

NEW YORK CITY & STATE COMBINED LEGIONELLA LAWS FOR COOLING TOWERS

FREE DOWNLOAD INCLUDES:
NYCRR Title 10 Part 4: Protection Against Legionella,
Local Law 77 of 2015, and
Chapter 8 of Title 24 of the
Rules of the City of New York



New York Codes, Rules and Regulations, Title 10 – Part 4: Protection Against Legionella

Statutory Authority: Public Health Law, section 225(5)(a)

**ADOPTED PERMANENT LEGISLATION
EFFECTIVE JULY 6th, 2016**

NOTICE OF ADOPTION OBTAINED FROM THE

NEW YORK STATE REGISTER

**July 6, 2016
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**DEPARTMENT OF STATE
Division of Administrative Rules**

PURSUANT TO THE PROVISIONS OF THE State Administrative Procedure Act, NOTICE is hereby given of the following action:

Action taken: Addition of Part 4 to Title 10 NYCRR.

Statutory authority: Public Health Law, section 225(5)(a) Subject: Protection Against Legionella.

Purpose: To protect the public from the immediate threat posed by Legionella.

Substance of final rule: The following summarizes the purpose and impact of each section. The summary is for convenience, and it is not a substitute for the express terms of the regulation.

The *New York State Register* is available on-line at:

www.dos.ny.gov/info/register.htm

Protection Against Legionella

Effective date: 7/6/16

SUMMARY OF EXPRESS TERMS

The following summarizes the purpose and impact of each section. The summary is for convenience, and it is not a substitute for the express terms of the regulation.

- 4-1.1 Scope.
 - Provides that the regulation applies to all owners of cooling towers.
- 4-1.2 Definitions.
 - This section defines key terms.
 - In particular, a “cooling tower” is now defined as: “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.”
 - The definition of “owner” is now defined as follows: “any person, agent, firm, partnership, corporation or other legal entity having a legal or equitable interest in, or control of, a cooling tower or the premises where the cooling tower is located. In all instances, the legal owner of the building shall be deemed an owner within the meaning of the Subpart. Further, where a tenant owns a cooling tower that services the tenant’s leased premises, the tenant is an “owner” within the meaning of this Subpart. Additionally, if a tenant does not own the cooling tower but has a lease or contractual arrangement to maintain the cooling tower, the tenant shall be deemed an agent having control of the cooling tower, and thus an “owner,” for purposes of this Subpart.”

- 4-1.3 Electronic registration and reporting.
 - Requires owners of cooling towers to register such towers with the Department using a statewide electronic system. Required registration fields have been slightly revised.
 - Establishes a schedule for routine *Legionella* culture sampling and analysis, which includes reporting intervals not exceeding 90 days.
 - Requires reporting of certain events, including:
 - last bacteriological culture sample collection date and result;
 - last *Legionella* culture sample collection date and result;
 - date of any required remedial action;
 - last inspection date;
 - last certification date;
 - date of removal or permanent discontinued use of a cooling tower; and
 - cooling tower system volume (including any piping, basin, and sump).
 - The proposed regulations generally require reporting of certain events every 90 days. This is a change from the emergency regulations, which required reporting within 10 days.
 - Affords public access to the statewide electronic system, as appropriate, and requires such system to be accessible and searchable to local health departments.
 - Clarifies that where both a landlord and a tenant are considered “owners” of a cooling tower pursuant to Section 4-1.2, then either the owner or the tenant shall register the cooling tower. Both parties, however, are obligated to ensure that registration and reporting are completed.
- 4-1.4 Maintenance program and plan.

- Requires owners to obtain or update the maintenance program and plan for all operational cooling towers by September 1, 2016, and prior to the startup of newly installed cooling towers. The plan must include the following elements:
 - A schedule for routine bacteriological culture sampling and analysis to assess microbiological activity. The proposed regulation establishes a new, minimum sampling requirement, in which such sampling and analysis must be conducted: (1) at intervals not to exceed 30 days while the cooling tower is in use; and (2) at additional times, as needed, to validate process adjustments. The component that specifies a minimum sampling interval is a new requirement.
 - The emergency regulation contained a requirement for a schedule of routine *Legionella* culture sampling and analysis. The new regulation requires sampling within two weeks of seasonal start-up and thereafter at intervals not to exceed 90 days. In addition, the new regulation requires that year-round use towers be sampled at intervals not to exceed 90 days and within two weeks after start-up following maintenance. These are new requirements.
 - Provisions for immediate *Legionella* culture sampling and analysis following specified conditions, such as power failure, loss of biocide of sufficient duration to allow for the growth of bacteria, and if the State or local health department determines that one or more cases of legionellosis is or may be associated with the tower. In addition to the conditions above, the proposed regulation describes conditions whereby the department or local health department may require sampling.

- Provisions requiring immediate and appropriate action, including any necessary remedial action, in response to bacteriological and *Legionella* culture analyses.
 - Provisions requiring that any and all *Legionella* culture analysis must be performed in accordance with Section 4-1.5. This is a new requirement.
 - Provisions for shutdown and for removing or permanently discontinuing use of a cooling tower. These are new requirements.
 - Provisions requiring appropriate actions during idle conditions. This is a new requirement.
 - Provisions requiring cleaning and disinfection of a cooling tower that has been shut down without treatment for more than five days. This is a new requirement.
- 4-1.5 *Legionella* culture analysis.
 - Requires that *Legionella* culture analysis be performed by a laboratory that is approved to perform such analysis by the New York State Environmental Laboratory Approval Program (ELAP). This is a new requirement.
- 4-1.6 Notification.
 - Requires an owner of a cooling tower to notify the local health department within 24 hours of receipt of a *Legionella* culture sample result that exceeds 1,000 colony forming units per milliliter (CFU/mL). The owner must also notify the public of the test result in a manner determined by the local health department or by the department, if the department elects to determine the manner of public notification. This is a new requirement.

- 4-1.7 Disinfection.
 - Establishes qualifications of persons who may disinfect a cooling tower.
 - Requires that the name and certification number of the applicator or the business name and registration number of the company providing the disinfection be maintained on-site in accordance with Section 4-1.9. This is a new requirement.
 - Permits only biocide products registered by the New York State Department of Environmental Conservation for use in cooling towers or pesticidal devices in a USEPA registered establishment to be used in disinfection.
 - Clarifies the terms “disinfect” and “disinfection” to mean the control of microorganisms or microbial growth. The term “disinfection” is also clarified to exclude the cleaning of a cooling tower through application of detergents, penetrants, brushes or other tools, high-powered water, or any other method that does not involve the use of a pesticide, as defined in 6 NYCRR Part 325.
- 4-1.8 Inspection and certification.
 - Inspection.
 - Requires that all owners of cooling towers ensure that such towers are inspected prior to seasonal start up and at intervals not exceeding every 90 days while in use. Year-round towers shall be inspected at intervals not exceeding every 90 days and prior to start up following maintenance. The inspection requirement prior to start up is new.
 - Certification.
 - By November 1, 2016, and by November 1st of each year thereafter, the owner of a cooling tower must obtain a certification that the cooling tower has

a maintenance program and plan, and that all activities within that plan or required by this Subpart were implemented.

- Reporting.
 - All inspection findings, deficiencies, and corrective actions, and all certifications, must be reported to the owner. This section is new to the regulation.
- 4-1.9 Recordkeeping.
 - Describes the records and documentation that the owner must maintain onsite for at least three years. Such records must be made available to the department or local health department upon request.
- 4-1.10 Enforcement.
 - Provides that the department or local health department may require any owner to conduct *Legionella* culture sampling and analysis, following a determination, based upon epidemiologic or laboratory testing, that one or more cases of legionellosis are or may be associated with a cooling tower. This is a new provision.
 - Permits an officer or employee of the department or local health department to enter onto any property to inspect a cooling tower for compliance with the requirements of this Subpart. The proposed regulation clarifies that such officers or employees may take water samples.
 - Provides that a violation of any provision in this Subpart is subject to all civil and criminal penalties as provided for by law. Further, every day that an owner remains in

violation of any provision constitutes a separate and distinct violation of such provision.

- 4-1.11 Variances and waivers.
 - Grants local health departments authority to issue variances from this regulation, upon approval of the New York State Department of Health. The local and State health department must be satisfied that the variance will not present a danger to public health.
 - The department may also grant general or specific waivers where it is satisfied that a waiver will not present a danger to public health.
- 4-1.12 Severability.
 - Standard severability clause is included.
- Appendix 4-A
 - This Appendix describes required responsive actions for *Legionella* culture test results. As compared to the emergency regulations, these regulations raise the threshold level for detecting *Legionella* in laboratory culture analyses, from ≥ 10 colony forming units per milliliter (CFU/mL) to ≥ 20 CFU/mL.
 - Responsive actions have been updated and clarified. The term “acceptable improvement” was changed to an actual quantitative target of “ < 20 CFU/mL.” Also, where an owner receives a laboratory *Legionella* culture analyses result ≥ 1000 CFU/mL, the owner must provide appropriate notifications per section 4-1.6.

- The footnotes for *on-line decontamination* and *system decontamination* were modified to allow the use of a halogen-based compounds (chlorine or bromine).

SUBPART 4-2 Covered Facilities

- 4-2.1 Scope.
 - This Subpart addresses *Legionella* exposure in general hospitals and residential health care facilities (collectively, “covered facilities”). This area was addressed through section 4.11 of the emergency regulation.
- 4-2.2 Definitions.
 - Defines key terms.
- 4-2.3 Environmental assessment
 - Requires covered facilities to perform an environmental assessment of the facility, using forms provided or approved by the department, no later than September 1, 2016, unless an environmental assessment was performed on or after September 1, 2015.
 - Requires an annual update of the environmental assessment, and in specified conditions.
 - Requires that copies of the completed environmental assessment form be retained in accordance with Section 4-2.6.
- 4-2.4 Sampling and Management Plan

- Requires that all covered facilities adopt and implement a sampling and management plan for their potable water systems by December 1, 2016, and that new covered facilities must adopt such plan prior to providing services.
 - In addition to any sampling required by the sampling plan, *Legionella* culture sampling and analysis of the potable water system must occur immediately, as directed by the department, where (1) the department determines that one or more cases of legionellosis are, or may be, associated with the facility; and (2) under any other condition specified by the department.
 - The sampling and management plan must be reviewed and updated annually, and in specified conditions.
 - The proposed regulation requires that the sampling and management plan and sampling results be retained in accordance with Section 4-2.6 of this Subpart.
- 4-2.5 *Legionella* culture analysis.
 - *Legionella* culture analyses must be performed by a laboratory approved to perform such analyses by the New York State Environmental Laboratory Program (ELAP).
- 4-2.6 Recordkeeping.
 - Specifies that all records related to the environmental assessment, sampling and management plan, and associated sampling results must be retained for three years and must be made available immediately to the department upon request.
- 4-2.7 Enforcement.

- Authorizes the department to conduct an assessment and/or a *Legionella* culture sampling and analysis of the potable water system at any time.
- Provides that where an owner of a covered facility does not comply with any provision contained within this Subpart, the department may determine that such condition constitutes a violation and may take such action as authorized by law.

Further, each day an owner is in violation of a provision constitutes a separate and distinct violation.
- 4-2.8 Variances and waivers.
 - Grants the department authority to issue variances and waivers from this regulation, subject to specified conditions.
- 4-2.9 Severability.
 - Standard severability clause is included.
- Appendix 4-B
 - This new appendix contains a table with comparison thresholds for routine *Legionella* culture sampling results. However, in the event that one or more cases of legionellosis are, or may be, associated with the facility, the sampling interpretation shall be in accordance with the direction of a qualified professional and the department.

Pursuant to the authority vested in the Public Health and Health Planning Council and the Commissioner of Health by section 225(5)(a) of the Public Health Law, Part 4 of Title 10 (Health) of the Official Compilation of Codes, Rules and Regulations of the State of New York is added, to be effective upon publication of a Notice of Adoption in the State Register, to read as follows:

PART 4: Protection Against *Legionella*

SUBPART 4-1 Cooling Towers

§ 4-1.1 Scope.

All owners of cooling towers shall comply with this Subpart.

§ 4-1.2 Definitions.

As used in this Subpart, the following terms shall have the following meanings:

- (a) *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.
- (b) *Building*. The term *building* means any structure used or intended for supporting or sheltering any use or occupancy. The term shall be construed as if followed by the phrase "structure, premises, lot or part thereof" unless otherwise indicated by the text.
- (c) *Cooling Tower*. The term *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.

(d) *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.

(e) *Owner*. The term *owner* means any person, agent, firm, partnership, corporation or other legal entity having a legal or equitable interest in, or control of, a cooling tower or the premises where the cooling tower is located. In all instances, the legal owner of the building shall be deemed an owner within the meaning of the Subpart. Further, where a tenant owns a cooling tower that services the tenant's leased premises, the tenant is an "owner" within the meaning of this Subpart. Additionally, if a tenant does not own the cooling tower but has a lease or contractual arrangement to maintain the cooling tower, the tenant shall be deemed an agent having control of the cooling tower, and thus an "owner," for purposes of this Subpart.

§ 4-1.3 Electronic registration and reporting.

(a) *Registration*. All owners of cooling towers shall register such towers with the department, using a statewide electronic system designated by the department, prior to initial operation, and whenever any owner of the cooling tower changes. Such registration shall include, at a minimum, the following information:

- (1) street address of the building at which the cooling tower is located, with building identification number, if any;
- (2) name(s), addresses(es), telephone number(s), and email address(es) of the owner(s) of the cooling tower;
- (3) name of the manufacturer of the cooling tower;

- (4) model number of the cooling tower;
- (5) specific unit serial number of the cooling tower, if available;
- (6) cooling capacity of the cooling tower;
- (7) cooling tower system volume, inclusive of all piping, basin(s), and sump;
- (8) intended use of the cooling tower;
- (9) whether the cooling tower operates year-round or seasonally and, if seasonally, start and end date of operation;
- (10) whether systematic disinfection in accordance with section 4-1.7 of this Subpart is maintained manually, through timed injection, or through continuous delivery;
- (11) whether maintenance is performed by in-house personnel, by a contractor, or by other parties; and
- (12) year the cooling tower was placed into service.

(b) *Reporting.* Effective upon adoption of the regulation, at intervals of no more than 90 days while a cooling tower is in use, the owner of the cooling tower shall report to the department using the statewide electronic system:

- (1) date of last bacteriological culture sample collection, the analysis result(s), and date of any required remedial action, pursuant to section 4-1.4(b)(1) of this Subpart;
 - (2) date of last *Legionella* culture sample collection, the analysis result(s), and date of any required remedial action, pursuant to section 4-1.4(b)(2) - (4) of this Subpart;
 - (3) date of last inspection, pursuant to section 4-1.8 of this Subpart;
 - (4) date of last certification, pursuant to section 4-1.8 of this Subpart;
 - (5) date of removal or permanent discontinued use of the cooling tower, if applicable;
- and

(6) such other information as shall be determined by the department.

(c) The department shall make data in the statewide electronic system publicly available, as appropriate. The statewide electronic system shall be made fully accessible and searchable to any local health department. Nothing in this Subpart shall preclude a local health department from requiring registration and reporting with a local system or collecting fees associated with the administration of such system.

(d) Where both a landlord and a tenant are considered “owners” of a cooling tower pursuant to Section 4-1.2 of this Subpart, either the owner or the tenant shall register the cooling tower. However, both parties are obligated to ensure that registration and reporting are completed as required by this Subpart.

§ 4-1.4 Maintenance program and plan.

(a) By September 1, 2016, and thereafter prior to initial start-up of a newly installed cooling tower, the owner shall obtain or update 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), 2015 edition with final approval date of June 26, 2015, at pages 7-8, incorporated herein by reference. The latest edition of ASHRAE 188-2015 may be purchased from the ASHRAE website (www.ashrae.org) or from ASHRAE Customer Service, 1791 Tullie Circle, NE, Atlanta, GA 30329-2305. E-mail: orders@ashrae.org. Fax: 678-539-2129. Telephone: 404-636-8400, or toll free 1-800-527-4723. Copies are available for inspection and copying at: Center for Environmental Health, Corning Tower Room 1619, Empire State Plaza, Albany, NY 12237.

(b) In addition, the maintenance program and plan shall include the following elements:

- (1) a schedule for routine bacteriological culture sampling and analysis to assess microbiological activity at intervals not to exceed 30 days while the cooling tower is in use, and that requires additional bacteriological culture sampling and analysis, as needed, to validate process adjustments;
- (2) a schedule for routine *Legionella* culture sampling and analysis within 14 days of seasonal start-up and, thereafter, at intervals not to exceed 90 days while the cooling tower is in use. Cooling towers in use year-round must sample at intervals not to exceed 90 days, and within two weeks after start-up following maintenance;
- (3) in addition to the routine *Legionella* culture sampling and analysis required by paragraph (2) of this subdivision, conditions that require immediate *Legionella* culture sampling and analysis, which shall include, but are not limited to:
 - (i) power failure of sufficient duration to allow for the growth of bacteria;
 - (ii) loss of biocide treatment of sufficient duration to allow for the growth of bacteria;
 - (iii) failure of conductivity control, or any other control methods, to maintain proper cycles of concentration;
 - (iv) a determination by the department 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; and
 - (v) any other conditions specified by the department or local health department.
- (4) provisions requiring immediate and appropriate action, including remedial action, in response to bacteriological and *Legionella* culture analyses. For *Legionella* culture analyses, such provisions shall include, but not be limited to, taking all responsive actions

required by Appendix 4-A, including contacting the local health department within 24 hours pursuant to the conditions specified in section 4-1.6 of this Subpart;

(5) provisions requiring that any and all *Legionella* culture analyses must be performed in accordance with section 4-1.5 of this Subpart;

(6) a shutdown and disinfection plan for removing or permanently discontinuing use of a cooling tower;

(7) provisions requiring treatment and manual or automated flushing of any piping, basin, sump, or wetted surface during idle conditions; and

(8) provisions requiring cleaning and disinfection prior to startup of a stagnant cooling tower that has been shut down without treatment and recirculation for more than five consecutive days.

§ 4-1.5 *Legionella* culture analysis.

All *Legionella* culture analyses must be performed by a laboratory that is approved to perform such analysis by the New York State Environmental Laboratory Approval Program (ELAP).

§ 4-1.6 Notification.

(a) The owner of a cooling tower shall notify the local health department within 24 hours of receipt of a *Legionella* culture sample result that exceeds 1,000 colony forming units per milliliter (CFU/mL). The local health department shall notify the state department of health with 24 hours of receipt of such a report.

(b) The owner shall notify the public of such test results in a manner determined by the local health department or, in the event that the department elects to determine the manner of public

notification, by the department.

§ 4-1.7 Disinfection.

- (a) Any person who disinfects a cooling tower shall be a commercial pesticide applicator or pesticide technician who is qualified to apply biocide in a cooling tower and certified in accordance with the requirements of Article 33 of the Environmental Conservation Law and 6 NYCRR Part 325, or a pesticide apprentice under the supervision of a certified applicator.
- (b) The name and certification number of the applicator or the business name and registration number of the company providing the disinfection shall be maintained on-site in accordance with section 4-1.9 of this subpart.
- (c) Only biocide products registered by the New York State Department of Environmental Conservation for use in cooling towers or pesticidal devices produced in a USEPA registered establishment may be used in disinfection.
- (d) The terms “disinfect” and “disinfection” in this Part means the control of microorganisms or microbial growth. The term “disinfection” shall not include the cleaning of a cooling tower through application of detergents, penetrants, brushes or other tools, high-powered water, or any other method that does not involve the use of a pesticide, as defined in 6 NYCRR Part 325.

§ 4-1.8 Inspection and certification.

- (a) Inspection.
 - (1) All owners of cooling towers shall ensure that such towers are inspected prior to seasonal start-up and at intervals not exceeding every 90 days while in use. Year-round towers shall be inspected at intervals not exceeding every 90 days and prior

to start-up, following maintenance.

(2) All inspections shall be performed by a: New York State licensed professional engineer; certified industrial hygienist; certified water technologist; environmental consultant or water treatment professional with training and experience performing inspections in accordance with current standard industry protocols including, but not limited to ASHRAE 188-2015, as incorporated by section 4-1.4 of this Subpart.

(3) Each inspection shall include an evaluation of the:

- (i) cooling tower and associated equipment for the presence of organic material, biofilm, algae, debris and other visible contaminants;
- (ii) general condition of the cooling tower basin, remote sump, packing material, and drift eliminators;
- (iii) water make-up connections and control, including backflow protection and/or airgaps as needed;
- (iv) proper functioning of the conductivity control; and
- (v) proper functioning of all water treatment equipment, including, but not limited to, pumps, timers, valves, and strain gauges.

(4) Any deficiencies found during inspection shall be reported to the owner for immediate corrective action. A person qualified to inspect pursuant to subdivision (a) of this section shall document all deficiencies, and all completed corrective actions.

(b) *Certification.* By November 1, 2016, and by November 1st of each year thereafter, the owner of a cooling tower shall obtain a certification from a person identified in subdivision (a) of this

section, that such cooling tower has a maintenance program and plan, and that all activities within that plan or required by this Subpart were implemented, including but not limited to:

- (1) all bacteriological culture sampling and analysis;
- (2) all *Legionella* culture sampling and analysis, including any immediate *Legionella* culture sampling and analysis performed pursuant to paragraphs (b)(3) and (b)(4) of section 4-1.4 of this Subpart;
- (3) any disinfection performed pursuant to section 4-1.7 of this Subpart; and
- (4) all inspections performed pursuant subdivision (a) of this section.

(c) *Reporting*. All inspection findings, deficiencies, and corrective actions, and all certifications, shall be reported to the owner, who shall retain such information, in accordance with section 4-1.9 of this Subpart.

§ 4-1.9 Recordkeeping.

The owner of a cooling tower shall maintain records for at least three years of all sampling and analyses; disinfection schedules and applications; inspection findings, deficiencies, and corrective actions; and certifications. An owner shall maintain a copy of the maintenance program and plan required by this Subpart on the premises where a cooling tower is located. Such records and plan shall be made available to the department or local health department immediately upon request.

§ 4-1.10 Enforcement.

(a) The department or local health department may require any owner to conduct *Legionella* culture sampling and analysis, following a determination, based upon epidemiologic data or

laboratory testing, that one or more cases of legionellosis are or may be associated with a cooling tower.

(b) An officer or employee of the department or local health department may enter onto any property to inspect a cooling tower for compliance with the requirements of this Subpart, in accordance with applicable law, and may take water samples as part of such inspections.

(c) Where an owner does not register, have a maintenance program and plan, obtain certification, disinfect, perform or obtain culture sampling and analysis, or inspect a cooling tower within the time and manner set forth in this Subpart, the department or local health department may determine that such condition constitutes a nuisance and may take such action as authorized by law. The department or local health department may also take any other action authorized by law.

(d) A violation of any provision of this Subpart is subject to all civil and criminal penalties as provided for by law. Each day that an owner remains in violation of any provision of this Subpart shall constitute a separate and distinct violation of each such provision.

§ 4-1.11 Variances and waivers.

(a) Variances. In order to allow time for compliance with this Subpart, an owner may submit a written application to a local health department for a variance from any provision of this Subpart, for a period not exceeding 90 days, accompanied by an explanation of why such variance will not present a danger to public health. With the approval of the department, the local health department may approve such application for a variance in writing, subject to any conditions that the department or local health department may deem appropriate to protect public health. The local health department or department may revoke such variance upon a determination that the

variance may present a danger to public health.

(b) Waivers. The department may issue a written general or specific waiver with respect to any provision of this Subpart, subject to any conditions the department may deem appropriate, where the department is satisfied that such waiver will not present a danger to public health. The department may revoke such waiver upon a determination that the waiver may present a danger to public health.

§ 4-1.12 Severability.

If any provisions of this Subpart or the application thereof to any person or entity or circumstance is adjudged invalid by a court of competent jurisdiction, such judgment shall not affect or impair the validity of the other provisions of this Subpart or the application thereof to other persons, entities, and circumstances.

Appendix 4-A

Interpretation of <i>Legionella</i> Culture Results from Cooling Towers	
<i>Legionella</i> Test Results in CFU/mL ¹	Response
No detection (< 20 CFU/mL)	Maintain treatment program and <i>Legionella</i> monitoring in accordance with the maintenance program and plan.
For levels at ≥ 20 CFU/mL but < 1000 CFU/mL perform the following:	<ul style="list-style-type: none"> ○ Review treatment program. ○ Institute immediate <u>online disinfection</u>² to help with control ○ Retest the water in 3 – 7 days. <ul style="list-style-type: none"> ▪ Continue to retest at the same time interval until one sample retest result is < 20 CFU/mL. With receipt of result < 20 CFU/mL, resume routine maintenance program and plan. ▪ If retest is ≥ 20 CFU/mL but < 100 CFU/mL, repeat <u>online disinfection</u>² and retest until < 20 CFU/mL attained. ▪ If retest is ≥ 100 CFU/mL but < 1000 CFU/mL, further investigate the water treatment program and immediately perform <u>online disinfection</u>.² Retest and repeat attempts at control strategy until < 20 CFU/mL attained. ○ If retest is ≥ 1000 CFU/mL, undertake control strategy as noted below.

<p>For levels ≥ 1000 CFU/mL perform the following:</p>	<ul style="list-style-type: none"> ○ Review the treatment program and provide appropriate notifications per section 4-1.6 of this Subpart. ○ Institute immediate <u>online decontamination</u>³ to help with control ○ Retest the water in 3 – 7 days. <ul style="list-style-type: none"> ▪ Continue to retest at the same time interval until one sample retest result is < 20 CFU/mL. With receipt of result < 20 CFU/mL, resume routine maintenance program and plan. ▪ If any retest is ≥ 20 CFU/mL but < 100 CFU/mL, repeat <u>online disinfection</u>² and retest until < 20 CFU/mL attained. ▪ If any retest is ≥ 100 CFU/mL but < 1000 CFU/mL, further investigate the water treatment program and immediately perform <u>online disinfection</u>.² Re-test and repeat attempts at control strategy until < 20 CFU/mL attained. ▪ If any retest is ≥ 1000 CFU/mL: <ul style="list-style-type: none"> • carry out <u>system decontamination</u>⁴.
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¹ Colony forming units per milliliter.

² Online disinfection means – Dose the cooling tower water system with either a different biocide or a similar biocide at an increased concentration than currently used.

³ Online decontamination means – Dose the recirculation water with a halogen-based compound (chlorine or bromine) equivalent to at least 5 milligrams per liter (mg/L) or parts per

million (ppm) free residual halogen for at least one hour.

⁴ System decontamination means – Maintain between 5 to 10 mg/L (ppm) free residual halogen for a minimum of one hour; drain and flush with disinfected water; clean wetted surface; refill and dose to 1 – 5 mg/L (ppm) of free residual halogen and circulate for 30 minutes. Refill, re-establish treatment and retest for verification of treatment.

For chlorine treatment the pH range should be 7.0 to 7.6; for bromine treatment the pH range should be 7.0 to 8.7. At higher pH values the treatment times may need to be extended.

NOTE: Stabilized halogen products should not be used for online decontamination or system decontamination as defined in this Appendix per footnotes 3 and 4.

SUBPART 4-2 Health Care Facilities

§ 4-2.1 Scope.

All general hospitals and residential health care facilities as defined in Article 28 of the Public Health Law (collectively, “covered facilities”) shall comply with this Subpart.

§ 4-2.2 Definitions.

(a) *Covered facilities*. The term *covered facilities* means all general hospitals and residential health care facilities as defined in Article 28 of the Public Health Law.

(b) *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.

(c) *Potable water system*. The term *potable water system* means a building water distribution system that provides water intended for human contact or consumption.

§ 4-2.3 Environmental Assessment.

(a) By September 1, 2016, all covered facilities must perform an environmental assessment of the facility using forms provided or approved by the department, unless an environmental assessment was performed on or after September 1, 2015.

(b) Environmental assessments shall be updated annually and under the following conditions:

(1) in the event that one or more cases of legionellosis are, or may be, associated with the facility;

(2) upon completion of any construction, modification, or repair activities that may affect the potable water system;

(3) expansion or relocation of a facility's hematopoietic stem cell transplant and solid organ transplant units; or

(4) any other conditions specified by the department.

(c) The facility shall retain copies of the completed environmental assessment form in accordance with section 4-2.6 of this Subpart.

§ 4-2.4 Sampling and Management Plan.

(a) By December 1, 2016, all covered facilities shall adopt and implement a *Legionella* culture sampling and management plan for their potable water systems. New covered facilities shall adopt such a plan prior to providing services. The sampling and management plan must include at a minimum:

- (1) *Legionella* culture sampling sites as determined by the environmental assessment;
- (2) provisions requiring *Legionella* culture sampling and analysis at intervals not to exceed 90 days for the first year following adoption of the sampling and management plan. Thereafter, the plan shall include provisions for annual *Legionella* culture sampling and analysis; provided that the plan shall further require that those portions of any potable water system that serve hematopoietic stem cell transplant or solid organ transplant patients shall continue to be sampled and analyzed at intervals not to exceed 90 days;
- (3) provisions requiring actions in response to *Legionella* culture analysis results, including all responsive actions required by Appendix 4-B, and specific time frames for such actions.

(b) In addition to the sampling required by the facility's sampling and management plan, a covered facility shall conduct *Legionella* culture sampling and analysis of the potable water system in a timeframe to be determined by the department upon:

- (1) a determination by the department that one or more cases of legionellosis are, or may be, associated with the facility, or
- (2) any other conditions specified by the department.

(c) A covered facility shall review its sampling and management plan annually and under the following conditions:

- (1) in the event that one or more cases of legionellosis are, or may be, associated with the facility;
 - (2) upon completion of any construction, modification, or repair activities that may affect the potable water system;
 - (3) upon expansion or relocation of a facility's hematopoietic stem cell transplant and solid organ transplant units; or
 - (4) any other conditions specified by the department.
- (d) A copy of the sampling and management plan and sampling results shall be retained in accordance with section 4-2.6 of this Subpart.

§ 4-2.5 *Legionella* culture analysis.

All *Legionella* culture analyses must be performed by a laboratory that is approved to perform such analysis by the New York State Environmental Laboratory Approval Program (ELAP).

§ 4-2.6 Recordkeeping.

A covered facility shall maintain the environmental assessment required by section 4-2.3 and the sampling and management plan required by section 4-2.4 of this Subpart, and any associated sampling results, on the facility premises for at least three years. Such records shall be made available to the department immediately upon request.

§ 4-2.7 Enforcement.

- (a) The department may conduct an assessment and/or *Legionella* culture sampling and analysis of the potable water system at any time.

(b) A violation of any provision of this Subpart is subject to all civil and criminal penalties as provided for by law. Each day that an owner remains in violation of any provision of this Subpart shall constitute a separate and distinct violation of each such provision.

§ 4-2.8 Variances and waivers.

(a) *Variances.* In order to allow time for compliance with this Subpart, a facility may submit a written application to the department for a variance from any provision of this Subpart, for a period not exceeding 90 days, accompanied by an explanation of why such variance will not present a danger to public health. The department may approve such application for a variance in writing, subject to any conditions that it may deem appropriate to protect public health. The department may revoke such variance upon a determination that the variance may present a danger to public health.

(b) *Waivers.* The department may issue a written general or specific waiver with respect to any provision of this Subpart, subject to any conditions the department may deem appropriate, where the department is satisfied that such waiver will not present a danger to public health. The department may revoke such waiver upon a determination that the waiver may present a danger to public health.

§ 4-2.9 Severability.

If any provisions of this Subpart or the application thereof to any person or entity or circumstance is adjudged invalid by a court of competent jurisdiction, such judgment shall not affect or impair the validity of the other provisions of this Subpart or the application thereof to other persons, entities, and circumstances.

Appendix 4-B

Interpretation of Routine ¹ <i>Legionella</i> Culture Results from Covered Facilities	
Percentage of Positive <i>Legionella</i> Test Sites	Response
< 30%	Maintain environmental assessment and <i>Legionella</i> monitoring in accordance with the sampling and management plan.
≥ 30%	<ul style="list-style-type: none"> ○ Immediately institute short-term control measures² in accordance with the direction of a qualified professional,³ and notify the department. ○ The water system shall be re-sampled no sooner than 7 days and no later than 4 weeks after disinfection to determine the efficacy of the treatment. <ul style="list-style-type: none"> ▪ Retreat and retest. If retest is ≥ 30% positive, repeat short-term control measures.² ▪ With receipt of results < 30% positive⁴, resume monitoring in accordance with the sampling and management plan. ○ For persistent results, as determined by the department, showing ≥ 30% positive sites, long-term control measures⁵ shall be implemented in accordance with the direction of a qualified professional³ and the department.

¹ In the event that one or more cases of legionellosis are, or may be, associated with the facility, the sampling interpretation shall be in accordance with the direction of a qualified professional and the department.

² Short-term control measures are temporary interventions that may include, but are not limited to, heating and flushing the water system, hyperchlorination, or the temporary installation of treatment such as copper silver ionization (CSI).

³ Control measures shall be conducted in accordance with the direction of a qualified professional. A qualified professional is a New York State licensed professional engineer; certified industrial hygienist; certified water technologist; environmental consultant or water treatment professional with training and experience performing assessments and sampling in accordance with current standard industry protocols.

⁴ Positive samples should be minimized.

⁵ Long-term control measures may include supplemental disinfection treatments.

SUMMARY OF REGULATORY IMPACT STATEMENT

Needs and Benefits:

Legionellosis describes any illness caused by exposure to *Legionella* bacteria, including Legionnaire's Disease and Pontiac Fever. Potential sources of exposure to *Legionella* bacteria include water in the home, workplace, healthcare facilities or aerosol-producing devices in public places. Improper maintenance of cooling towers can contribute to the growth and dissemination of *Legionella* bacteria. Inadequate surveillance for *Legionella* bacteria in the potable water systems at general hospitals and residential health care facilities can also increase the risk of legionellosis.

Symptoms of legionellosis may include cough, shortness of breath, high fever, muscle aches, and headaches, and can result in pneumonia. Hospitalization is often required, and between 5 and 30% of cases are fatal. People at highest risk are those 50 years of age or older; current or former smokers; those with chronic lung diseases; those with weakened immune systems from diseases like cancer, diabetes, or kidney failure; and those who take drugs to suppress the immune system during chemotherapy or after an organ transplant. The number of cases of legionellosis reported in New York State between 2005 and 2014 increased 323%, compared to those reported in the previous ten-year period.

Outbreaks of legionellosis have been associated with cooling towers, as well as with the potable water systems of general hospitals and residential health care facilities. Subpart 4-1 of these regulations establish requirements for cooling towers relating to: registration, reporting and recordkeeping; testing; disinfection; maintenance; inspection; and certification of compliance. Subpart 4-2 of these regulations require general hospitals and residential health care facilities to

implement an environmental assessment and *Legionella* sampling and management plan for their potable water systems and take necessary responsive actions.

These proposed regulations incorporate important clarifications and revisions from the emergency regulations initially adopted by the Public Health and Health Planning Council on August 17, 2015. In general, the Department organized and streamlined the language for concision and clarity. Certain sections were renumbered and related provisions consolidated. Further, the proposed regulations have been divided into two Subparts.

Costs:

Subpart 4-1

Building owners already incur costs for routine operation and maintenance of cooling towers. There will be some increased costs associated with sampling, inspection, and certification of cooling towers. These costs are detailed in the Regulatory Impact Statement.

State and local governments will incur costs for administration, implementation, and enforcement. Exact costs cannot be predicted at this time. However, some local costs may be offset through the collection of fees, fines and penalties authorized pursuant to this Part. Costs to State and local governments may be offset further by a reduction in the need to respond to community legionellosis outbreaks.

Subpart 4-2

General hospitals and residential healthcare facilities already incur costs associated with running infection control programs. The regulations would incur new costs for those facilities that are not already conducting annual environmental assessments, and would require all such facilities to adopt and implement a *Legionella* sampling and management plan. In many

instances, facilities can complete the environmental assessment using existing hospital staff (maintenance, operations, and nursing staff). The cost of these requirements is expected to be offset by the reduced risk of Legionellosis in such facilities.

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Regulatory Impact Statement

Statutory Authority:

The Public Health and Health Planning Council (PHHPC) is authorized by Section 225 of the Public Health Law (PHL) to establish, amend and repeal sanitary regulations to be known as the State Sanitary Code (SSC), subject to the approval of the Commissioner of Health. PHL Section 225(5)(a) provides that the SSC may deal with any matter affecting the security of life or health, or the preservation or improvement of public health, in the state of New York.

Legislative Objectives:

This rulemaking is in accordance with the legislative objective of PHL Section 225 authorizing PHHPC, in conjunction with the Commissioner of Health, to protect public health and safety by amending the SSC to address issues that jeopardize such health and safety. Subpart 4-1 establishes requirements for cooling towers relating to: registration, reporting and recordkeeping; testing; disinfection; maintenance; inspection; and certification of compliance. Subpart 4-2 establishes requirements for potable water systems for general hospitals and residential health care facilities.

Needs and Benefits:

Legionellosis describes any illness caused by exposure to *Legionella* bacteria, including Legionnaire's Disease and Pontiac Fever. Symptoms of legionellosis may include cough, shortness of breath, high fever, muscle aches, and headaches, and can result in pneumonia. People at highest risk are those 50 years of age or older; current or former smokers; those with chronic lung diseases; those with weakened immune systems from diseases like cancer, diabetes,

or kidney failure; and those who take drugs to suppress the immune system during chemotherapy or after an organ transplant. The number of cases of legionellosis reported in New York State between 2005 and 2014 increased 323%, compared to those reported in the previous ten-year period.

Illnesses caused by the *Legionella* bacteria are a serious public health threat, as these cases often require hospitalization, and between 5 and 30% of cases are fatal. Optimal conditions for *Legionella* growth include warm water that is high in nutrients and protected from light. People are exposed to *Legionella* through inhalation of aerosolized water containing the bacteria. Outbreaks of legionellosis have been associated with cooling towers, as well as with the potable water systems of hospitals and residential health care facilities.

The proposed regulations govern operation and maintenance of cooling towers, as well as potable water systems for general hospitals and residential healthcare facilities. These proposed regulations incorporate important clarifications and revisions, as compared to the emergency regulations adopted by PHHPC on August 17, 2015. In general, the Department has organized and streamlined the language for concision and clarity. Certain sections were renumbered and related provisions consolidated. Further, the proposed regulations have been divided into two Subparts: the first regulates cooling towers, and the second regulates potable water systems of general hospitals and residential health care facilities.

Subpart 4-1

Improper maintenance of cooling towers can contribute to the occurrence of *Legionella*. A cooling tower is an evaporative device that is part of a recirculated water system incorporated into a building's cooling, industrial process, refrigeration, or energy production system. Water is part of the process of heat transfer, and these devices require disinfectant to kill or inhibit the

growth of bacteria (including *Legionella*) in such water. The mists normally aerosolized from the tower contain any bacteria growing in this water, including *Legionella*.

Notably, cooling tower manuals typically contain warnings that *Legionella* and other bacteria may be amplified and disseminated if the cooling tower is not properly maintained. Manuals typically recommend that the cooling tower be located at a distance and direction that avoids contaminated discharge from being drawn into fresh air intakes.

In 2005, a cooling tower located at ground level adjacent to a hospital in New Rochelle, Westchester County resulted in a cluster of 19 cases of legionellosis and multiple fatalities. Most of the individuals were either dialysis patients, or companions escorting patients to their dialysis session. The cooling tower was found to have insufficient chemical treatment to control bacterial overgrowth. The tower was ultimately replaced by the manufacturer in order to maintain cooling for the hospital and to protect public health.

Additionally, in June and July of 2008, 12 cases of legionellosis, including one fatality, were attributed to a small cooling tower in Syracuse, New York. After an investigation, it was determined that the unit was not operating properly, resulting in the growth of microorganisms in the unit. No new cases were detected after emergency biocide treatment was initiated and proper treatment was maintained.

Recently, 133 cases of legionellosis, which included 16 fatalities, occurred in the Bronx, New York (July-August, 2015). Epidemiologic, environmental, and laboratory investigations of the Legionnaires' disease outbreak in the South Bronx identified a hotel cooling tower as the source of this outbreak. The investigation included a DNA comparison of isolates cultured from cooling towers in the South Bronx and case-patients who lived, worked or visited the area. DNA

from the hotel cooling tower isolates and the outbreak-associated cases were indistinguishable.

In both situations, emergency disinfection of compromised cooling towers helped curtail these outbreaks. These outbreaks highlight the need for proper operation, monitoring, on-going treatment and maintenance of cooling towers. Prior to the issuance of the emergency regulation in August 2015, cooling towers were unregulated in New York State.

The heating, ventilation, and air-conditioning (HVAC) industry has issued guidelines on how to: seasonally start a cooling tower; treat it with biocides and other chemicals needed to protect the components from scale and corrosion; set cycles of operations that determine when fresh water is needed; and shut down the tower at the end of the cooling season. The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) has recently released a new Standard entitled *Legionellosis: Risk Management for Building Water Systems* (ANSI/ASHRAE Standard 188-2015). Section 7.2 of that document outlines components of the operations and management plan for cooling towers. The industry also relies on other guidance for specific treatment chemicals, emergency disinfection or decontamination procedures, and other requirements.

Absent regulation, however, this industry guidance is not obligatory. Consequently, maintenance deficiencies, such as poor practice in operation and management, can result in bacterial overgrowth and mist emissions that contain pathogenic *Legionella* bacteria. This regulation requires that all owners of cooling towers ensure that such towers are properly maintained, to protect the public and address this public health threat.

Subpart 4-2

The proposed regulations require that all general hospitals and residential healthcare facilities perform an environmental assessment of their facility. The facilities must also adopt a *Legionella* sampling and management plan for their potable water system, report the results, and take necessary actions to protect the safety of their patients and/or residents. Additionally, facilities must perform immediate *Legionella* culture sampling and analysis of potable water systems, in a manner directed by the Department, where the Department determines that one or more cases of legionellosis are, or may be, associated with the facility. The Department may also require immediate sampling and analysis based upon any other conditions it specifies.

Most healthy people do not get Legionnaires' disease after being exposed to *Legionella*. In both general hospitals and nursing homes, the risk for disease increases in people who are: over 50 years of age; receiving chemotherapy; undergoing or who have undergone transplants; or receiving immunosuppressive therapy for other conditions. Hospitals will often group these patients together due to the requirements for special precautions. General hospitals who have patients within hematopoietic stem-cell transplant (HSCT) and solid organ transplant units are especially at risk. Accordingly, the potable water systems serving such patients require more frequent sampling under the regulations.

Additionally, people with chronic lung disease are at increased risk for acquiring Legionnaires' disease. Many residents of nursing homes are at risk for legionellosis, as the risk increases with increasing age, especially in the presence of underlying chronic disease.

From 2007 to date, the Department has been involved with the environmental assessment or investigation of 230 legionellosis events that involved one or more cases, located in 173 hospitals and nursing homes. These cases have demonstrated the need for general hospitals and

nursing homes to conduct regular environmental assessments, implement a sampling and management plan for the potable water systems, and to take necessary responsive action.

Costs:

Costs to Private Regulated Parties:

Subpart 4-1

Building owners already incur costs for routine operation and maintenance of cooling towers. The proposed regulation, however, establishes certain requirements that have associated costs, to the extent these actions are not already being performed.

- *Routine Bacteriological Culture Sampling and Analysis.* The regulations require routine bacteriological sampling and analysis using dip slides or heterotrophic plate counts (HPC).
 - The cost per dip-slide test is \$3.50. Assuming these tests are performed once each month, this would result in an annual cost of \$42 for year-round towers. For seasonal towers, the approximate cost for this sampling is \$24.50.
 - The cost per HPC test would average \$20. Assuming HPC is performed once each month, this would result in an annual cost of \$240 for year-round cooling towers. For seasonal towers, the approximate cost would be \$140.
- *Routine and Immediate Legionella Culture Sampling and Analysis.* Owners of cooling towers are required to conduct *Legionella* culture sampling and analysis at intervals not to exceed every 90 days while the cooling tower is in use, and immediately in the event of disruption of normal operations. The average cost of each sample analysis is estimated to be approximately \$125. If four samples are collected per year for a year-round cooling tower, the approximate cost is \$500. In the case of a seasonal tower, if three samples are

collected per year, the approximate annual cost is \$375.

- *Inspection.* Owners of cooling towers shall obtain the services of a professional engineer (P.E.), certified industrial hygienist (C.I.H.), certified water technologist, or environmental consultant or water treatment professional with training and experience performing inspections in accordance with current standard industry protocols including, but not limited to ASHRAE 188-2015; for inspection of the cooling towers at intervals not exceeding once every 90 days while the cooling towers are in use. The cost of such services is estimated to be approximately \$150 per hour and estimated to take approximately eight (8) hours. For year-round towers, the approximate annual cost of inspection is \$4,800, and for seasonal towers, the approximate annual cost of inspection is \$3,600.
- *Annual Certification.* The same persons qualified to perform inspections are qualified to perform annual certifications. The cost of such services is estimated to be approximately \$150 per hour and is estimated to take approximately four (4) hours. The approximate cost of annual certification for both year-round and seasonal towers is \$600.
- *Disinfection.* If disinfection is required, owners of cooling towers are required to obtain the services of a certified commercial pesticide applicator or pesticide technician who is qualified to apply biocide in a cooling tower, or a pesticide apprentice under the supervision of a certified applicator. The cost of such services is estimated to be approximately \$5,000 for labor, plus the cost of materials.
- *Recordkeeping and Electronic Reporting.* Owners of cooling towers are required to maintain certain specified records and to electronically report certain specified information. The costs of these administrative activities are predicted to be minimal.

- The formulation of a cooling tower maintenance program and plan is estimated to require 4 to 8 hours at \$150 per hour (\$600 to \$1200). The range represents the cost for reviewing and modifying an existing plan versus the preparation of a new plan.
- Where power producers and industrial facilities disinfect a cooling tower using halogenation, they may be required to dehalogenate discharge streams from cooling towers to meet State Pollutant Discharge Elimination permit System (SPDES) permit conditions. Piping, and attendant monitoring equipment (e.g., conductivity probes, continuous halogen monitors), may require design and capital expenditures in accordance with the unique operating conditions of the tower.

Subpart 4-2

General hospitals and residential healthcare facilities already incur costs for routine operation and maintenance of infection control programs. This regulation establishes the following requirements, which have associated costs:

- *Annual Environmental Assessment.* In many instances, physical facilities staff can complete the environmental assessment in cooperation with other hospital staff (maintenance, operations, and nursing staff). The work can normally be completed in 2 to 3 hours. In the event that a consultant is used, these costs range between \$300 and \$450.
- *Sampling and Management Plan.* If the facility already has a sampling and management plan and maintains proper maintenance records, but requires a consultant to determine compliance with these new requirements, the associated cost would be 6.5 hours at \$150 per hour (\$975). Without a prior plan, and with poor maintenance documentation, the associated cost would be 13 hours, or more, at \$150 per hour (approximately \$1,950). In

some cases, facilities may be able to develop a sampling and management plan using existing staff. Further, these costs will have already been realized by those facilities following the department's guidance documents issued prior to the emergency regulations.

- *Routine and Immediate Legionella Culture Sampling and Analysis.* Covered facilities are expected to sample at intervals not to exceed every 90 days for the first year after adoption of the sampling and management plan. If ten samples were to be collected during each sampling round, and the cost of each sample analysis is estimated to be approximately \$125.00, the total cost per year of such sampling is estimated to be \$5,000. This would be an annual cost for facilities with hematopoietic stem-cell transplant (HSCT) and solid organ transplant units. For facilities without such units, the annual cost of sampling is estimated to be \$1,250, as sampling may be performed on an annual basis.

Costs to State Government and Local Government:

State and local governments will incur costs for administration, implementation, and enforcement of Subpart 4-1. Exact costs cannot be predicted at this time. However, some local costs may be offset through the collection of fees, fines and penalties authorized pursuant to this Part. Costs to State and local governments may be offset further by a reduction in the need to respond to community legionellosis outbreaks.

State government will incur costs for enforcement of Subpart 4-2 for general hospitals and residential healthcare facilities. However, the cost is expected to be outweighed by the benefit of reduced cases of legionellosis at these facilities.

Local Government Mandates:

The SSC establishes a minimum standard for regulation of health and sanitation. Local governments can, and often do, establish more restrictive requirements that are consistent with the SSC through a local sanitary code. PHL § 228. Local governments have the power to enforce the provisions of the State Sanitary Code, including Subpart 4-1, utilizing both civil and criminal options available. PHL §§ 228, 229, 309(1)(f) and 324(1)(e). With respect to Subpart 4-2, the Department, rather than local governments, will conduct enforcement.

Paperwork:

The regulation imposes new registration, reporting and recordkeeping requirements for owners of cooling towers. Additionally, general hospitals and residential healthcare facilities will be required to perform periodic environmental assessments and to adopt and implement a *Legionella* sampling and management plan. The regulation imposes new recordkeeping requirements for general hospitals and residential healthcare facilities related to the environmental assessment, the sampling and management plan and sample results.

Duplication:

This regulation does not duplicate any state requirements.

Alternatives:

No alternatives were considered, as promulgating this regulation was determined to be necessary to address the public health threat.

Federal Standards:

There are no federal standards or regulations pertaining to registration, maintenance, operation, testing, and inspection for cooling towers, or to *Legionella* sampling of potable water systems for general hospitals or residential healthcare facilities.

Compliance Schedule:

These permanent regulations, which incorporate revisions to the emergency regulations currently in effect, will be effective upon publication of a Notice of Adoption in the State Register.

Subpart 4-1

All owners of existing cooling towers should already be complying with the current emergency regulations. By September 1, 2016, all owners of existing cooling towers must begin routine bacteriological sampling analysis every 30 days while the tower is in use, and *Legionella* culture sampling and analysis every 90 days while the tower is in use. As in the emergency regulations, owners of cooling towers must obtain a certification that regulatory requirements have been met by November 1, 2016, with subsequent annual certifications by November 1st of each year.

Owners must register cooling towers and report certain actions, using a statewide electronic system. Reportable events include dates of sample collection; dates of disinfection; date of last inspection; date of last certification; and date of discontinued use. Reporting must be made through the electronic registry in intervals not exceeding 90 days.

Subpart 4-2

By September 1, 2016, all covered facilities must perform an environmental assessment of the facility using forms provided, or approved, by the department, unless an environmental assessment was performed on or after September 1, 2015. The assessment shall be updated annually and updated in the event of a case of facility-acquired legionellosis, facility repair, new construction, changes in the potable water system, and upon any other conditions specified by the department.

Additionally, all covered facilities must adopt and implement a *Legionella* sampling and management plan for the facilities' potable water system by December 1, 2016. The plan must include *Legionella* culture sampling and analysis at intervals not to exceed 90 days for the first year after the adoption of the sampling and management plan. Thereafter, sampling is to be performed annually, at a minimum, provided that general hospitals with hematopoietic stem cell and solid organ transplant units must continue to sample at intervals not to exceed 90 days. The sampling and management plan must be reviewed annually and updated in the event of a case of facility-acquired legionellosis, significant construction, repair work, or changes to the potable water system and/or facilities' use that may affect hematopoietic stem cell and solid organ transplant units, and any other conditions specified by the department.

In addition to the sampling required by a facility's sampling and management plan, immediate *Legionella* culture sampling and analysis of the potable water system must occur, at the direction of the department, when (1) a determination is made by the department that one or more cases of legionellosis are, or may be, associated with the facility; or (2) any other conditions specified by the department.

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REGULATORY FLEXIBILITY ANALYSIS FOR SMALL BUSINESS AND LOCAL GOVERNMENTS

Effect of Rule:

The rule will affect the owner of any building with a cooling tower, as those terms are defined in the regulation, which could include small businesses and local governments. Any general hospitals and residential health care facilities owned or operated by a local government or that qualifies as a small business will be required to complete an environmental assessment, adopt and implement a *Legionella* sampling and management plan for the facilities' potable water system, and take appropriate responsive actions. At this time, it is not possible to determine the number of small businesses or local governments affected.

Local governments must also enforce Subpart 4-1, relating to regulation of cooling towers. Local governments have the power to enforce the provisions of the State Sanitary Code, including this new Part. PHL §§ 228, 229, 309(1)(f) and 324(1)(e).

Compliance Requirements:

Compliance requirement for small businesses and local governments are the same as those requirements set forth in the Regulatory Impact Statement.

Professional Services:

To comply with inspection and certification requirements with respect to cooling towers, small businesses and local governments will need to obtain services of a P.E., C.I.H., certified water technologist, or environmental consultant with training and experience performing

inspections in accordance with current standard industry protocols including, but not limited to ASHRAE 188-2015. Small businesses and local governments will need to secure laboratory services for *Legionella* culture analysis. To comply with disinfection requirements with respect to cooling towers, small businesses and local governments will need to obtain the services of a commercial pesticide applicator or pesticide technician, or pesticide apprentice under supervision of a commercial pesticide applicator.

Compliance with the provisions that apply to general hospitals and healthcare facilities may require expertise in areas such engineering, physical facility management, water treatment methods, and monitoring of the environmental conditions of their potable water distribution systems.

Compliance Costs:

Compliance costs for small business and local government are consistent with the costs outlined in the Regulatory Impact Statement.

Economic and Technological Feasibility:

Although there will be an impact on building owners, including small businesses and local governments, compliance with the regulation is considered economically and technologically feasible, in part because the requirements are consistent industry best practices. This regulation is also necessary to protect public health, and it is expected to reduce cases of legionellosis in communities around cooling towers, as well as for patients and residents in general hospitals and residential healthcare facilities. Accordingly, the benefits to public health are anticipated to outweigh any costs.

Minimizing Adverse Impact:

The Department provides a cooling tower registry, technical consultation, coordination, and information and updates. In addition, the Department has issued guidance for general hospitals and cooling towers, which is consistent with the proposed regulations. Covered facilities that have followed the guidance will already be in compliance with most of the new regulations.

Small Business and Local Government Participation:

Development of the emergency regulations, upon which these regulations were based, was coordinated with New York City.

Cure Period:

Violation of this regulation can result in civil and criminal penalties. However, the regulations allow for time to adopt plans and performed required actions. Accordingly, and in light of the magnitude of the public health threat posed by *Legionella*, no cure period is warranted.

RURAL AREA FLEXIBILITY ANALYSIS

Pursuant to Section 202-bb of the State Administrative Procedure Act (SAPA), a rural area flexibility analysis is not required. These provisions apply uniformly throughout New York State, including all rural areas. The proposed rule will not impose an adverse economic impact on rural areas, nor will it impose any disproportionate reporting, recordkeeping or other compliance requirements on public or private entities in rural areas.

JOB IMPACT STATEMENT

Nature of the Impact:

The New York State Department of Health (NYSDOH) expects there to be a positive impact on jobs or employment opportunities. The requirements in the regulation generally coincide with industry standards and manufacturers specification for the operation and maintenance of cooling towers. However, it is expected that a subset of owners have not adequately followed industry standards and will hire firms or individuals to assist them with compliance and to perform inspections and certifications.

Categories and Numbers Affected:

The Department anticipates no negative impact on jobs or employment opportunities as a result of the proposed regulations.

Regions of Adverse Impact:

The Department anticipates no negative impact on jobs or employment opportunities in any particular region of the state.

Minimizing Adverse Impact:

Not applicable.

SUMMARY OF ASSESSMENT OF PUBLIC COMMENT

This assessment summarizes and responds to the comments received on proposed regulations for Subparts 4-1 and 4-2 of Title 10 of the New York State Code of Rules and Regulations, which address protection against *Legionella* in cooling towers and in the potable water systems of general hospitals and residential health care facilities. The Notice of Proposed Rulemaking was published in the *State Register* on April 20, 2016. The public comment period for this proposal was open from April 20, 2016 until June 6, 2016.

The Department of Health (“DOH” or the “Department”) received approximately 80, letters and emails, containing over 200 comments and questions from various stakeholders, including but not limited to, manufacturers of cooling towers, cooling tower operators, consultants, power production consortia, analytical laboratories, healthcare facilities and associations, local health departments, and other organizations representing the interests of the affected parties. While the Department processed every comment and each one received equal consideration, in providing responses, the Department grouped together similar comments. The Department made some technical revisions to the regulations in response to these comments, as further explained below. No substantive changes were made to the regulations.

The Assessment of Public Comment presents and responds to all of the comments; this serves as a summary of the most frequent comments and the Department’s corresponding responses. The full text of the regulations, as well as the full Assessment of Public Comment, are available on the Department’s website.

Scope of the Regulation

Several comments recommended the Department broaden the scope of the regulations to include management of entire building water systems, through incorporation of the ANSI/ASHRAE Standard 188-2015. The commenters urged the Department to require the management of the entire building water system for “high-risk” buildings.

The Department acknowledges there are many potential sources of exposure to *Legionella* bacteria including water in the home, workplace, healthcare facilities or aerosol-producing devices in public places. Part 4 addresses two of those sources—cooling towers and potable water systems in general hospitals and residential health care facilities. Improper maintenance of cooling towers can contribute to the growth and dissemination of *Legionella* bacteria. Inadequate surveillance for *Legionella* bacteria in the potable water systems at general hospitals and residential health care facilities can increase the risk for exposure. Findings from a recent Centers for Disease Control and Prevention (CDC) review of legionellosis between 2000 and 2014 (CDC; *Morbidity and Mortality Weekly Report*, Vol. 65, June 7, 2016) support the Department’s focus on cooling towers and potable water systems in health care facilities. The Department will continue to consider whether and how to regulate other sources of *Legionella* but does not intend to expand the regulation at this time. Dividing Part 4 into Subparts enables the Department to amend the regulations to address other sources.

Cost of the Regulation

The Department received several comments concerning the cost of the regulation associated with the requirements in both Subparts. The Department will work with local health departments as well as the regulated parties to identify methods to streamline implementation.

Subpart 4-2 will be implemented by the Department and will not impact local health departments.

SUBPART 4-1 Cooling Towers

Bacteriological and Legionella culture sampling and analysis

The Department received several comments requesting additional specificity for the sampling methods and conditions describing when additional *Legionella* culture sampling and analysis must occur. The Department declined to add additional specificity to accommodate new sampling and analytical technologies, professional judgment, and differences between cooling towers and their conditions. No change was made to the regulation.

The Department also received several comments suggesting modification to the bacteriological and *Legionella* culture sampling and analysis frequency to provide more flexibility. The Department believes the sampling intervals are reasonable and attainable and no change was made to the regulation.

Differences between power production plant cooling towers and those used by other industries

The Department received several comments describing the differences between power production plant cooling towers and those used for other purposes. The Department has had substantial discussions with power production consortia and with the New York State Department of Environmental Conservation (DEC) to discuss the unique issues involving disinfection and discharge permits for power production plant cooling towers.

The Department will continue to address these concerns through guidance. No change was made to the regulation.

Registry

The Department received several comments regarding coordination with New York City Department of Health and Mental Hygiene (DOHMH), given the recently adopted DOHMH regulations pertaining to cooling towers. The Department continues to work with DOHMH to address reporting and data sharing. No change was made to the regulation.

Environmental Laboratory Approval Program (ELAP)

The Department received comments concerning the requirement that *Legionella* culture analysis be performed by a New York State Environmental Laboratory Approval Program (ELAP) certified laboratory. On June 1, 2016, the Department made application materials available for laboratories to apply for certification for *Legionella* culture analysis and has begun receiving applications for laboratories. No change was made to the regulation.

Public Notification

The Department received comments concerning the public notification requirement, requesting clarification and a standard approach for notification. The Department will work with local health departments to ensure a standard approach for public notification.

Disinfection

One commenter raised a concern over the technical accuracy of the disinfection language in 10 NYCRR 4-1.7. The Department, in consultation with the DEC, made technical clarifications to the regulation to specify that the terms “disinfect” and “disinfection” mean the control of microorganisms or microbial growth. Further, the regulation permits only biocide

products registered by the DEC for use in cooling towers or pesticidal devices in a US EPA registered establishment to be used in disinfection.

Inspection and Certification

The Department received several comments and questions related to the inspections and certification requirements in 10 NYCRR 4-1.8. Several commenters requested changes to the inspection interval. The Department believes the inspection interval is reasonable and attainable, and no change was made to the regulation. Additional clarification was provided in the full Assessment of Public Comment. The Department will publish additional guidance as needed.

Appendix 4-A

The Department received several comments recommending revisions to Appendix 4-A. In particular, commenters requested a revision to the language prohibiting the use of halogen-based compounds. In response, the Department provided a technical revision to a footnote to address that online disinfection may involve the use of stabilized halogens that are part of normal operations. In addition, the Department revised the second column heading in Appendix 4-A from “Approach” to “Response,” as suggested.

SUBPART 4-2 Health Care Facilities

Environmental Assessment

The Department received several comments concerning the environmental assessment form, including how to access the form, who should prepare it, and when must it be updated. The forms are currently available to local health departments in the Health Commerce System and will be posted on the Department’s website. Assessments should be completed by individuals, or

members of an internal multi-disciplinary team, that have the knowledge related to the facility's components, operations, and contract services. As stated in the regulation, the environmental assessment needs to be updated annually or when major construction is conducted at the facility. This means that the environmental assessment must be revised whenever building or plumbing modifications occur that will affect the remainder of the potable water system. No changes were made to the regulation.

Sampling and Management Plan

The Department received comments stating that a comprehensive management program and plan is necessary for healthcare facilities. Specifically, some commenters requested that Subpart 4-2 incorporate ANSI/ASHRAE 188-2015, Annex A, by reference.

The Department did not make substantive amendments to 10 NYCRR 4-2.4 in response to these comments. Elements of Annex A are contained in Department guidance issued as a Health Advisory sent to Article 28 facilities on August 10, 2015 (Health Advisory). In addition, the Department clarified the regulation by changing the term "Sampling Plan" to "Sampling and Management Plan." Inclusion of "Management" in the title better represents the intent of the plan.

The Department also received several questions concerning when samples must be collected, from where, how many, and other details. Many of these answers are available in a Department's Health Advisory, and responsive details are provided in the full Assessment of Public Comment. In addition, the Department will issue updated guidance with additional information. No changes were made to the regulation in response to these comments.

Appendix 4-B

The Department received several comments concerning the sampling result interpretation and response actions for *Legionella* culture results. The Department revised the second column heading in Appendix 4-B from “Approach” to “Response,” as suggested. The Department provided a technical revision to a footnote to remove mention of specific treatment alternatives. Specific answers to the questions received are provided in the full Assessment of Public Comment.



**THE NEW NYC COOLING TOWER
LEGISLATION**

**OBTAINED FROM THE
NEW YORK
CITY
COUNCIL**

LOCAL LAW No. 77

**LOCAL LAWS
OF
THE CITY OF NEW YORK
FOR THE YEAR 2015**

No. 77

Introduced by The Speaker (Council Member Mark-Viverito) and Council Members Gibson, Johnson, Williams, Arroyo, Barron, Constantinides, Eugene, Kallos, Koo, Koslowitz, Mealy and Wills (in conjunction with the Mayor). Passed under a Message of Necessity from the Mayor.

A LOCAL LAW

To amend the administrative code of the city of New York, in relation to regulation of cooling towers.

Be it enacted by the Council as follows:

Section 1. Chapter 3 of title 28 of the administrative code of the city of New York is amended by adding a new article 317 to read as follows:

ARTICLE 317

COOLING TOWERS

§ 28-317.1 General. All owners of cooling towers shall comply with this article and the rules of the department.

§ 28-317.2 Definitions. As used in this article, the following terms shall have the following meanings:

COOLING TOWER. The term “cooling tower” means a cooling tower, evaporative condenser or fluid cooler that is part of a recirculated water system incorporated into a building’s cooling, industrial process, refrigeration, or energy production system.

§ 28-317.3 Registration. All owners of cooling towers shall register such towers with the department prior to initial operation in a form and manner as required by the commissioner and shall include, at a minimum, the following information:

1. Address of the building at which the cooling tower is located;
2. Intended use of cooling tower;
3. Name, address, telephone number and email address of owner;
4. Manufacturer of the cooling tower;
5. Model number of the cooling tower;
6. Specific unit serial number of the cooling tower;
7. Cooling capacity (tonnage) of the cooling tower;
8. Basin capacity of the cooling tower; and
9. Commissioning date of the cooling tower.

Exception: Owners of existing cooling towers shall register such towers within 30 days after the effective date of this section.

§ 28-317.3.1 Discontinued use. The owner or operator of a cooling tower shall notify the department within 30 days after removing or permanently discontinuing use of a cooling tower. Such notice shall include a statement that such cooling tower has been drained and sanitized in compliance with the requirements of the department of health and mental hygiene for discontinuance of a cooling tower.

§ 28-317.4 Inspecting, cleaning, disinfecting and testing. All cooling towers shall be inspected, tested, cleaned and disinfected in accordance with section 17-194.1 of the administrative code and the rules of the department of health and mental hygiene.

§ 28-317.5 Annual certification. The owner or operator of a cooling tower shall file a certification each year that such cooling tower was inspected, tested, cleaned and disinfected in compliance with section 17-194.1 of the administrative code and the rules of the department of health and mental hygiene, and that a maintenance program and plan has been developed and implemented as required by such

section. Such certification shall be submitted by November 1, 2016 and by November 1 of each year thereafter, or as otherwise specified in the rules of the department.

§ 28-317.6 Fees. The department may charge filing fees for registration, discontinuing of use and annual certification as set forth in the rules of the department.

§ 28-317.7 Enforcement. Failure to register a cooling tower or submit a certification or statement required by this article shall be classified as a major violation.

Section 2. The administrative code of the city of New York is amended by adding a new section 17-194.1 to read as follows:

§ 17-194.1 a. Definitions. For the purposes of this section, the following terms have the following meanings:

Building. The term “building” has the same meaning as in section 28-101.5 of this code.

Cooling tower. The term “cooling tower” has the same meaning as in section 28-317.2 of this code.

Owner. The term “owner” has the same meaning as in section 28-101.5 of this code.

b. Registration. An owner of a building that has a cooling tower shall register the cooling tower with the department of buildings in accordance with article 317 of chapter 3 of title 28 of this code.

c. Maintenance program and plan. An owner of a building that has a cooling tower shall develop and implement a maintenance program and plan for such cooling tower that is in accordance with sections 5, 6, and 7.2 of the American society of heating, refrigeration and air-conditioning engineers standard 188 for the year 2015 (ASHRAE 188-2015) and with the manufacturer’s instructions. Such program and plan shall be developed by a qualified person.

d. Cleaning and disinfection after extended shut-down. At a minimum, an owner shall clean and disinfect cooling towers that are shut-down for more than five days. Cleaning and disinfection shall occur within 15 days before the use of such tower.

e. Minimum requirements for inspections and testing. At a minimum, cooling towers, other than cooling towers whose use has been permanently discontinued and for which a notice of such discontinuation has been sent to the department of buildings, shall be inspected and tested at least as frequently as every three months during periods of the year such cooling towers are in use.

1. Each inspection shall include an evaluation of the cooling tower and associated equipment for the presence of organic material, biofilm, algae and other visible contaminants.

2. Each inspection shall include a test for the presence of microbes in the water of the cooling tower. The department shall by rule establish (i) the targets and acceptable methods of microbial testing and laboratory analysis, (ii) the levels of microbes in cooling towers that are indicative of a maintenance deficiency requiring mitigation, including but not limited to maintenance to prevent potential health risks, and (iii) the levels of microbes in cooling towers that present a serious health threat and require immediate action and reporting.

(a) Where the results of any such test indicate levels of microbes that are indicative of a maintenance deficiency requiring mitigation, including but not limited to maintenance to prevent potential health risks, the owner of the building that has such cooling tower shall, within 48 hours after such owner knows or reasonably should know of such results, clean and disinfect the cooling tower in accordance with the rules of the department.

(b) Where the results of any such test indicate levels of microbes that present a serious health threat, the owner of the building that has such cooling tower shall, within 24 hours after such owner knows or reasonably should know of such results, (i) notify the department and (ii) clean and disinfect the cooling tower, including an additional application of biocide, in accordance with the rules of the department.

f. Inspections, cleaning and disinfection. All inspections, cleaning and disinfection required by this section shall be performed by or under the supervision of a qualified person.

g. Abatement. Where an owner does not clean and disinfect a cooling tower within the time and manner set forth in subdivision e, the department may serve an order on the owner requiring compliance within a specified time. If such order is not complied with the department may authorize any agency of the city to act as agent of the department in executing such order and may recover the

costs of such execution from the owner in accordance with any of the methods set forth in sections 17-149 through 17-158.

h. Recordkeeping. An owner shall keep and maintain records of all inspections and tests performed pursuant to this section for at least three years. An owner shall maintain a copy of the maintenance program and plan required by subdivision c of this section on the premises where a cooling tower is located. Such records and plan shall be made available to the department immediately upon request.

i. Enforcement.

1. An officer, employee or agent of the department may enter onto any property to inspect the cooling tower, and review and obtain a copy of any records or plan required to be kept under subdivision h of this section, for compliance with the requirements of this section or any of the rules promulgated thereunder, in accordance with applicable law.

2. (i) Any owner of a building who violates any provision of this section or any of the rules promulgated thereunder shall be liable for a civil penalty of not more than \$2,000 for a first violation, and not more than \$5,000 for a second or subsequent violation, except that such owner shall be liable for a penalty of not more than \$10,000 for any violation that is accompanied by or results in a fatality or serious injury.

(ii) In addition to any civil penalties under this subdivision, a violation of an order pursuant to subdivision g of this section shall be a misdemeanor punishable by a fine of not more than \$25,000 or imprisonment for not more than one year, or both.

(iii) A notice of violation served for civil penalties pursuant to this section shall be returnable at the environmental control board or any tribunal established within the office of administrative trials and hearings.

j. Electronic reporting. The department may require any submission required by this section be submitted electronically.

Section 3.

a. The commissioner of the department of health and mental hygiene, in consultation with the department of buildings, shall submit a report to the mayor and the speaker of the city council on or before May 15 each year until May 15, 2025 reporting on the following information for the prior year:

- (i) The number of new cooling tower registrations and the number of notifications of discontinued use of a cooling tower pursuant to section 28-317.3 of the administrative code received by the department of buildings through November 1 of the prior year;
- (ii) The number of annual certifications that a cooling tower was inspected, tested, cleaned and disinfected pursuant to section 28-317.5 of the administrative code received by the department of buildings through November 1 of the prior year;
- (iii) The number of reports of tests for the presence of microbes that reveal levels that present a serious health threat received by the department of health and mental hygiene pursuant to paragraph 2 of subdivision e of section 17-194.1 of the administrative code;
- (iv) The number of inspections of cooling towers conducted pursuant to subdivision h of section 17-194.1 of the administrative code and the rules of the department of health and mental hygiene, along with the number and types of any violations cited during such inspections;
- (v) The number of cleanings, disinfections or other actions performed by or behalf of the department pursuant to subdivision f of section 17-194.1 of the administrative code; and
- (vi) The number of persons diagnosed with legionnaires' disease in the city in each of the previous 10 years, to the extent known or reasonably discoverable by the department of health and mental hygiene.

b. On or before March 1, 2016, the commissioner of the department of health and mental hygiene shall submit a report to the mayor and the speaker of the city council that includes an assessment and recommendations on whether this local law should be amended to include

requirements for any of the building water systems described in the American society of heating, refrigeration and air-conditioning engineers standard 188 for the year 2015 (ASHRAE 188-2015) in addition to cooling towers.

c. On or before March 1, 2017, the commissioner of the department of health and mental hygiene shall submit a report to the mayor and the speaker of the city council detailing the implementation of this local law, the effectiveness of the requirements of this local law in preventing outbreaks of legionnaire's disease, and recommendations for improvements or modifications to this local law and any rules promulgated thereunder to further the control of legionella bacteria.

Section 4. This local law takes effect immediately, except that subdivision c of section 17-194.1 of the administrative code as added by section two of this local law shall take effect on March 1, 2016; and that section 28-317.4 of the administrative code, as added by section one of this local law, and subdivisions e, f, g, h and i of section 17-194.1 of the administrative code, as added by section two of this local law, shall take effect upon the promulgation of rules by the department of health and mental hygiene.

THE CITY OF NEW YORK, OFFICE OF THE CITY CLERK, s.s.:

I hereby certify that the foregoing is a true copy of a local law of The City of New York, passed by the Council on August 13, 2015 and approved by the Mayor on August 18, 2015.

MICHAEL M. McSWEENEY, City Clerk, Clerk of the Council.

CERTIFICATION OF CORPORATION COUNSEL

I hereby certify that the form of the enclosed local law (Local Law No. 77 of 2015, Council Int. No. 866 of 2015) to be filed with the Secretary of State contains the correct text of the local law passed by the New York City Council and approved by the Mayor.

STEPHEN LOUIS, Acting Corporation Counsel.



NOTICE OF
ADOPTION

CHAPTER 8 - TITLE 24*
COOLING TOWER LEGISLATION

POSTED APRIL 7th, 2016

OBTAINED FROM THE

RULES OF THE
City of New York
WEBSITE

Effective Date:
Monday,
May 9th, 2016

New York City
DEPARTMENT OF HEALTH
AND MENTAL HYGIENE

The *Rules of the City of New York* are available on-line at:

<https://rules.cityofnewyork.us>

These adopted changes to **Chapter 8 of Title 24 of the Rules of the City of New York** were found online at <https://rules.cityofnewyork.us> from the document entitled:

NEW YORK CITY DEPARTMENT OF HEALTH AND MENTAL HYGIENE

Notice of Adoption of Chapter 8 (Cooling Towers) of Title 24 of the Rules of the City of New York

In compliance with § 1043(b) of the New York City Charter (the “Charter”) and pursuant to the authority granted to the Department by §§556 and 1043 of said Charter, a notice of intention to add a new Chapter 8 (Cooling Towers) to Title 24 of the Rules of the City of New York was published in the City Record on December 3, 2015 and a public hearing was held on January 4, 2016. Eight persons testified at the public hearing and 26 written comments were received, including several from persons who testified at the hearing. In response to the comments received, changes were made to the original proposal and are discussed below.

Statement of Basis and Purpose

Background

Legionellosis is an illness that must be reported to the Department in accordance with New York City Health Code §11.03 and State Sanitary Code (SSC) §2.1 (found in title 10 of NYCRR). The more serious form of legionellosis is a pneumonia known as Legionnaires’ disease (LD); a less serious form, Pontiac fever, is a flu-like illness. LD has case fatality rate of 5-30%. The US Centers for Disease Control and Prevention (CDC) estimates that there were between 8,000 and 18,000 cases of LD in the United States annually, and that more than 10% of cases are fatal.¹

People are exposed to *Legionella* through the inhalation or aspiration of aerosolized water (droplets or mist) that contain the bacteria. Person-to-person transmission of *Legionella* has not been demonstrated. Susceptible people at higher risk for LD include the elderly, people who are immune compromised or have other medical conditions, and heavy smokers. In New York City, there were 301 cases of LD in 2013 and 225 cases in 2014. Between 2000 and 2014 there were, on average, 165 confirmed cases a year with the number of annual cases ranging from 44 to 301. This year, there have been 374 confirmed cases of LD as of October 7, 2015. In July and August, the Department investigated an unusually large cluster of 133 cases of LD that occurred in the Bronx and resulted in 16 deaths.² The Department determined that this outbreak was associated with aerosolized *Legionella* bacteria emanating from one or more building cooling towers to which susceptible persons were exposed. Responding to the outbreak, the City Council and Mayor enacted Local Law 77 of 2015. At the same time, the State Public Health and Health Planning Council (PHHPC) adopted a new Part 4 of the State Sanitary Code (“SSC”), found in 10 NYCRR Chapter 1, on an emergency basis, citing other instances of LD outbreaks and fatalities occurring in other parts of the State that are believed to be associated with cooling towers.³

¹ <http://www.cdc.gov/legionella/fastfacts.html>

<http://www.cdc.gov/legionella/index.html>

<http://www.cdc.gov/legionella/about/treatment-complications.html>

² <http://www.nyc.gov/html/doh/html/diseases/cdlegi.shtml>

³ The State’s emergency rules originally were scheduled to expire November 18, 2015 but have been reissued, and permanent rules are expected.

Both Local Law 77 and the SSC §4.2(c) define a cooling tower as “a cooling tower, evaporative condenser or fluid cooler that is part of a recirculated water system incorporated into a building’s cooling, industrial process, refrigeration or energy production system.” As the PHHPC’s Emergency Justification for Part 4 of the State Sanitary Code states:

Because water is part of the process of removing heat from a building, cooling towers require treatment with biocides – chemicals that kill or inhibit bacteria (including *Legionella*)—as means of controlling bacterial overgrowth. Overgrowth may result in the normal mists ejected from the tower having droplets containing *Legionella*.

Local Law 77 added a new Article 317 to Title 28 of the Administrative Code that required owners of cooling towers to register them with the Department of Buildings (“DOB”) by September 17, 2015. Towers must be inspected, tested, cleaned and disinfected in accordance with new Administrative Code §17-194.1 and rules adopted by the Department. Owners and operators of cooling towers must annually certify to DOB that their cooling towers have been inspected, tested, cleaned and disinfected and that a management and maintenance program has been developed and implemented in accordance with Administrative Code §17-194.1. Statewide, including in New York City, owners of all cooling towers must also comply with SSC Part 4, which includes registration with and reporting requirements to the State Department of Health.

This new Chapter sets forth specific requirements for the operation and maintenance of cooling towers in New York City comply with and further those contained in Part 4 of the SSC. The Chapter’s provisions that are equivalent to the SSC are noted below. This Chapter is organized in a differently than the SSC requirements; more terms are defined in this Chapter and more detailed instructions for management and maintenance are provided than those contained in SSC Part 4 to facilitate compliance with both the City and State rules and requirements.

Chapter 8 contents and further changes

The new Chapter 8 includes the provisions outlined below. The description also notes changes made to the original published proposal in response to comments received.

§8-01 Scope and applicability: applicable to all owners and operators of buildings and other premises that are equipped with cooling towers.

§8-02 Definitions: to facilitate compliance with and enforcement of these rules, more terms are defined in this Chapter than in the corresponding sections of either the Administrative Code or SSC Part 4. Since the proposed rule was published for public comment, a definition has been added for “biocidal indicator,” and the definition of “water quality parameters” has been amended to delete “total dissolved solids (TDS)” and “oxidation reduction potential (ORP)” as parameters and add “biocidal indicator” as an additional parameter. The term “responsible person” has also been redefined as someone who is working under the guidance of a “qualified person.” This change was made to clarify that the “qualified person” is not required to be the direct supervisor of the “responsible person.”

§8-03 Maintenance program and plan: the requirements of this section exceed those of SSC Part 4, including specific routine maintenance tasks; identification of persons responsible for various functions; identifying system components; and establishing a system risk management assessment to identify areas that may create problems and lead to proliferation of *Legionella* bacteria. In response to

comments that the records of cooling tower operations and the maintenance program and plan may not be kept at the cooling tower itself, the Department has modified this requirement to allow the plan to be kept in an adjacent location on the same campus, complex or lot where the cooling tower is located. Section 8- 07(a) has also been amended to be consistent with this change.

§8-04 Process control measures: this section establishes requirements for routine monitoring, to be conducted at least weekly by the “responsible person,” and for compliance inspections to be conducted at least every 90 days by a qualified person. It specifies standards for maintenance, cleaning, and parts replacement; and requires installation of high efficiency drift eliminators in all new and retrofitted cooling tower systems and in existing ones, where practicable. In response to comments received since the proposed rule was published, subdivision (a)(3) has been changed to require observations of wetted surfaces only if this can be done without shutting down the cooling tower system. Subdivision (c)(2) has been amended to require that alterations to equipment be made in compliance with the current City Construction Codes and that cleaning protocols and safety equipment be included in the management program and plan.

§8-05 Water treatment: this section specifies requirements for automatic treatments, use of chemicals and biocides, and monitoring water quality characteristics/parameters, and establishes a schedule for sampling for Legionella and other bacteria including requiring additional sampling when certain events occur. This section also mandates the use of certain qualified laboratories for analysis and requires reporting levels of Legionella at a certain magnitude to the Department within 24 hours of obtaining test results; and specifies corrective actions for various levels of bacteria. Although the 2014 New York City Plumbing Code Appendix C authorizes use of rainwater or recycled water as makeup water for cooling towers, it does not require disinfection for Legionella bacteria before use. These rules prohibit such use unless owners use additional control measures approved by the Department that protect against cooling tower system contamination since the Department believes that this water may not meet public health standards and may tend to support microbial growth. In response to comments received since the proposed rule was published, provisions in subdivision (c) on biocide applications and recordkeeping have been clarified, and a new requirement added that any water treatment system that does not use any oxidizing biocide must be approved by the Department. Subdivision (d) has been amended to restrict (as opposed to completely prohibit) the use of non-chemical water treatment to systems where effective chemical treatment is also in place to control Legionella. In subdivision (f), provisions have been added to clarify that continuous automated monitoring is allowed in lieu of manual monitoring. The initially published Table 1 of corrective actions has been split into two tables: Table 8-1 indicates required actions when water samples are culture positive for Legionella and Table 8-2 indicates the required actions for heterotrophic and dip slide results for uncultured bacteria.

§8-06 System shutdown and start-up; commissioning new cooling towers: this section sets forth requirements for pre-seasonal cleaning and disinfection and for new cooling towers being placed into use. In response to comments received since the proposed rule was published, subdivision (c) has been amended to require pre-startup inspection and Legionella sampling.

§8-07 Records: this requires the maintenance of records of all activities and that such records be made available for immediate inspection by the Department at the premises where the cooling tower is installed.

§8-08 Modification: authorizes the Commissioner to modify the application of a provision of these rules where compliance imposes an undue hardship and would not otherwise be required by law, provided that the modification does not compromise public health concerns.

§8-09 Penalties: establishes a schedule of penalties for initial and subsequent violations within the limits set forth in Administrative Code §17-194.1.

Statutory Authority

This amendment to Title 24 of the Rules of the City of New York (“RCNY”) is promulgated pursuant to Local Law 77 of 2015, and sections 556 and 1043 of the New York City Charter (“the Charter”). Section 556 of the Charter broadly authorizes the Department of Health and Mental Hygiene (“the Department”) to regulate all matters pertaining to the health of the City. Section 1043 grants the Department rule-making authority. Local Law 77 of 2015, enacted August 18, 2015, added a new §17-194.1 to the New York City Administrative Code (“Administrative Code”) requiring owners of buildings to clean and disinfect cooling towers and authorizing the Department to adopt rules to implement these requirements. Many of Local Law 77’s substantive provisions for inspection and disinfection become effective upon the promulgation of these Department rules.

The rule is as follows:

“Shall” and “must” denote mandatory requirements and may be used interchangeably in the rules of this Department, unless otherwise specified or unless the context clearly indicates otherwise.

Section 1. Title 24 of the Rules of the City of New York is amended by adding a new Chapter 8 (Cooling Towers) to read as follows:

CHAPTER 8 COOLING TOWERS

§8-01 Scope and applicability.

§8-02 Definitions.

§8-03 Maintenance program and plan.

§8-04 Process control measures.

§8-05 Water treatment.

§8-06 System shutdown and start-up; commissioning and decommissioning cooling towers.

§8-07 Records.

§8-08 Modification.

§8-09 Penalties.

§8-01 Scope and applicability. This Chapter applies to owners of New York City buildings or other premises in the City that are equipped with a cooling tower system.

§8-02 Definitions. When used in this Chapter, the following terms mean:

“ANSI/ASHRAE 188-2015” means sections 5, 6 and 7.2 of ANSI/ASHRAE Standard 188-2015 Legionellosis: Risk Management for Building Water Systems,” a publication issued by the American National Standards Institute (ANSI)/American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE), final approval date June 26, 2015, at pages 4-8.

“Bacteriological indicator” means a biological process control indicator that estimates microbial content in the circulating water of a cooling tower system, such as heterotrophic plate count (HPC) as measured in a water sample or by a dip slide.

“Biocidal indicator” means a direct or indirect measure of the effectiveness of biocide, consisting of free halogen residual concentration or oxidation reduction potential (ORP), as specified in the management program and plan.

“Building” means any structure used or intended for supporting or sheltering any use or occupancy. The term shall be construed as if followed by the phrase “structure, premises, lot or part thereof” unless otherwise indicated by the text.

“Cleaning” means physical, mechanical or other removal of biofilm, scale, debris, rust, other corrosion products, sludge, algae and other potential sources of contamination.

“Cooling tower” means a cooling tower, evaporative condenser or fluid cooler that is part of a recirculated water system incorporated into a building’s cooling, industrial process, refrigeration, or energy production system.

“Cooling tower system” means one or more cooling towers and all of the recirculating water system components, process instruments and appurtenances through which water flows or comes into contact with key parts consisting of biocide, anti-scaling and anti-corrosion chemical applicators, valves, pumps, the tower superstructure, condensers and heat exchangers and other related components. The cooling tower system may comprise multiple cooling towers that share some or all superstructure components.

“Corrective actions” mean disinfection, cleaning, flushing, and other activities to remedy biofilm growth, *Legionella* proliferation, or other system mechanical problems identified through monitoring, inspections, or other means as may be determined by the Department.

“Compliance inspection” means the inspection, testing and other activities that are required on a regular basis (at least every 90 days) in accordance with the maintenance program and plan and this Chapter, including the completion of a written or electronic checklist, and must be conducted and certified by a qualified person.

“Dead legs” mean lengths of pipe normally closed at one end or ending in a fitting within the cooling tower system that limits water circulation and is likely to result in stagnant water in the system.

“Department” means the New York City Department of Health and Mental Hygiene.

“Dip slide” means a method to test for microorganisms (such as HPC) consisting of a sterile culture medium affixed to a sterile slide, that is dipped directly into the liquid that is to be sampled.

“Disinfection” means using one or more of the biocides registered with the New York State Department of Environmental Conservation at a defined concentration, under specific conditions and for an established period that will kill or inactivate pathogenic microorganisms.

“Drift eliminator” means a system of baffles or cells that cause separation of entrained water and designed to remove aerosols from cooling tower exhaust.

“Heterotrophic plate count” or “HPC” means a measure of the concentration of microorganisms that require an external source of organic carbon for growth including bacteria, yeasts and mold in water samples.

“Idling” means turning off or limiting water circulation within the cooling tower system but not draining the system water.

“Immediate” or “immediately” means within 24 hours when used in regards to (i) actions required to be taken under this Chapter, or (ii) incidents or results required to be reported under this Chapter, or (iii) records required to be made available to the Department under this Chapter.

“Legionella” means the genus of bacteria which is ubiquitous in aqueous environments, including the recirculated water of cooling tower systems that are not properly or regularly maintained. There are more than 50 different species of Legionella, all of which are potentially pathogenic.

“Legionella sample” means water or other sample to be examined for the presence of viable Legionella bacteria using semiselective culture media and procedures specific to the cultivation and detection of

Legionella species, such as those outlined in International Organization for Standardization (ISO) Standards 11731-1:1998 and 11731-2:2004.

“Maintenance program and plan” means a written set of measures describing monitoring, cleaning, disinfection and all other activities for the prevention and control of Legionella growth in a cooling tower system, that is in accordance with section 5, 6 and 7.2 of ANSI/ASHRAE 188-2015 and with the manufacturer’s instructions, and is developed by a qualified person.

“Makeup water” means water added to the cooling tower system on a regular basis to replace water lost by evaporation, drift or leakage and to maintain optimal system operation and process control.

“Management and maintenance team” means the individual or individuals designated by a building owner to be responsible for the continued effective and safe operation of a cooling tower system.

“Owner” means any person, agent, firm, partnership, corporation or other legal entity having a legal or equitable interest in, or control of the premises.

“Process control measures” mean actions that must be taken to evaluate internal functioning of the cooling tower system, including monitoring conductivity, pH, biological indicators and other parameters, and observing phenomenon such as scaling, corrosion and biofilm.

“Qualified person” means a New York State licensed and registered professional engineer; a certified industrial hygienist; a certified water technologist with training and experience developing management plans and performing inspections in accordance with current standard industry protocols including, but not limited to ANSI/ASHRAE 188-2015; or an environmental consultant who has at least two (2) years of operational experience in water management planning and operation.

“Responsible person” means a person employed or whose services are retained by an owner, who understands and is capable of performing the required daily water quality measurements, weekly system monitoring and operation and maintenance of a cooling tower system in accordance with the maintenance program and plan, and making recommendations for diagnosing anomalous conditions that require corrective actions, under the supervision of a qualified person. The responsible person should be capable of: measuring water pH, temperature and disinfectant residual levels at proper locations/frequencies; checking biocide storage container levels; recording dates, amounts and times of biocide injection; and logging all other relevant data and comments.

“Risk management assessment” means a process for comprehensively identifying, describing and evaluating in detail all aspects of a cooling tower system that may potentially contribute to the growth and dissemination of *Legionella* bacteria.

“Routine monitoring” means evaluation and other activities that must be completed periodically in accordance with the maintenance program and plan and this Chapter.

“Stagnant water” means water that is confined, standing, experiencing period of low flow or usage, and not being actively circulated through the cooling tower system.

“Standard methods” means accepted protocols for sampling, recording, laboratory testing, reporting and other procedures related to environmental and water quality sampling, including, but not limited to,

those set forth in *Standard Methods for the Examination of Water and Wastewater* 22nd Edition, 2012, a publication issued jointly by the American Public Health Association, the American Water Works Association and the Water Environment Federation and the *Standards Microbiological Methods* (TC 147/SC4) published by the International Organization for Standardization, or successor editions.

“System shutdown” means shutting off or closing and draining the cooling tower system when cooling is no longer needed.

“System start-up” means commissioning a new system, or putting the cooling tower system into operation after system shutdown or idling.

“Water quality parameters” means temperature, pH, conductivity, biocidal indicator, bacteriological indicator and other chemical and physical indicators of system process control.

§8-03 Maintenance program and plan. For each cooling tower system the owner must have a maintenance program and plan prepared by a qualified person in accordance with sections 5, 6 and 7.2 of ANSI/ASHRAE 188-2015, the manufacturer’s instructions, and the requirements of this Chapter. The plan must be kept current and amended by a responsible or qualified person as needed to reflect any changes in the management and maintenance team, system design, operation or system control requirements for the cooling tower system. The plan must be kept in the building where a cooling tower or cooling tower system is located, or in an adjacent building or structure on the same campus, complex, lot, mall or on-site central engineering division, and must be made available to the Department for inspection upon and at the time of a request. At a minimum, the plan must include and describe:

- (a) *Management and maintenance team.* Identification, including names and contact information (mail and email addresses and telephone numbers) and description of the function of each person on the cooling tower system management and maintenance team, including:
 - (1) The owner of the building where each cooling tower system is located and any manager or other person designated by the owner as responsible for compliance with the requirements of Administrative Code §17-194.1 and this Chapter.
 - (2) Any person designated by the owner as a responsible person, as defined in §8-02 of this Chapter.
 - (3) Every consultant, service company and qualified person who cleans, disinfects, delivers chemicals or services the cooling tower system.
- (b) *Cooling tower system.* Identification, specifications and description of each cooling tower system and all components located at a specific address, including:
 - (1) The number of cooling towers in the cooling tower system.
 - (2) The location of each cooling tower in relation to the building and the building address, block and lot number.

- (3) The dimensions and characteristics of the cooling tower system including total recirculating water volume, cooling tower tonnage, biocide delivery method, flow rate and other key characteristics.
 - (4) The purpose of the cooling tower system and seasonal or year-round operation including start and end date, if applicable. For systems with multiple cooling towers, conditional operation, such as cycling or scaling, related to cooling demand, must also be noted.
 - (5) The New York City Department of Buildings registration number for each cooling tower.
 - (6) The Cooling tower manufacturer, model number and serial number, if applicable.
 - (7) A flow diagram or schematic of the cooling tower system, identifying all of the principal components and appurtenances of the cooling tower system including makeup water and waste stream plumbing locations.
- (c) *Risk management assessment.* The assessment must identify risk factors for Legionella proliferation and specify risk management procedures for all or parts of each cooling tower system, and anticipated conditions including:
- (1) Any dead legs or stagnant water in the recirculation system.
 - (2) Operating configurations and conditions that may occur after periods of extended inactivity lasting more than three (3) days, including idling or low circulation while not being fully drained.
 - (3) System parts that require continual operation throughout the year making regular, periodic offline cleaning and disinfection difficult.
 - (4) Any components that may add additional risk factors for organic material buildup and microbial growth such as strainers and out-of-use filters.
 - (5) Sources of elevated organic contamination, including, but not limited to windblown debris, bird waste and plant material.
 - (6) Design configurations that present risk of direct sun exposure on basin, deck or fill.
 - (7) Ventilation intakes or other routes for human exposure to cooling tower aerosols.
 - (8) System components adversely affecting water quality management procedures.
 - (9) Other risk or limiting factors or constraints in the cooling tower system's design and functioning.

(d) *Cooling tower operation.*

- (1) Control measures, corrective actions, documentation, including a written checklist for routine monitoring, and reporting that comply with sections 8-04 through 8-08 of this Chapter and any routine maintenance activities recommended by the manufacturer's instructions, including performance measures, which may sufficiently demonstrate adequate implementation of the operation requirements described in the maintenance program and plan. Where there is a conflict between the requirements of this Chapter, Part 4 of the State Sanitary Code, section 17-194.1 of the Administrative Code, and the manufacturer's instructions, the maintenance program and plan must reflect the most stringent requirement.
- (2) Specific, detailed seasonal and temporary shutdown and start-up procedures.
- (3) Notification and communication strategies among management and maintenance team members regarding the required corrective actions in response to process control activities, monitoring, sampling results and other actions taken to maintain the cooling tower system.

§8-04 Process control measures.

- (a) *Routine system monitoring.* An owner must designate a responsible person as defined in §8-02 of this Chapter to monitor each cooling tower system at least weekly while such system is in use.
 - (1) The responsible person must enter on a written or electronic checklist provided and maintained by the owner all visual observations of the cooling tower system and associated equipment.
 - (2) The responsible person must possess the skills and have the knowledge necessary to be able to monitor the system under the guidance of a qualified person, in accordance with the management program and plan.
 - (3) All wetted surfaces visible during cooling tower operation without shutting down the system, tower basins and drift eliminators must be observed during monitoring and the presence of organic material, biofilm, algae, scale, sediment and silt/dust deposits, organics (oil and grease), and other visible contaminants observed must be noted on the checklist.
 - (4) The responsible person must observe and note the condition of chemical dosing and control equipment and the bleed-off system, and determine if there is sufficient storage and delivery of treatment chemicals.
 - (5) Any system anomalies or problems must be recorded on the checklist and reported to the management and maintenance team for immediate corrective action.
- (b) *Compliance inspections.* An owner must retain a qualified person to conduct a compliance inspection at least once every ninety (90) days while a cooling tower system is in operation.

The qualified person must complete and the owner must maintain a written or electronic checklist containing observations and findings with respect to any of the following:

- (1) Presence of organic material, biofilm, algae, and other visible contaminants.
- (2) General condition of the tower, the basin, packing material and drift eliminator.
- (3) Quality of water makeup connections and control.
- (4) Proper functioning of the conductivity control.
- (5) Proper functioning of all dosing equipment (pumps, strain gauges).
- (6) Review of routine maintenance records to ensure proper implementation of required activities and corrective actions as needed.

(c) *Maintenance.*

- (1) *Routine maintenance.* Cooling tower systems must be maintained and operated in accordance with the maintenance program and plan. Routine maintenance must address all components and operations, including, but not limited to, general system cleanliness, drift eliminator and fill material condition, overall distribution operation, water treatment system, basin/remote sump cleaning, and purging of stagnant and low-flow zones.
- (2) *Replacement in kind.* Any replacement part or equipment used in a cooling tower must comply with the manufacturer's design and performance specifications. As applicable, replacement materials must be corrosion resistant and effectively prevent the penetration of sunlight. Any alteration or replacement of a cooling tower system must comply with the New York City Construction Codes.

(d) *Cleaning.* The cooling tower system must be cleaned whenever routine monitoring indicates a need for cleaning, but no less than twice a year, in accordance with the maintenance program and plan. Cleaning protocol indicated by the manufacturer's instructions or industry standards, and worker protective measures, as required by applicable law must be specified in the maintenance program and plan. Water contact areas such as the basin, sump, fill, spray nozzles and fittings, drift eliminators and air intake louvres must be properly accessed or removed to facilitate cleaning.

(e) *Aerosol and mist control.* The cooling tower system must be operated at all times to minimize the formation and release of aerosols and mist. Owners must install and maintain drift eliminators in accordance with the manufacturer's specifications and the New York City Construction Codes. The calculated drift loss at maximum design water circulation must not exceed the manufacturer's tested value for maximum drift loss. Counter-flow cooling towers must achieve a reduction of drift loss to no more than 0.002% percent of the recirculated water volume; cross-flow cooling towers must achieve a reduction of drift loss to no more than 0.005% of the recirculated water volume.

§8-05 **Water treatment.** Prior to changing an existing chemical treatment system or introducing a new chemical treatment agent, cooling tower design, installation, operation, and maintenance must be evaluated by a qualified person to ensure compatibility between the chemicals and the cooling tower system's materials, and to minimize microbial growth and the release of aerosols. The evaluation must describe the optimum level of chemicals to achieve the desired result in a manner which can be used as a system performance measure.

- (a) *Daily automatic treatment while in operation.* Water in a cooling tower system must be treated at least once a day when the system is in operation and such treatment must be automated, unless the maintenance program and plan explicitly states how manual or less frequent biocide additions will provide effective control of Legionella growth.
- (b) *Recirculating system.* A cooling tower system must be operated and programmed to continually recirculate the water irrespective of the building's cooling demand of the system, unless the maintenance program and plan specifies in detail how the intended water treatment schedule will be carried out, and how effective biofilm and microorganism control will be achieved when the whole or a part of the system is idle during the scheduled chemical injection.
- (c) *Chemicals and biocides.* Chemicals and biocides must be used in quantities and combinations sufficient to control the presence of Legionella, minimize biofilms, and prevent scaling and corrosion that may facilitate microbial growth. Only New York State Department of Environmental Conservation approved oxidizing chemicals may be used as the primary biocide control. For systems where oxidizing chemicals cannot be used as the primary biocide to control the presence of Legionella building owners must submit an alternative plan for effective bacteriological control for approval by the Department.
 - (1) *Biocide applications.* Any person who performs cleaning and disinfection or applies biocides in a cooling tower system must be a commercial pesticide applicator or a pesticide technician certified in accordance with the requirements of Article 33 of the New York State Environmental Conservation Law and 6 NYCRR Part 325, or a pesticide apprentice under the supervision of a certified applicator.
 - (2) *Registered biocides.* Only biocide products registered with the New York State Department of Environmental Conservation may be used to meet the disinfection requirements of this Chapter.
 - (3) *Records.* Water treatment records must be kept for all chemicals and biocides added, noting the purpose of their use, the manufacturer's name, the brand name, the safety data sheet, the date and time of each addition, and the amount added each week.
 - (4) *Chemical and biocide additions.* Chemicals and biocides must be added in accordance with this section and the procedures described in the maintenance program and plan addressing, as applicable, feeding mechanism, feeding location,

frequency, set timer, duration, triggering events, control procedures, and target biocide residuals. Water treatment chemicals and biocides must be used in accordance with the product label and manufacturer's instructions.

(d) *Non-chemical water treatment device prohibited.* Only biocide products registered with the New York State Department of Environmental Conservation may be used to meet the disinfection requirements of this Chapter. Non-chemical water treatment devices that employ alternative technologies to control biological growth may not be used in lieu of chemical biocide unless approved by the Department. Non-chemical water treatment devices may be installed as part of a cooling tower system as specified in the management program and plan, provided that the required chemical water treatment also being used adequately controls for Legionella.

(e) *Makeup water.* Owners using water derived from rainwater capture or recycling water systems as a source of cooling tower system makeup water must install a drift eliminator and test and treat water in accordance with a specific alternative source water plan. This plan is in addition to the maintenance program and plan required by §8-03 of this Chapter, and must be approved by the Department. The alternative water source plan must include provisions for adequate design of the treatment and control components and on-going evaluation to eliminate any risk to public health.

(f) *Water quality monitoring.*

(1) *Frequency.* Water quality parameters, including but not limited to pH, temperature, conductivity and biocidal indicators, must be measured and recorded as specified in the management program and plan as follows:

(A) *Manual measurements.* At least three times each week, provided that no more than two days pass without such measurement when the cooling tower system is operating.

(B) *Continuous, automated and/or remote measurements.* When continuous, automated and/or remote measurements and recordings are used, the management program and plan must show how effective measurements of system process control are being monitored. Automated measurements must be 12 properly recorded and results made immediately available to responsible and qualified persons and to Department inspectors when requested.

(2) *Minimum weekly biological process control indicators.* A bacteriological indicator to estimate microbial content of recirculating water must be collected and interpreted in accordance with Table 8-2 at least once each week while the cooling tower system is operating. Indicators must be taken at times and from water sampling points, as detailed in the maintenance program and plan, that will be representative of water microbial content. Indicators may be taken at any time from constant chemical treatment systems. Indicators from systems that use intermittent biocide

applications must be taken before biocide application and reflect normal cooling tower operating conditions.

- (3) *Legionella samples.* Legionella culture testing must be conducted no less frequently than every 90 days during cooling tower system operation. A Legionella sample must be analyzed by a US Centers for Disease Control and Prevention ELITE Program certified laboratory, by the New York State Department of Health Wadsworth Center or other laboratory approved by the Department. Test results of all Legionella species at or above the magnitude of level 4 as indicated in Table 8-1 must be reported to the Department within 24 hours of receiving the test results. Additional emergency Legionella sampling must be conducted if any of the following occur:
- (A) Power failure of sufficient duration to allow for growth of bacteria;
 - (B) Loss of biocide treatment sufficient to allow for growth of bacteria;
 - (C) Failure of conductivity controls to maintain proper cycles of concentration;
 - (D) At the request of the Department upon a determination that one or more cases of legionellosis is or may be associated with the cooling tower, based on epidemiological data or laboratory testing,
 - (E) Any time two consecutive bacteriological indicator sample results are above Level 4 as indicated in Table 8-2; or
 - (F) Any other conditions specified by the Department.
- (4) *Monitoring and sampling locations.* System monitoring and sampling locations must be representative of the entire cooling tower system. The system must be operating with water circulating in the system for at least one hour prior to water quality measurements or collection of samples.
- (5) *Water quality corrective actions.* The maintenance program and plan must identify the procedures, responsible parties, required response time(s) and notification protocol for corrective actions and must include, at a minimum, corrective actions that must be implemented according to the result levels in Table 8-1 and Table 8-2.

Table 8-1. Corrective actions required for Legionella culture results.

Level	Legionella Culture Result ¹	Process Triggered by Legionella Culture Results
1	< 10 CFU/ml	Maintain water chemistry and biocide levels.
2	≥ 10 CFU/ml to <100 CFU/ml	Initiate immediate disinfection by increasing biocide concentration or using a different biocide within 24 hours: review treatment program, and retest water within 3-7 days. Subsequent test results must be interpreted in accordance with this Table until level 1 is reached.
3	≥ 100 CFU/ml to <1000 CFU/ml	Initiate immediate disinfection by increasing biocide concentration or using a different biocide (within 24 hours), reviewing treatment program, performing visual inspection to evaluate need to perform cleaning and further disinfection. Retest water within 3-7 days. Subsequent test results must be interpreted in accordance with this Table until level 1 is reached.
4	≥ 1000 CFU/ml	Initiate immediate disinfection by increasing biocides within 24 hours. Within 48 hours perform full remediation of the tower by hyperhalogenating ² , draining, cleaning, and flushing. Review treatment program, retest water within 3-7 days. Subsequent test results this Table until level 1 is reached. For Legionella results at must be interpreted in accordance with this level, notify Department within 24 hours of receiving test result. ³
<p>1. Performed by a CDC ELITE Laboratory, or NYSDOH Wadsworth Laboratory, or another laboratory approved by the Department. Combine all species of Legionella detected.</p> <p>2. At a minimum, dose the cooling water system with 5 to 10 ppm Free Halogen Residual for at least 1 hour; pH 7.0 to 7.6.</p> <p>3. In a manner as specified on the Department's website.</p>		

Table 8-2. Corrective actions required for bacteriological indicator results.

Level	Heterotrophic Plate Count ¹ and Dip Slide Result	Process Triggered Test Results
1	< 10,000 CFU/ml	Maintain water chemistry and biocide levels.
2	≥ 10,000 CFU/ml to <100,000 CFU/ml	Initiate immediate disinfection by increasing biocide concentration or using a different biocide within 24 hours, review treatment program, retest water within 3-7 days. Subsequent test results must be interpreted in accordance with this Table until level 1 is reached.
3	≥ 100,000 CFU/ml to < 1,000,000 CFU/ml	Initiate immediate disinfection by increasing biocide concentration or using a different biocide within 24 hours, reviewing treatment program, performing visual inspection to evaluate need to perform cleaning and further disinfection. Retest water within 3-7 days. Subsequent test results must be interpreted in accordance with this Table until level 1 is reached.
4	≥ 1,000,000 CFU/ml	Initiate immediate disinfection by increasing biocides within 24 hours. Within 48 hours perform remediation of the tower by hyperhalogenating ² , cleaning, and flushing. Review treatment program, retest water within 3-7 days. Subsequent test results must be interpreted in accordance with this Table until level 1 is reached.
<p>1. Performed by an appropriately accredited Laboratory (e.g. NELAP, AALA).</p> <p>2. At a minimum, dose the cooling water system with 5 to 10 ppm Free Halogen Residual for at least 1 hour; pH 7.0 to 7.6.</p>		

§8-06 System shutdown and start-up; commissioning and decommissioning cooling towers.

- (a) *Full system shutdown.* Procedures to shut a cooling tower system must conform to the manufacturers' recommendations. When shut down, the system must be completely drained and protected from offline contamination.
- (b) *Full system startup.* At a minimum, before cooling tower system start-up, an owner must clean and disinfect a cooling tower that has been shut down or idle for more than five days, in accordance with §17- 194.1 of the Administrative Code. Cleaning and disinfection must be done no later than 15 days before the first seasonal use of such tower. The maintenance program and plan must include detailed seasonal and idle period startup procedures that include, at a minimum:
 - (1) Either fully clean and disinfect, drain to waste and disinfect, or sufficiently hyperhalogenate the recirculated water before startup; and
 - (2) Before the startup of a cooling tower system after an extended shutdown of five or more days, collect samples for Legionella culture and take actions required by Table 8-1 when results are received; and
 - (3) Before seasonal startup of a system that has been fully shut down, perform a pre-startup inspection by a qualified person.
- (c) *Commissioning new cooling towers.* Newly installed cooling tower systems must be cleaned and disinfected prior to operation according to this section and the maintenance program and plan, and be registered with the Department of Buildings cooling tower registration system in accordance with § 28- 317.3 of the Administrative Code.
- (d) *Removal or permanently discontinuing use of cooling towers.* The owner of a cooling tower must notify the Department of Buildings electronically within 30 days after removing or permanently discontinuing use of a cooling tower in accordance with § 28-317.3.1 of the Administrative Code. Such notice must include a statement that the cooling tower has been drained and sanitized in accordance with this section.

§8-07 Records.

- (a) *Records.* An owner must keep for at least three (3) years in the building where a cooling tower is located or in an adjacent building or structure on the same campus, complex, lot, mall or on-site central engineering division a record of any maintenance, inspection, deficiency, corrective action, water treatment, test result, cleaning or disinfection performed on the tower.
- (b) *Certification.* The owner of a cooling tower must file an annual certification each year as specified by the Department of Buildings, indicating that such tower was inspected, tested, cleaned and disinfected in accordance with the maintenance program and plan, as required

by§ 28-317.5 of the Administrative Code. The certification must document any deviations from compliance with the maintenance program and plan and the corrective actions taken to address any deficiencies.

- (c) *Posting.* The owner must post the Department of Buildings Cooling Tower Registration Number that has been assigned to that cooling tower on each cooling tower. The Registration Number must be posted on a sign or plate that is securely fastened to the cooling tower in a location that is conspicuously visible and must be constructed of a durable, weather resistant material.

§8-08 Modification. The Commissioner or designee may grant a modification when strict application of any provision of this Chapter presents practical difficulties or unusual hardships. The Commissioner in a specific instance may modify the application of such provision consistent with the general purpose of this Chapter and in compliance with Administrative Code §17-194.1 and upon such conditions as, in his or her opinion, are necessary to protect the health or safety of the public.

§8-09 Penalties. The following penalties shall be imposed for sustained initial and repeat violations. All penalties, except for those alleging a violation of the State Sanitary Code, must be doubled if the respondent fails to appear to answer such violation and is found in default.

Section of Law	Description	Penalty: First violation	Repeat violation(s)
24 RCNY §8-03	No maintenance program and plan	\$1,000	\$2,000
24 RCNY §8-03	Maintenance program and plan incomplete or not on premises	\$500	\$1,000
24 RCNY §8-04(a)	Routine monitoring not conducted, documented at least once a week when tower is in use	\$500	\$1,000
24 RCNY §8-04(b)	Compliance inspections not conducted, documented at least once every 90 days when the tower is in use	\$500	\$1,000
24 RCNY §8-04(c)	Routine maintenance according to maintenance program and plan not conducted or documented	\$500	\$1,000
24 RCNY §8-04(d)	Twice yearly or other required cleaning not conducted or documented	\$500	\$1,000

24 RCNY §8-04(e)	Aerosol control do not meet manufacturer's design specifications or drift loss reduction requirements in new or existing towers when required	\$1,000	\$2,000
24 RCNY §8-05(a)	Daily automatic or approved alternative provided	\$500	\$1,000
24 RCNY §8-05(b)	Cooling water system not continually recirculated and no acceptable alternative	\$500	\$1,000
24 RCNY §8-05(c)(1)	Use of an unqualified biocide applicator	\$500	\$1,000
24 RCNY §8-05(c)(2)	Use of an unregistered biocide product	\$500	\$1,000
24 RCNY §8-05(c)(3)	No records of all chemicals and biocides added	\$500	\$1,000
24 RCNY §8-05(c)(4)	Sufficient quantities and combinations of chemicals not added as specified in the maintenance program and plan	\$500	\$1,000
24 RCNY §8-05(d)	Using unacceptable alternative non-chemical water treatment device	\$500	\$1,000
24 RCNY §8-05(e)	Use of captured rainwater or recycled water as makeup water not in accordance with approved alternative water source plan	\$1,000	\$2,000
24 RCNY §8-05(f)(1)	Minimum daily water quality measurements not taken or recorded	\$500	\$1,000
24 RCNY §8-05(f)(2)	Failure to collect, analyze or record weekly biological process control indicators	\$500	\$1,000
24 RCNY §8-05(f)(3)	Legionella samples not collected or analyzed, or results not recorded or reported to the Department as required	\$1,000	\$2,000
24 RCNY §8-05(f)(4)	Failure to monitor and sample from representative locations and times	\$500	\$1,000
24 RCNY §8-05(f)(5)	Required corrective actions not taken based on bacteriological results	\$1,000	\$2,000
24 RCNY §8-06(a)	Improper or inadequate shutdown procedures	\$500	\$1,000

24 RCNY §8-06(b)(1)	Improper or inadequate start-up procedures	\$500	\$1,000
24 RCNY §8-06(b)(2)	Legionella samples not collected, analyzed before system start-up	\$500	\$1,000
24 RCNY §8-06(c)	New cooling tower not or inadequately cleaned and disinfected prior to operating	\$500	\$1,000
24 RCNY §8-07(a)	Failure to document all inspections, logs, tests, cleaning, and disinfection in accordance with the maintenance program and plan	\$500	\$1,000
24 RCNY §8-07(a)	Failure to retain records for at least 3 years	\$500	\$1,000
24 RCNY §8-07(b)	Required records not kept at the cooling tower premises	\$500	\$1,000
24 RCNY §8-07(c)	Department of Buildings Cooling Tower Registration Number not posted as required	\$500	\$1,000
24 RCNY §8-07(d)	Records not made immediately available to Department upon request	\$500	\$1,000
State Sanitary Code Part 4	Miscellaneous provisions	\$250	\$250

* **Disclaimer:** This document including the aforementioned list of penalties and fines was taken from the “Notice of Adoption of Chapter 8 (Cooling Towers) of Title 24 of the Rules of the City of New York” published online by the City of New York at http://rules.cityofnewyork.us/sites/default/files/adopted_rules_pdf/f-dohmh_04-7-16_a_ch_8.pdf.

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