TO: Mayor and Members  
Board of Health  
WARD(S) AFFECTED: CITY WIDE

COMMITTEE DATE: April 26, 2010

SUBJECT/REPORT NO:  
Legionella: Cooling Tower Registry By-law- BOH09021(a) (City Wide)  
(Outstanding Business List Item)

SUBMITTED BY:  
Elizabeth Richardson, MD, MHSc, FRCPC  
Public Health Services Department

PREPARED BY:  
Eric Mathews: (905) 546-2424  Ext. 2186

SIGNATURE:

RECOMMENDATION:

(a) That the Report BOH09021(a) respecting the Draft Cooling Tower Registry By-law, be received;

(b) That the Board of Health directs Public Health Services to finalize a cooling tower registry By-law in consultation with stakeholders and the public and report back to the Board of Health for its approval and recommendation that Council pass the By-law.

EXECUTIVE SUMMARY

This report addresses the outstanding business items related to BOH Report BOH09021 where the Board of Health directed Public Health Services to;
a) Consult with stakeholders and report back to the Board of Health with a draft cooling tower registry By-law;

b) That Public Health Services staff bring forward any costs of enforcement to the 2011 Budget process as an enhancement.

Public Health Services (PHS) has consulted with stakeholders and is now reporting back to the Board of Health with a draft cooling tower registry By-law. PHS is also reporting back on costs of enforcement of the proposed By-law. The background and rationale for this By-law is described in BOH Report BOH09021.

PHS is of the opinion that a By-law is needed to improve the scope and accuracy of the PHS cooling tower inventory, expedite Legionella outbreak investigations, and diminish the potential of Legionella illnesses that could be related to exposure to cooling tower emissions. The By-law will require all owners of cooling towers to register their equipment with PHS and to have a risk management plan and a log book of repairs and maintenance. A Public Health Inspector will perform a compliance audit once every four years to assess compliance with the By-law and take action where deemed necessary. It estimated that there are over 200 cooling towers in Hamilton. PHS communicates risk management and cooling tower maintenance best practices advice to cooling tower owners annually.

Appendix A is a draft cooling tower registry By-law that has been prepared in consultation with stakeholders. With the direction of the Board of Health, PHS will conduct a final stakeholder and public consultation and bring back a final cooling tower registry By-law for Board of Health approval and recommendation that Council pass the By-law.

Appendix B is a summary of the initial stakeholder consultation. Results of the stakeholder consultation found that 100% of the respondents were aware of the potential risk of Legionnaires disease from cooling towers and all of the respondents believed it was important for PHS to decrease the potential risk of exposure to Legionella. The majority of the respondents (80%) supported the establishment of a cooling tower registry in Hamilton and believed PHS should institute random/periodic reviews of supporting registry documents.

The cooling tower registry By-law meets the expectations of the Ontario Public Health Standards (OPHS) under the Investigation, Identification, and Management of Health Hazards Protocol. Funding for the implementation and enforcement of this By-law will be the same as other required public health standards and programs. PHS will implement and enforce this By-law with existing resources and budget.
It is anticipated that Public Health Services will bring back a final By-law to the Board of Health for approval in January 2011, with PHS enforcing registration as of May 31, 2011.

Alternatives for Consideration – See Page 6

FINANCIAL / STAFFING / LEGAL IMPLICATIONS (for Recommendation(s) only)

Financial: None

Staffing: One third of a Public Health Inspector Full Time Equivalent (1/3 FTE) is expected to be able to implement this By-law as described in this report. This will come from within existing staff. The administration and management of this By-law are not expected to require additional staff.

Legal: No legal implications have been identified.

HISTORICAL BACKGROUND (Chronology of events)

In 2006 and 2008, clusters of Legionella infections were identified in the City of Hamilton involving 11 and 10 cases respectively. Public Health Services conducted an investigation to determine possible sources of exposure and concluded that a common source could not be found. Although there is limited evidence available, the increase in cases of Legionella infections may have been caused by dissemination of Legionella bacteria located in a reservoir associated with cooling towers. These are known to be reservoirs for Legionella bacteria and are known to create conditions favourable for the growth, discharge, and transmission of Legionella bacteria.

As part of the PHS Legionella outbreak investigation in 2006, sampling and testing of cooling towers was conducted. Water samples from 39 cooling towers were tested; 13 (33.3%) cooling towers were found to contain Legionella or Legionella-like bacteria and 3 (7.7%) cooling towers were found to contain *Legionella pneumophila* serogroup 1, the most common cause of human illness. However, due to a lack of clinical specimens and laboratory evidence it was not possible to establish a genetic match between the Legionella bacteria found in the cooling tower and the Legionella bacteria that caused illness in some Hamilton residents.

During and following the 2006 outbreak, PHS commenced an inventory of all cooling towers within the City of Hamilton. Staff identified 216 cooling towers on 154 properties. On two occasions PHS wrote Orders under the Health Protection and Promotion Act for owners/operators to provide locations of their cooling towers.
PHS found that this inventory was crucial in the efficient and timely response of the outbreak investigation conducted in 2008. However, it is very likely that changes have occurred regarding ownership, operation, and maintenance since 2006. PHS is of the opinion that a responsible local approach would be to continue with the annual communication of best practices for Legionella control to cooling tower owners/operators and to improve the cooling tower inventory and maps by means of implementing a By-law that requires cooling tower owners to register their cooling towers with PHS.

A cooling tower registry By-law will collect data for: risk communication purposes for relevant audiences; outbreak investigations in accordance with *Infectious Diseases Protocol, 2008* (or as current); and evidence regarding the proportion of local cooling tower owners/operators that are in compliance with this By-law and that have an adequate risk management plan based on industry best practices.

In June 2009, Board of Health Report BOH09021 directed PHS to consult with stakeholders and report back with a draft cooling tower registry By-law.

**POLICY IMPLICATIONS**

No policy implications have been identified.

**RELEVANT CONSULTATION**

Public Health Services has consulted with:

- 94 Industry stakeholders including Cooling Tower Owners/operators and Water Treatment Service providers
- Ontario Ministry of the Environment
- Ontario Ministry of Labour
- Ontario Ministry of Health and Long-Term Care
- McMaster Institute of Environment and Health
- City of Hamilton, Public Health Services, Health Protection Division (Infectious Diseases and Surveillance Teams)
- City of Hamilton, Legal Services Division

**ANALYSIS / RATIONALE FOR RECOMMENDATION**

(include Performance Measurement/Benchmarking Data, if applicable)

In November 2009, Public Health Services mailed 94 consultation packages to stakeholders, mainly cooling tower owners/operators, water treatment companies and
various ministries. These packages included a letter of explanation, a copy of the draft By-law and an evaluation tool in the form of a survey, designed by McMaster Institute of Environment & Health (MIEH). Information was posted on the Public Health Services website and a notice was placed in the At Your Service page of the Hamilton Spectator and in all Brabant Newspapers.

MIEH prepared the stakeholder consultation questionnaire, compiled the responses, and provided a summary report of the stakeholder consultation (Appendix B). Throughout the consultation period 15 surveys were completed and returned, resulting in a 16% response rate. An additional 14 responses were received through email or telephone, resulting in a combined response rate of 35%.

Survey results found all of the respondents (100%) were aware of the potential risk of Legionnaires from cooling towers and that all of the respondents (100%) believed it was important for PHS to decrease the potential risk of exposure to Legionella. The majority of the respondents (80%) both supported the establishment of a cooling tower registry in Hamilton and believed PHS should institute random/periodic reviews of supporting registry documents.

Respondents believed that the creation of a cooling tower registry would address public health issues by raising and standardizing the local cooling tower operations, documenting low and high risk operators, and the development of a database to be utilized by PHS during outbreaks. Respondents chose PHS as the preferred administrator of the registry due to expertise, available resources, cost and the natural fit between the mandate of PHS and the rationale behind the development of the registry.

When asked to identify possible challenges faced by PHS in the creation and implementation of a cooling tower registry, respondents listed compliance, enforcement, education and awareness among the target group, the creation and administration of the registry and also the educational/learning curve of the part of the Public Health Inspectors.

In summary, consultation with industry stakeholders indicates that they support PHS in the creation and implementation of a Cooling Tower Registry By-law.

Appendix A is the draft cooling tower registry By-law prepared by PHS in consultation with stakeholders. Creating a cooling tower registry By-law is being recommended in order to protect the health of Hamilton residents and visitors through two objectives;

1. Diminish the potential of future outbreaks of Legionella infections by requiring that all cooling towers have a risk management plan and that all owners/operators maintain an up-to-date log book for each cooling tower.
2. Create an accurate and comprehensive inventory of cooling towers should PHS need to investigate an outbreak of Legionellosis in the future.
All owners/operators will be required to complete a ‘Cooling Tower Registration’ form initially. This form will collect information regarding who to contact, who is servicing the Cooling Tower, and the location of the cooling tower. Owners/operators of cooling towers will also be required to complete a ‘Cooling Tower Details’ form annually. This form will collect details of each specific cooling tower, such as; year constructed, type of system, nature of system used, volume of water and if a risk management plan is in place. The enactment of this By-law may have a positive correlation with diminishing the risk of Legionella growth in cooling towers.

After the cooling tower registration By-law comes into force PHS will audit 25% of the cooling towers annually. These locations will be randomly selected with the intent of auditing each cooling tower within the City of Hamilton once every four years. During each audit a Public Health Inspector will ensure that all registration information is current, that an adequate Risk Management Plan is in place and that a repairs and maintenance log book is kept up-to-date.

Education of cooling tower owners and operators will be the first approach by PHS to implement this By-law. PHS is very committed to ensuring that cooling tower owners and operators are aware of this By-law and what they are obliged to do in order to meet the requirements of the By-law.

Enforcement of the By-law will follow when cooling tower information has not been updated, when a cooling tower is not registered, or when a risk management plan or log books are not in place or maintained. PHS will not inspect or test cooling towers on a routine basis or as part of this proposed By-law.

It is anticipated that the cooling tower registry By-law will be enacted in January 2011 with PHS enforcing registration as of May 31, 2011.

**ALTERNATIVES FOR CONSIDERATION:**

(include Financial, Staffing, Legal and Policy Implications and pros and cons for each alternative)

1. Create a By-law that prescribes operational standards for cooling towers, supported by an inspection and testing program.

   **Pros:** The City of Hamilton would have an intensive surveillance program pertaining to cooling towers that would only marginally improve the reduction of risk to exposure of Legionella bacteria related to cooling tower emissions compared to the recommendations in this report.
Cons: An operational standards and inspection program would not fall within the mandate of the Board of Health or PHS. 100% of the funding would need to be acquired through local taxes or registration fees from cooling tower owners/operators. The funding for this type of program would be significant for laboratory costs and a considerable amount of time would be needed to inspect and assess the operation and maintenance of a cooling tower.

2. Not implement a cooling tower registry By-law.

Pros: The resources needed for this recommendation could be used elsewhere for other public health programs.

Cons: This would not provide an up to date and accurate inventory of cooling towers within the City of Hamilton. Additional information useful in investigating local clusters or outbreaks of Legionellosis and for the purpose of communicating with cooling tower owners and operators would not be available to PHS. This would not diminish the risk of cooling tower emissions that could contain Legionella bacteria.

**CORPORATE STRATEGIC PLAN** (Linkage to Desired End Results)


1. **Skilled, Innovative and Respectful Organization**
   - More innovation, greater teamwork, better client focus
   - Opportunity for employee input in management decision making

2. **Financial Sustainability**
   - Delivery of municipal services and management capital assets/liabilities in a sustainable, innovative and cost effective manner

3. **Inter-governmental Relations**
   - Influence federal and provincial policy development to benefit Hamilton
   - Maintain effective relationships with other public agencies

6. **Environmental Stewardship**
• Reduce the impact of Hamilton’s industrial, commercial Private and Public operations on the environment

7. Healthy Community

• Plan and manage the built environment

APPENDICES / SCHEDULES

Appendix “A” to Report BOH09021(a)
Appendix “B” to Report BOH09021(a)
CITY OF HAMILTON

BY-LAW NO. __________

Respecting the Registration of Cooling Towers.

WHEREAS Council desires to establish a Cooling Tower Registry to facilitate communication with owners with respect to controlling the growth of Legionella bacteria and to improve City tracking of possible sources Legionella bacteria;

AND WHEREAS sections 8, 9 and 10 of the Municipal Act, 2001, S.O. 2001, c. 25, authorize the City of Hamilton to pass by-laws necessary or desirable for municipal purposes, and in particular paragraphs 5 through 8 of subsection 10(2) authorize by-laws respecting the economic, social and environmental well-being of the municipality; the health, safety and well-being of persons; the provision of any service or thing that it considers necessary or desirable for the public; and the protection of persons and property;

AND WHEREAS section 425 of the Municipal Act, 2001, S.O. 2001, c. 25, authorizes the City of Hamilton to pass by-laws providing that a person who contravenes a by-law of the City of Hamilton passed under that Act is guilty of an offence;

AND WHEREAS the Municipal Act, 2001, S.O. 2001, c. 25, further authorizes the City of Hamilton, amongst other things, to delegate its authority, to impose fees or charges on persons for services or activities provided or done by or on behalf of it, to provide for inspections and inspection orders, and to make orders to discontinue activity or to do work;

NOW THEREFORE the Council of the City of Hamilton enacts as follows:

Definitions
1. In this By-law:

“business day” means any day on which the City of Hamilton’s administration buildings are open for business;

“City” means the geographical area of the City of Hamilton or the municipal corporation as the context requires;

“Cooling Tower” means a device for the lowering the temperature of:

(a) recirculated water by bringing the water into contact with fan-forced or fan-induced atmospheric air; or

(b) water, a refrigerant or other fluid in a pipe or other container by bringing recirculated water and fan-forced or fan-induced atmospheric air into contact with the pipe or other container;

which may or may not share a common reservoir with one or more other Cooling Towers;

“Log Book” means a book where a Cooling Tower operator records the date and details of all maintenance, including but not limited to any breakdowns and repairs, carried out on the Cooling Tower and all other actions related to the Risk Management Plan or otherwise to the control of Legionella bacteria;

“Medical Officer of Health” means the City’s Medical Officer of Health or his or her designate;

“Officer” means a Public Health Inspector or other person appointed or employed by the City of Hamilton for the enforcement of this By-law and includes the Medical Officer of Health;

“operator” means the owner or the person in control of a Cooling Tower;

“person” includes but is not limited to an individual, sole proprietorship, partnership, association or corporation; and

“Risk Management Plan” means a plan:
(a) prepared in accordance with standards, guidelines or other similar documents with respect to controlling the growth Legionella bacteria in Cooling Towers published by the American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE), the Cooling Technology Institute (CTI) or another such organization or by the Cooling Tower manufacturer; and

(b) describing equipment installed and processes implemented to control the growth of Legionella bacteria.

Scope

2. This By-law applies to any Cooling Tower that operates on any day, in any year.

Registration

3. Every owner of a Cooling Tower operating or capable of operating on [the date this By-law is passed] shall register the Cooling Tower with the Medical Officer of Health within 30 days of [the date this By-law is passed].

4. Every owner of a Cooling Tower that commences to operate or to be capable of operating after [the date this By-law is passed] shall register the Cooling Tower with the Medical Officer of Health within 30 days of the date the Cooling Tower commences to be in operation or to be capable of operating.

5. Every registration expires on May 1 of each year if it is not renewed before that date.

6. To register or renew a registration, the owner of a Cooling Tower shall complete and submit to the Medical Officer of Health an application approved by the Medical Officer of Health containing such information as the Medical Officer of Health may require.

7. Every owner shall notify the Medical Officer of Health of any material change in circumstances in connection with information given to the Medical Officer of Health under section 6 within 20 business days after the material change occurs.

General Prohibitions

8. No person shall operate a Cooling Tower unless the Cooling Tower is registered under this By-law.
9. Every operator shall ensure that there is a Risk Management Plan in respect of each Cooling Tower they operate.

10. Every operator shall ensure that an up-to-date and legible Log Book is kept in respect of each Cooling Tower they operate.

11. No person shall enter inaccurate information in a Log Book or falsify, mutilate or deface a Log Book.

Administration and Enforcement

12. The Medical Officer of Health is authorized to administer and enforce this By-law including but not limited to prescribing the format and content of any forms or other documents required under this By-law.

13. Registration and other fees under this By-law shall be as set and approved by Council from time to time under the User Fees and Charges By-law.

14. An Officer may enter on land at any reasonable time for the purpose of carrying out an inspection to determine whether or not the following are being complied with:

   (a) this By-law;

   (b) a direction or order made under this By-law; or

   (c) an order made under s. 431 of the Municipal Act, 2001.

15 (1) An Officer may, for the purposes of the inspection under Section 14:

   (a) require the production for inspection of documents or things relevant to the inspection;

   (b) inspect and remove documents or things relevant to the inspection for the purpose of making copies or extracts;
(c) require information in writing or otherwise as required by the Officer from any person concerning a matter related to the inspection; or

(d) alone or in conjunction with a person possessing special or expert knowledge, make examinations or take tests, samples or photographs necessary for the purposes of the inspection.

(2) Any cost incurred by the City in exercising its authority to inspect under paragraph 15(1)(d), including but not limited to the cost of any examination, test, sample or photograph necessary for the purposes of the inspection, shall be paid by the owner of the Cooling Tower.

16. An Officer may undertake an inspection pursuant to an order issued by a provincial judge or justice of the peace under Section 438 of the Municipal Act, 2001 where he or she has been prevented or is likely to be prevented from carrying out an inspection under Sections 14 and 15.

17. If an Officer is satisfied that a contravention of this By-law has occurred, he or she may make an order requiring the person who contravened the By-law or who caused or permitted the contravention or the owner or occupier of the property on which the contravention occurred to discontinue the contravening activity.

18. An order under Section 17 shall set out:

(a) reasonable particulars of the contravention adequate to identify the contravention and the location of the property on which the contravention occurred; and

(b) the date or dates by which there must be compliance with the order.

19. If an Officer is satisfied that a contravention of this By-law has occurred, he or she may make an order requiring the person who contravened the By-law or who caused or permitted the contravention or the owner or occupier of the property on which the contravention occurred to do work to correct the contravention.

20. An order under Section 19 shall set out:
(a) reasonable particulars of the contravention adequate to identify the contravention and the location of property on which the contravention occurred;

(b) the work to be completed; and

(c) the date or dates by which the work must be complete.

21. An order to discontinue contravening activity made under Section 17 or an order to do work made under Section 19 may be served personally or by registered mail to the last known address of:

(a) the owner or occupier of the property where the contravention occurred; and

(b) such other persons affected by it as the Officer making the order determines.

Service by registered mail shall be deemed to have taken place 5 business days after the date of mailing.

22. In addition to service given in accordance with Section 21, an order to discontinue contravening activity made under Section 17 or an order to do work made under Section 19 may be served by an Officer placing a placard containing the order in a conspicuous place on the property where the contravention occurred.

23. Where service cannot be given in accordance with Section 21, sufficient service is deemed to have taken place when given in accordance with Section 22.

24. Every person who contravenes any provision of this By-law is, upon conviction, guilty of an offence and is liable:

(a) on a first conviction, to a fine of not more than $10,000; and

(b) on any subsequent conviction, to a fine of not more than $25,000.

25. Despite section 24, where the person convicted is a corporation:

(a) the maximum fine in subsection 24(a) is $50,000; and
(b) the maximum fine in subsection 24(b) is $100,000.

26. Where a person has been convicted of an offence, the court in which the conviction has been entered and any court of competent jurisdiction thereafter may, in addition to any other remedy and to any penalty imposed by this By-law, make an order:

General Provisions

27. This By-law may be referred to as the Cooling Tower Registry By-law or the Hamilton Cooling Tower Registry By-law.

28. If a court of competent jurisdiction declares any provision or provisions of this By-law invalid, it is the intention of Council that the remainder of the By-law shall continue to be in force.

Enactment

29. This By-law comes into force on the date of its passing.

PASSED this ___ day of ___ , 20__ .

________________________________________  _______________________________________
Fred Eisenberger                           Rose Caterini
MAYOR                                     CLERK
Please complete this form to register your cooling tower(s) or update an existing registration. If any information below has changed, you are required to submit these changes to Public Health Services within 30 days.

Initial registration (Please complete this form entirely)

Update an existing registration (Please complete new or changed information)

Cooling Tower location:

Name

Street no. Street name

Street type (i.e. avenue, road) Street direction (i.e. West)

Municipality Postal Code

Cooling Tower information:

Number of cooling towers

Purpose of the cooling tower system. Please check the appropriate boxes.

Air conditioning Industrial Process Other (please specify)

Refrigeration

Nature of the business served by these systems. Please check the appropriate boxes.

Hospital/Health Care Agriculture Entertainment

Residential Care Education Warehouse

Manufacturing Office Retail

Hotel/Accommodation Dry Cleaning

Other (please specify)

Please complete the Cooling Tower Details Form for EACH cooling tower. Registration will not be complete unless a form is completed for each cooling tower. This form is available at www.hamilton.ca/publichealth.

Cooling tower operator:
Name of the person who is responsible for operation and maintenance.

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Mailing address and contact information

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Business name

Physical location and contact information

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### Agent/Property Manager:

Name of agent/property manager the landowner has allowed to act on their behalf.

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**Business name**

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### Water treatment service provider:

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**Business name**

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Mailing address. If same as physical location, please select ‘Same as above’

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**Registration holder:**

For the purpose of this application the registration holder is responsible for maintaining the ongoing registration affairs for the cooling tower. The registration holder will be the primary contact.

Please select one of the following to be deemed the registration holder:

- Land owner
- Agent
- Cooling tower owner
- Water treatment provider
- Cooling tower operator

**Acknowledgment**

As the applicant or the applicants authorized representative, I acknowledge that I have read the above notes and provided the required information.

Form Completed by
Submit completed forms to:
Environmental Health Programs
City of Hamilton Public Health Services
1 Hughson Street North 3rd Floor
Hamilton  ON  L8R 3L5
Fax: (905) 546-2787

For inquiries please contact:
(905) 546-2424 Ext.
www.hamilton.ca/publichealth

Land owner
Agent
Cooling tower owner
Water treatment provider
Cooling tower operator

Signature

Date form completed
Please complete this form for EACH cooling tower. This is to be completed on an annual basis.

If there have been changes to the cooling tower operator, cooling tower owner, land owner, agent, or water treatment provider you MUST update this information using the Cooling Tower Registration Form.

### Cooling Tower location:

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<tr>
<th>Name</th>
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<td>Municipality</td>
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<tr>
<td>Number of cooling towers</td>
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</table>

### Cooling tower information:

<table>
<thead>
<tr>
<th>ID/Registration no.</th>
<th>Physical location (i.e. roof)</th>
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<tr>
<td>Year constructed</td>
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**GPS co-ordinates (if available)**

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<th>X</th>
<th>Y</th>
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Please check the type of system being used.

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<tr>
<th>Induced draught cross flow</th>
<th>Induced draught counter flow</th>
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<tbody>
<tr>
<td>Forced draught cross flow</td>
<td>Forced draught counter flow</td>
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<tr>
<td>Evaporative condenser</td>
<td>Other (Please specify)</td>
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Is a drift eliminator fitted to this system?  Yes [ ]  No [ ]

Is an automated biocide dosing device fitted to this system? Yes [ ]  No [ ]
Estimated system volume

Less than 100 Litres  101 to 1,000 Litres  1,001 to 5,000 Litres  5,001 to 10,000 Litres  10,001 to 50,000 Litres  More than 50,000 Litres

Has a Risk Management Plan (RMP) been prepared for this cooling tower?

Yes  No

What is your RMP based on?

ASHRAE  CTI  Other

Please specify.

Are you keeping up-to-date records of maintenance in a log book?

Yes  No

Acknowledgment

As the applicant or the applicants authorized representative, I acknowledge that I have read the above notes and provided the required information.

Form Completed by

Land owner

Agent

Cooling tower owner

Water treatment provider

Cooling tower operator

Signature

Date form completed

Submit completed forms to:

Environmental Health Programs

City of Hamilton Public Health Services

1 Hughson Street North 3rd Floor

Hamilton  ON  L8R 3L5

Fax: (905) 546-2787

For inquiries please contact:

(905) 546-2424 Ext.

www.hamilton.ca/publichealth
SUMMARY RESEARCH REPORT
INDUSTRY CONSULTATION
FOR
COOLING TOWER AND EVAPORATIVE CONDENSER REGISTRY BYLAW
JANUARY 2010

Conducted By

McMaster Institute of Environment & Health
(MIEH)
McMaster University
1280 Main Street West
Hamilton, Ontario
L8S 4L8

Dr. K. Bruce Newbold (Director)
newbold@mcmaster.ca

Marie McKeary (Research Facilitator)
mckear@mcmaster.ca

for

Hamilton Public Health Services
Health Protection Division
COOLING TOWER REGISTRY (CTR) MAIL OUT PACKAGES

- November 2009 PHS mailed 94 CTR packages to local Cooling Tower operators, owners and maintenance companies for the purpose of Industry Consultation on the proposed CTR Bylaw. Ninety four is the extent of the current database administered by PHS.

- The package consisted of a: Letter of explanation/invitation to stakeholders, copy of draft Bylaw, evaluation tool/survey designed by MIEH to gather feedback. Information was also posted on the PHS website and a notice was placed in the local print media with contact information on November 6, 2009.

- Stakeholders were given approximately three and a half weeks (Nov. 2 – Nov. 27, 2009) to complete the survey and responses were accepted by mail, fax, e-mail, and personal delivery to PHS. A designated contact person was available to answer any inquiries regarding the package.

RESPONSES

- Fifteen (15) completed surveys were received
- Contact person responded to fourteen (14) inquiries
- One (1) e-mail was received from a maintenance company
- One (1) e-mail was received from a National Trade Association
- Two (2) ministry e-mails were received (MOL and MOE)

TOTAL = 33 responses for a 35% Response Rate

Sub Total (survey response) = 15/94 for a 16% Response Rate
QUANTITATIVE FINDINGS

☐ All of the respondents (100%) were aware of the potential risk of Legionnaires from Cooling Towers. All of the respondents (100%) believed it was important for PHS to decrease the potential risk of a Legionnaires outbreak in Hamilton.

❖ Respondents owned or maintained the following applications of CT’s:
  - 53% Industrial
  - 33% Commercial
  - 20% Educational
  - 13% Health Care
  - 13% Recreational

❖ Respondents followed the following Industry guidelines:
  - 53% ASHRAE
  - 53% CTI
  - 26% (Other = Nalco Best Practices, AWT Protocol, iiar, unspecified)
  - 13% N/A

❖ The majority of respondents (80%) had received the first letter from PHS (which enclosed a copy of the BOH report explaining the purpose and process for the proposed By law).

❖ Seventy three per cent (73%) of the respondents had reviewed the first PHS letter and eighty percent (80%) of them had also reviewed the BOH report.

❖ The majority of respondents (80%) support the establishment of a Cooling Tower Registry in Hamilton and believe PHS should institute random/periodic reviews of supporting registry documents.

❖ There was unanimous agreement (100%) that PHS needs and should have access to a Cooling Tower Registry for the purpose of outbreak investigations.

❖ The majority of respondents (80%) do not believe there should be any Cooling Tower exemptions written into the proposed Bylaw and only thirteen per cent (13%) believe there should be exemptions.

Analysis conducted by McMaster Institute of Environment and Health (MIEH) at the request of the Health Protection Division of Hamilton Public Health Services (HPHS), January 2010.
QUANTITATIVE FINDINGS (continued)

- Current CT practices by survey respondents:
  - 73% employed a Maintenance Company
  - 80% currently maintain a Log book
  - 87% currently follow a Risk Management Plan (RMP)
  - 73% agree a Log book is an important requirement for the CTR
  - 80% agree an RMP is an important requirement for the CTR

Analysis conducted by McMaster Institute of Environment and Health (MIEH) at the request of the Health Protection Division of Hamilton Public Health Services (HPHS), January 2010.
QUALITATIVE FINDINGS

- As stated earlier (Question #6) in the report 80% of the respondents support the proposed Cooling Tower and Evaporative Condenser Bylaw within the City of Hamilton. The reasons for their support are both Proactive and Reactive and can be grouped into the following thematic areas:

  - To protect the health and safety of the public, especially during a Legionnaires outbreak.
  - The development of a data base which will then be available to PHS.
  - It will assist in the establishment and maintenance of high standards to be applied to all CT’s within the jurisdiction of the municipality.
  - Thus it will also be an acknowledgement of the ‘good’ operators who are practicing due diligence.
  - Some respondents believe the cost to be prohibitive and some suggest a ‘one time’ only registration fee instead of an annual fee.

SUMMARY

Respondents believed in the creation of a CT registry in order to address public health issues by raising and standardizing the local CT operations, documenting low and high risk operators, and the development of a data base to be utilized by PHS during outbreaks. The need for fees was recognized and there was some support for a ‘one time’ only fee.
Survey Responses (#6)

“A registry of CT’s makes it easier for PHS to determine the source of outbreaks if they occur.”

“I believe CT units should be regulated and guidelines in place for safe operation. I believe the Registry is just another cost added to companies who are already spending enough to keep their systems up and running safely.”

“We believe we operate and maintain our two cooling towers to a high standard to mitigate legionella bacteria. However, it is a fact that legal requirements do ensure a high standard is maintained by all users.”

“I am not sure it is fair to charge the customer.”

“If there is not, then why enact this bylaw.”

“If you do proper PM’s and chemical treatments with due diligents you should be alright.”

“To protect the public.”

“From our perspective, we can manage our affairs adequately. I see the need for a registration process for many owners though.”

“Proper management of a treatment program should be mandatory.”

“Owners of Cooling Towers should be obligated to register towers with PHS to establish a database or Towers within the city. Database should not be shared.”

“It aids my facility to track my due diligence.”

“This will be beneficial to the city to identify all owners responsible for their cooling towers. With this, the owner will now be fully aware of the importance of keeping records and all service and maintenance work.”

“I agree a one time registration would be beneficial but do not see any advantage to an annual registration. A list of locations would be helpful for investigation.”

Analysis conducted by McMaster Institute of Environment and Health (MIEH) at the request of the Health Protection Division of Hamilton Public Health Services (HPHS), January 2010.
As stated earlier (Question #8) in the report 80% of the respondents support the idea of PHS validating the CT registry information (including log books and risk management plans) through random and periodic checks. The reasons for their support can be grouped into the following thematic areas:

- Periodic inspections will assist the development & accuracy of the data base. The inspections will optimize the utility of the Registry.

- The belief that the CT registry will raise standards within the local industry and ultimately, lower the risk of legionnaires.

- There needs to be training and guidelines for operators to follow and a differential fee system instituted based on the ‘track’ record of the cooling tower operation.

- Other respondents did not agree with the idea of periodic inspections nor did everyone believe PHS was the appropriate agency to implement the action.

**SUMMARY**

Periodic inspections will optimize the possible utility of the Registry and help maintain the accuracy of the data base. PHS should offer training and guidelines and ‘reward’ those operators who adhere to the guidelines with a differential fee system. Some respondents were unsure whether PHS should be organizing agency in terms of the Registry.
Survey Responses (#8)

“It is a public health issue.”

“Yes, but training will be required along with specific guidelines that will stand up in court.”

“Ten visits, June till October. Condo Corps at ____ have maintenance company inspect units annually plus monthly through cooling season.”

“Audits can build data.”

“To ensure all are keeping there towers clean and up to standards.”

“It will optimize the Registry and make it a real aid.”

“This will help ensure all responsible parties of cooling towers will take the necessary steps to keep their cooling towers operating as designed and keeping the risk of Legionnaires disease to a minimum.”

“I believe the CT units should be inspected. I am not sure if the PHS is the group to do this.”

“The frequency of onsite reviews (and fees??) should be less for those that do it well and more for those that do not.”

“They can but I don’t see the value. As operator/owners there is a due diligence. They can review if necessary.”

“Waste of time and taxpayers money. Industries have chemical companys looking after their condenser units or should, as part of Registration company should have to prove this and that company held responsible.”
When respondents were asked *(Question #9)* to identify the possible benefits of the CT registry from the perspective of their own organization only 53% offered their opinion. The reasons for their support can be grouped into the following thematic areas:

- Validation and Recognition of those operators and/or maintenance companies practicing due diligence and ultimately, raising the standards of those who may be ‘high’ risk operators.

- A number of respondents (38%) did not believe the registry offered any benefits to their individual organization.

**SUMMARY**

Although some respondents saw no immediate benefit to their organization others saw the opportunity for the validation and recognition of those operators and/or maintenance companies practicing due diligence and ultimately, raising the standards of those who may be ‘high’ risk operators.

Analysis conducted by McMaster Institute of Environment and Health (MIEH) at the request of the Health Protection Division of Hamilton Public Health Services (HPHS), January 2010.
Survey Responses (Question #9)

“Risk management, operational efficiency, business opportunity.”

“Due Diligence.”

“We believe we act very responsibly. However, it would take an external point of view to confirm that.”

“It will help validate our operational quality and help me plan my operation and schedule.”

“We as an organization have always been very service orientated ensuring our cooling tower is maintained with proper chemicals, cleaning and maintenance. This registry could help us to show our employer the positive benefits of being proactive with our CT.”

“None known.”

“No benefits.”

“I do not see benefits. There should be guidelines and these need to be followed.”

Analysis conducted by McMaster Institute of Environment and Health (MIEH) at the request of the Health Protection Division of Hamilton Public Health Services (HPHS), January 2010.
When respondents were asked *(Question #10)* to identify the possible benefits of the CT registry from the perspective of protecting the health of the Hamilton population there was a 67% response rate. The reasons for their support can be grouped into the following thematic areas:

- Minimize risks of Legionnaires.
- Raise standards and regulate safety.
- The development of the data base will have outbreak ‘tracking’ utility.
- The registry will hold CT owners accountable as well as document those practicing due diligence.
- Some may find the cost prohibitive.

**SUMMARY**

The respondents acknowledged the utility of the Registry in protecting population health by primarily, regulating standards, documenting ‘high’ risk operators, acknowledging due diligence and developing an accurate data base for use by PHS when reactive measures are called upon during outbreaks. Some respondents were concerned regarding the cause of developing and maintaining the data base.

Analysis conducted by McMaster Institute of Environment and Health (MIEH) at the request of the Health Protection Division of Hamilton Public Health Services (HPHS), January 2010.
Survey Responses (Question #10)

“Minimization of risks and easier to track an outbreak.”

“If there is an outbreak, PHS, would know where the systems are.”

“Hopefully to prevent a breakout.”

“The registry identifies all cooling tower users. If you do no have a record of their existence, how can you assure they are being operated and maintained properly.”

“The intent is that all towers are biologically under control and will minimize the risk.”

“Registration may increase awareness for some and improve overall risk management.”

“Accountability of owners.”

“It proves the best practice in our facility.”

“There will be guidelines and standards in place for the owners to follow ensuring with periodic inspections of each facility it will help to identify any owners/operators not following this bylaw.”

“Good idea but don’t go overboard with wasting taxpayers dollars, to register you have to have chemical treatment by a chemical company and hold that company responsible.”

Analysis conducted by McMaster Institute of Environment and Health (MIEH) at the request of the Health Protection Division of Hamilton Public Health Services (HPHS), January 2010.
When respondents were asked (Question #11) to identify the possible benefits of having PHS take the lead for the development and administration of the CT registry. Sixty per cent (60%) of the respondents replied and their reasons for supporting this position can be grouped into the following thematic areas:

- The majority of respondents stated there was a logical ‘fit’ between the mandate/responsibility of PHS for the health of the population and the need for the registry as a tool to lower the potential health risks from Legionnaires with Cooling Towers identified as a source.
- Respondents also believed PHS had both the resources and expertise to maximize the application of the Registry.
- Twenty-two per cent (22%) of respondents stated it did not have to be under the jurisdiction of PHS.

**SUMMARY**

Overall, respondents chose PHS as the best choice to administer the CT registry due to expertise, available resources, cost, and the natural fit between the mandate of PHS and the rationale behind the development of the registry,

Analysis conducted by McMaster Institute of Environment and Health (MIEH) at the request of the Health Protection Division of Hamilton Public Health Services (HPHS), January 2010.
Survey Responses (Question #11)

“PHS is the first group to be aware of an outbreak, therefore they need access to the CTR.”

“Ensure that towers biologically controlled properly, investigation of outbreaks.”

“More resources are able than the MOL.”

“Consistency.”

‘To protect the public.’

“It is a local level of protection and will quick and practical.”

“Because of the health concerns related to Legionnaires disease the Public Health Service is the department to administer the CTR.”

“No opinion.”

“I don’t think it matters who, as long as it is done right.”
When respondents were asked (Question #12) to identify the possible challenges faced by PHS in the creation and implementation of a CT Registry. Fifty three per cent (53%) of the respondents completed the question and their answers can be grouped into the following thematic areas:

- The majority of respondents stated that compliance would be the greatest challenge for PHS.
- The original establishment of the Registry would be a challenge for PHS in terms of cost, location of current CT’s and their owners, and finally, defining the operational components of the proposed By Law (eg. Log book, RMP, etc).
- Education and training for owners/maintenance companies in order to inform them of their responsibilities under the proposed By Law.
- One respondent did not believe PHI’s were adequately trained in the operation of CT’s in order to render decisions. Another suggested there would be a conflict of interest for PHS although no details were given.

**SUMMARY**

Similar to the enactment of any Bylaw the greatest challenge identified was compliance. Again, the challenge with the enforcement of all regulations and policies can be mitigated by proper education and awareness among the target group, in this case, CT operators/owners. Another challenge would include both the creation and the administration of the Registry. Finally, some respondents believed there would be an educational/learning curve on the part of the PHI’s.
Survey Responses (Question #12)

“Implementation costs by PHS in our economic downturn.”

“Cost, Legionella can be found in potable water, Inspectors do not have the training to render decisions regarding the operation of the towers as it pertains to the by law.”

“Finding all owners. Forms of information which meet definition of “Logbook”.”

“Identifying where all towers are, which towers operate within the temperature of concern.”

“Non conformance.”

“Ensuring all registered owners are fully aware of their responsibilities are in agreement with its implementation.”

“Conflict of interest in goals.”

“Should be none.”

Analysis conducted by McMaster Institute of Environment and Health (MIEH) at the request of the Health Protection Division of Hamilton Public Health Services (HPHS), January 2010.
When respondents were asked (*Question #17*) to identify any possible exemptions which should be included in the proposed Bylaw only forty per cent (40%) of the respondents replied. Their answers were grouped into the following thematic areas:

- The majority of the respondents (33%) **did not believe** there should be any exemptions within the Bylaw.
- Those who did agree with exemptions focused on those CT’s which posed a lower risk of outbreak for both the workers of the organization and the general public.

**SUMMARY**

In general there should either be no exemptions (the majority) or a risk assessment tool should be used to designate high and low risk operations and only those and the lower end of the scale should be exempted.
Survey Responses (Question #17)

“All cooling towers need to be included. Each operator must be responsible for their equipment. The cost of legal arguments to get or defend exemptions will be prohibitive. Basically allow none.”

“No, these issues are industry standards and easily dealt with. There should be no need for an exemption.”

“If there are any health risks or safety issues with a cooling tower while in operation I don’t believe there should be any exemptions. Safety and health are the number 1 priority.”

“Towers can be assessed based on degree of risk, those that either by location or design pose no risk for workers or general population may be exempt.”

“The chemical company looks after this 14-16 we get reports.”

“All CT need to be treated for Legionella.”

Analysis conducted by McMaster Institute of Environment and Health (MIEH) at the request of the Health Protection Division of Hamilton Public Health Services (HPHS), January 2010.