HS24 LEGIONELLA
Management Program

Subject Matter Expert
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1.0 INTRODUCTION
The purpose of this program is to outline the roles, responsibilities and actions required to comply with the NYS Code Rule Part 4 of Title 10 Protection Against Legionella.

2.0 SCOPE
This program applies to the Ithaca Campus, Geneva Campus, NYC Cornell Club. This program does not cover Weill Medical College.

3.0 ROLES AND RESPONSIBILITIES
3.1 Environment, Health and Safety
3.1.1 Develop and oversee the implementation of the Legionella Management Program
3.1.2 Identify and communicate legal, regulatory and policy requirements associated with the program
3.1.3 Submit and oversee any variance or waiver request submitted to Local Health Department.
3.1.4 Notify local Department of Health of any Legionella culture sample result that exceeds 1,000 Colony forming units (CFU) per milliliter.
3.1.5 Provide notification to the public as determined by the local health department
3.2 Water Tower Owner (see section 6.0)
3.2.1 Develop a maintenance program and plan for each cooling tower, developed in accordance with section 7.2 of Legionellosis: Risk Management for Building Water Systems (ANSI/ASHRAE 188-2015)
3.2.2 Perform activities outlined in section 4.0 Procedures
3.2.3 Maintain records per section 8.0
3.2.4 Immediately report any Legionella culture sample result that exceeds 1,000 (CFU) per milliliter to EHS department.
3.2.5 Report information to Preventive Maintenance Program Manager in a timely fashion to allow for reporting specified in section 5.0
3.3 Preventive Maintenance Program Manager
3.3.1 Report to the NY DOH information per section 5.0 using the statewide electronic system
3.3.2 Maintain an inventory of all known cooling towers.

4.0 PROCEDURES
4.1 Routine Inspection, Cleaning and Treatment
4.1.1 All cooling towers will be subject to monthly inspections and treatment adjustment during the period of use. (Units may elect more frequent assessments, for example, it is common to do screening testing on a weekly or biweekly basis.)
4.1.2 Should the inspection show visible debris in the basin and/or other objectionable conditions, corrective action will be commenced immediately following the tower specific maintenance plan

4.2 Biological Testing and Remedial Action Plans
4.2.1 HPC Activity:
4.2.1.1 At each monthly service visit, a dip slide or HPC will be taken from each basin and analyzed. Units may opt for more frequent sampling
4.2.1.2 The biocide regimen will be presumed adequate if the dip slide is found to be less than or equal to 10,000 CFU/ml
4.2.1.3 If the dip slide is greater than 10,000 CFU/ml the biocide regimen will be immediately examined and modified to correct conditions. Retesting will
occur within 30 calendar days. Modification to the treatment regimen may be required
4.2.1.4 All results and actions will be logged
4.2.1.5 Reference: Cooling Technology Institute WTB-148

Recommended Targets Routine Treatment of Cooling Water Systems (from CTI WTB-148(08))

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Dipslides</th>
<th>Agar Pour Plate or Petri film</th>
<th>Microscopic Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plank tonic Counts (bulk water)</td>
<td>&lt;10,000 CFU/ml</td>
<td>&lt;10,000 CFU/ml</td>
<td>No higher life forms</td>
</tr>
<tr>
<td>Sessile Counts (surfaces)</td>
<td>&lt;100,000 CFU/cm²</td>
<td>&lt;100,000 CFU/cm²</td>
<td>No higher life forms</td>
</tr>
<tr>
<td>Deposits</td>
<td>NA</td>
<td>NA</td>
<td>No higher life forms</td>
</tr>
</tbody>
</table>

4.2.2 Legionella Activity:
4.2.2.1 The tower specific maintenance plan will indicate when testing for Legionella will occur. Testing will be conducted at a frequency not to exceed 90 days while the tower is in use.
4.2.2.2 In addition to routine testing, testing will be conducted if any of the following occur.
   4.2.2.2.1 Within 14 days after start-up following maintenance
   4.2.2.2.2 Power failure of sufficient duration to allow for the growth of bacteria
   4.2.2.2.3 Loss of biocide treatment sufficient to allow for the growth of bacteria
   4.2.2.2.4 Failure of conductivity control to maintain proper cycles of concentration
   4.2.2.2.5 As determination by the NY DOH or local health department that one or more cases of legionellosis is or may be associated with the cooling tower, based upon epidemiologic data or laboratory testing
   4.2.2.2.6 Any other conditions specified by the NY DOH or local health department

4.2.3 Results from Legionella testing will result in the immediate corrective actions found in Appendix 4-A to the regulation
4.2.4 All records and analysis will be maintained
4.2.5 The samples will be analyzed by a laboratory approved to perform such analysis by the New York State Environmental Laboratory Approval Program (ELAP)

4.3 Disinfection
4.3.1 All persons who apply biocides will hold Class 7G commercial pesticide applicator certification, or pesticide technician status, from the NYS Department of Environmental Conservation, and act within the scope of the regulations
4.3.2 All biocides used will be registered with the NYS Department of Environmental Conservation as required
4.3.3 The goal of treatment is to keep a residual level as specified in the tower specific maintenance plan

4.4 Inspection
4.4.1 Cooling tower will be inspected prior to seasonal startup and at intervals not exceeding 90 days while in use
4.4.2 All inspections shall be performed by: a NYS licensed professional engineer, certified industrial hygienist, certified water technologist; environmental consultant or water treatment professional with training and experience performing inspection according to ASHRAE 188-2015.

4.4.3 Inspections shall include an evaluation of:
- 4.4.3.1 the cooling tower and associated equipment for the presence of organic material, biofilm, algae, and other visible contaminants.
- 4.4.3.2 the general condition of the cooling tower, basin, packing material, and drift eliminator.
- 4.4.3.3 water make-up connections and control.
- 4.4.3.4 proper functioning of the conductivity control.
- 4.4.3.5 proper functioning of all dosing equipment (pumps, strain gauges).

4.5 Annual Certification

4.5.1 By November 1 of each year, contract a third party to certify to the Department of Health, that all cooling towers under their control were inspected, tested, cleaned, and disinfected in compliance with the DOH regulations, that the condition of the cooling towers is appropriate for intended use, and that a maintenance program and plan has been developed and implemented.

5.0 REPORTING

5.1 Reporting Requirements

<table>
<thead>
<tr>
<th>Report by</th>
<th>Time to Report</th>
<th>Activity</th>
<th>Report to</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preventative Maintenance Program Mgr</td>
<td>Every 90 days</td>
<td>Date of last bacteriological culture sample collection, the analysis results, and date of any required remedial action;</td>
<td>NYS Electronic Reporting System</td>
</tr>
<tr>
<td>Preventative Maintenance Program Mgr</td>
<td>Every 90 days</td>
<td>Legionella sample collection, sample results, and date of any required remedial action;</td>
<td>NYS Electronic Reporting System</td>
</tr>
<tr>
<td>Preventative Maintenance Program Mgr</td>
<td>Every 90 days</td>
<td>Date of last inspection</td>
<td>NYS Electronic Reporting System</td>
</tr>
<tr>
<td>Preventative Maintenance Program Mgr</td>
<td>Every 90 days</td>
<td>Date of last certification</td>
<td>NYS Electronic Reporting System</td>
</tr>
<tr>
<td>Preventative Maintenance Program Mgr</td>
<td>Every 90 days</td>
<td>Date of removal or permanent discontinued use of cooling tower, if applicable</td>
<td>NYS Electronic Reporting System</td>
</tr>
<tr>
<td>Tower Owner</td>
<td>Immediately</td>
<td>Legionella Results &gt; 1,000 CFU per milliliter</td>
<td>EHS</td>
</tr>
<tr>
<td>EHS</td>
<td>Immediately</td>
<td>Legionella Results &gt; 1,000 CFU per milliliter</td>
<td>Local Department of Health</td>
</tr>
</tbody>
</table>
5.2 90-day Reporting Dates
- September 30
- December 30
- March 30
- June 30

6.0 Registered COOLING TOWER AND TOWER RESPONSIBLE PERSON

<table>
<thead>
<tr>
<th>Building</th>
<th>County</th>
<th>Owner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Robert Purcell Community Center</td>
<td>Tompkins</td>
<td>Facilities Services Director</td>
</tr>
<tr>
<td>Schwartz Performing Arts Center</td>
<td>Tompkins</td>
<td>Facilities Services Director</td>
</tr>
<tr>
<td>Lynah Rink</td>
<td>Tompkins</td>
<td>Facilities Services Director</td>
</tr>
<tr>
<td>Wilson Laboratory (EWC-1)</td>
<td>Tompkins</td>
<td>Facilities Services Director</td>
</tr>
<tr>
<td>Wilson Laboratory (EWC-2)</td>
<td>Tompkins</td>
<td>Facilities Services Director</td>
</tr>
<tr>
<td>Wilson Laboratory (EWC-3)</td>
<td>Tompkins</td>
<td>Facilities Services Director</td>
</tr>
<tr>
<td>Wilson Laboratory (CT-1 / CSER)</td>
<td>Tompkins</td>
<td>Facilities Services Director</td>
</tr>
<tr>
<td>Guterman Bioclimatic Lab.</td>
<td>Tompkins</td>
<td>Facilities Services Director</td>
</tr>
<tr>
<td>Sage House</td>
<td>Tompkins</td>
<td>Facilities Services Director</td>
</tr>
<tr>
<td>Lab of Ornithology</td>
<td>Tompkins</td>
<td>Facilities Services Director</td>
</tr>
<tr>
<td>Morrison Hall</td>
<td>Tompkins</td>
<td>Facilities Services Director</td>
</tr>
<tr>
<td>Cornell Pomology Storage</td>
<td>Tompkins</td>
<td>Facilities Services Director</td>
</tr>
<tr>
<td>Kenneth Post Laboratory</td>
<td>Tompkins</td>
<td>Facilities Services Director</td>
</tr>
<tr>
<td>Insectary</td>
<td>Tompkins</td>
<td>Facilities Services Director</td>
</tr>
<tr>
<td>Dimock</td>
<td>Tompkins</td>
<td>Facilities Services Director</td>
</tr>
<tr>
<td>East Hill Office Building</td>
<td>Tompkins</td>
<td>Facilities Services Director</td>
</tr>
<tr>
<td>Chilled Water Plant #3 - Cooling Tower #4</td>
<td>Tompkins</td>
<td>Director of Utilities and Energy</td>
</tr>
<tr>
<td>Chilled Water Plant #3 - Cooling Tower #7</td>
<td>Tompkins</td>
<td>Director of Utilities and Energy</td>
</tr>
<tr>
<td>Chilled Water Plant #3 - Cooling Tower #8</td>
<td>Tompkins</td>
<td>Director of Utilities and Energy</td>
</tr>
<tr>
<td>4904 Hedrick Hall</td>
<td>Ontario</td>
<td>Geneva Director of Facilities</td>
</tr>
<tr>
<td>4934 Food Research - Cold Rooms</td>
<td>Ontario</td>
<td>Geneva Director of Facilities</td>
</tr>
<tr>
<td>4934 Food Research - PP Extractor</td>
<td>Ontario</td>
<td>Geneva Director of Facilities</td>
</tr>
<tr>
<td>4935A Barton Lab - Tower 1 (Absorber)</td>
<td>Ontario</td>
<td>Geneva Director of Facilities</td>
</tr>
<tr>
<td>4935A Barton Lab Tower 2 (Process)</td>
<td>Ontario</td>
<td>Geneva Director of Facilities</td>
</tr>
<tr>
<td>Cornell Club</td>
<td>Manhattan</td>
<td>Cornell Club General Manager</td>
</tr>
<tr>
<td>Cornell Club</td>
<td>Manhattan</td>
<td>Cornell Club General Manager</td>
</tr>
</tbody>
</table>
7.0 RECORDS AND DOCUMENT CONTROL

7.1 The following records will be maintained for at least three years
   7.1.1 sampling and analyses
   7.1.2 disinfection schedules and applications
   7.1.3 inspection findings, deficiencies, and corrective actions
   7.1.4 certifications

7.2 A copy of the maintenance program and plan will be located at the premises where a cooling
tower is located.

7.3 Records and plan shall be made available to the department or local health department immediately upon request.

8.0 DEFINITIONS

8.1 Bacteriologic culture sampling and analysis. The term bacteriologic culture sampling and analysis means the collection of a water sample for the measurement of live culture growth of the aerobic bacterial populations by heterotrophic plate count (HPC), dip slides, or similar method used by the industry and according to the manufacturer’s directions.

8.2 Cooling Tower means a cooling tower, evaporative condenser, fluid cooler or other wet cooling device that is capable of aerosolizing water, and that is part of, or contains, a recirculated water system and is incorporated into a building’s cooling process, an industrial process, a refrigeration system, or an energy production system.

8.3 Legionella culture sampling and analysis. The term Legionella culture sampling and analysis means the collection of a water sample for the measurement of the live culture of Legionella involving the use of specialized media and laboratory methods for growth to determine the species and serogroup.

9.0 REFERENCES

- NYS Department of Health Emergency Regulations (included here as Appendix B)

10.0 DOCUMENT HISTORY

<table>
<thead>
<tr>
<th>Date</th>
<th>Change</th>
<th>Made by</th>
</tr>
</thead>
<tbody>
<tr>
<td>HS24_LEG_PG_Legionella</td>
<td>Controlled document if viewed on line. Uncontrolled if printed. Valid 14 days from print date and time 10/14/19 8:46 AM</td>
<td>EHS</td>
</tr>
<tr>
<td>Date</td>
<td>Action</td>
<td>By</td>
</tr>
<tr>
<td>----------</td>
<td>------------------------------------------------------------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>7/18/16</td>
<td>Initial Document</td>
<td>Fitzpatrick</td>
</tr>
<tr>
<td>8/12/16</td>
<td>Added section 5.2 Reporting Dates, fixed misspelled tower name in section 6</td>
<td>Fitzpatrick</td>
</tr>
</tbody>
</table>