mL | % Total | MRL |
|---------------------------------------|-----------|--------|---------|------------|
| Legionella pneumophila Serogroup 2-15 | 3 | 1 | 100 | 0.4 CFU/mL |
| | 3 | 1 | ~100% | |

Client Sample #: 3
Sample Location: Boiler Room 1 - Non-Potable Water
Test: 1015, WATER, Legionella Analysis, CDC Method: NON-POTABLE SOP
2.35/SOP 2.22
Results: **4 CFU/mL**

Lab Sample #: 21021131-003

Liquid Volume: **250 (mL)**

| Organism(s) Isolated: | Raw Count | CFU/mL | % Total | MRL |
|--------------------------------------|-----------|--------|---------|------------|
| Legionella pneumophila Serogroup 1 | 2 | 2 | 40 | 0.8 CFU/mL |
| Legionella species (not pneumophila) | 3 | 2 | 60 | 0.8 CFU/mL |
| | 5 | 4 | ~100% | |

Client Sample #: 4
Sample Location: Boiler Room 2 - Non-Potable Water
Test: 1015, WATER, Legionella Analysis, CDC Method: NON-POTABLE SOP
2.35/SOP 2.22
Results: **<1 CFU/mL**

Lab Sample #: 21021131-004

Liquid Volume: **250 (mL)**

| Organism(s) Isolated: | Raw Count | CFU/mL | % Total | MRL |
|---------------------------------------|-----------|--------|---------|------------|
| Legionella pneumophila Serogroup 2-15 | 1 | <1 | 100 | 0.8 CFU/mL |
| | 1 | <1 | ~100% | |

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Client Sample #: 5
Sample Location: Cooling Tower 1
Test: 1015, WATER, Legionella Analysis, CDC Method: NON-POTABLE SOP
2.35/SOP 2.22
Results: **40 CFU/mL**

Lab Sample #: 21021131-005

Liquid Volume: **1 (mL)**

| Organism(s) Isolated: | Raw Count | CFU/mL | % Total | MRL |
|---------------------------------------|-----------|--------|---------|-----------|
| Legionella pneumophila Serogroup 2-15 | 4 | 40 | 100 | 10 CFU/mL |
| | 4 | 40 | ~100% | |

Client Sample #: 6
Sample Location: Cooling Tower 2
Test: 1015, WATER, Legionella Analysis, CDC Method: NON-POTABLE SOP
2.35/SOP 2.22
Results: **30 CFU/mL**

Lab Sample #: 21021131-006

Liquid Volume: **1 (mL)**

| Organism(s) Isolated: | Raw Count | CFU/mL | % Total | MRL |
|------------------------------------|-----------|--------|---------|-----------|
| Legionella pneumophila Serogroup 1 | 3 | 30 | 100 | 10 CFU/mL |
| | 3 | 30 | ~100% | |

Client Sample #: 7
Sample Location: Cooling Tower 3
Test: 1015, WATER, Legionella Analysis, CDC Method: NON-POTABLE SOP
2.35/SOP 2.22
Results: **No Legionella isolated**

Lab Sample #: 21021131-007

Liquid Volume: **1 (mL)**
MRL: **10 CFU/mL**

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Legionella Facts

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1. TESTING METHODOLOGY: Culture remains the recommended method for Legionella monitoring. Standardized culture procedures include ISO 11731:2017 *Detection and Enumeration of Legionella* and CDC: *Procedures for the Recovery of Legionella from the Environment*. Ref: BSR / ASHRAE Standard 188-2018
2. Legionella species recovered from culture method include *Legionella pneumophila* and *Legionella* species not pneumophila. All *Legionella pneumophila* isolates are run against Serogroup 1 reagent and Serogroup 2-15 reagent. *Legionella* species not pneumophila isolates are screened in *Legionella* species reagent. (This species reagent includes *micdadei*, *bozemanii*, *dumoffi*, *longbeachae*, *jordanis*, *gormanii*, *anisa* and *feelei*)
3. If the final quantitative result is corrected for contamination based on the blank, the blank correction is stated in the sample comments section of the report.

Action Criteria for Legionella

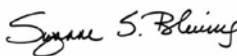
| Legionella / ml | Suggested Remedial Action: | | |
|--------------------|---|---------------|-------------------|
| | Cooling Towers and Evaporative Condensers | Potable Water | Humidifier/Fogger |
| Detectable, but <1 | 1 | 2 | 3 |
| 1 - 9 | 2 | 3 | 4 |
| 10 - 99 | 3 | 4 | 5 |
| 100 - 999 | 4 | 5 | 5 |
| ≥1,000 | 5 | 5 | 5 |

Remedial Actions:

- Level 1: Review routine maintenance program recommended by the manufacturer of the equipment to ensure that the recommended program is being followed. The presence of barely detectable number of Legionella represents a low level of concern.
- Level 2: Implement action 1. Conduct follow-up analysis after a few weeks for evidence of further Legionella amplification. This level of Legionella represents little concern, but the number of organisms detected indicates that the system is a potential amplifier of Legionella.
- Level 3: Implement action 2. Conduct review of premises for the direct and indirect bioaerosols contact with occupants and health risk status of people who may come in contact with bioaerosols. Depending on the results of the review of the premises, action related to cleaning and/or biocide treatment of the equipment may be indicated. This level of Legionella represents a low but increased level of concern.
- Level 4: Implement action 3. Cleaning and/or biocide treatment of the equipment is indicated. This level of Legionella represents a moderately high level of concern, since it is approaching levels that may cause outbreaks. It is uncommon for samples to contain number of Legionella that fall in this category.
- Level 5: Immediate cleaning and/or biocide treatment of the equipment is definitely indicated. Conduct post treatment analysis to ensure effectiveness of the corrective action. The level of Legionella represents a high level of concern, since it poses the potential for causing an outbreak. It is very uncommon for samples to contain number of Legionella that fall in this category.

Ref: Legionella: Current Status and Emerging Perspectives: Barbaree, Breiman, Dufour: ASM




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