

Philadelphia Cooling Tower Analysis Project (PCTAP):

An Overview

Background Information

Recent outbreaks have shown that cooling towers (CTs) can foster growth and transmission of the bacterium *Legionella*, which causes both Legionnaires' disease and Pontiac fever. From 2000-2014, the Centers for Disease Control and Prevention (CDC) investigated 27 outbreaks of Legionnaires' disease and found that cooling towers were a frequent source of *Legionella* infections (MMWR 2016). An improperly maintained cooling tower can become colonized with *Legionella* and can spread aerosolized droplets containing the bacterium vast distances. These droplets can then be inhaled by susceptible persons, leading to disease. Legionnaires' disease manifests as a serious pneumonia and approximately 10% of cases are fatal.



Figure 1. *Legionella* bacteria

The Problem

While there are buildings in Philadelphia that have cooling towers, it is unknown if these towers are properly maintained or tested for *Legionella*, or if they pose a risk for *Legionella* growth and transmission. Furthermore, the City of Philadelphia does not currently maintain an inventory of buildings with cooling towers. Thus, the Philadelphia Department of Public Health's (PDPH) understanding of the location of cooling towers throughout the city as well as their maintenance procedures is limited.

The Project

As cooling towers are a known risk factor for community outbreaks of legionellosis, it is of public health importance for the City of Philadelphia to catalog these units and determine a baseline estimate of *Legionella* colonization. In order to determine the potential contribution of cooling tower maintenance on Legionnaires' disease rates, PDPH will conduct a cross-sectional survey of 300 cooling towers to collect information on cooling tower maintenance, *Legionella* colonization, and awareness of ASHRAE Standard 188 among building owners and operators.

For this project, PDPH staff will contact the owners and operators of buildings identified as likely having cooling towers in order to confirm the presence of cooling towers and establish whether cooling tower maintenance plans are in place at each building. During these interviews, PDPH will schedule a subsequent time to conduct a cooling tower assessment and *Legionella* sampling. During the arranged site visit, the environmental health contractors (EHCs) will collect water samples and environmental swabs for *Legionella* testing and will assess water temperature, pH, and biocide residual. PDPH will maintain laboratory results and provide testing results back to collection sites. All data collected will be kept confidential and stored in a password-protected MS Access database.



Figure 2. Building Cooling Tower

Project Objectives

The overall goals of this project are to:

- Identify where cooling towers are located in the City of Philadelphia
- Establish a baseline estimate of *Legionella* colonization rates among Philadelphia cooling towers
- Evaluate cooling tower characteristics associated with *Legionella* colonization
- Compare *Legionella* colonization rates and legionellosis incidence over time and across jurisdictions, in coordination with New York City, to evaluate the effectiveness of cooling tower legislation

Project Partners

Throughout the duration of this project, PDPH will be working in conjunction with CDC and the New York City Department of Health and Mental Hygiene.

For questions, please contact:
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