
MEMORANDUM

TO: W. David McMillan, P.G.
Manager, Division of Public Water Supplies
Bureau of Water
Illinois EPA

CC: Listed Below

FROM: Justin DeWitt, P.E., LEED AP
Chief of General Engineering

DATE: November 21, 2016

SUBJECT: Water Services Attached to Public Water Supplies

I. INTRODUCTION

This memorandum details requirements relating to the connection of public water supplies to water services which provide potable water in accordance with 77 IL Admin Code 890.170 a). In accordance with the Plumbing Licensing Law (225 ILCS 320/2) *"Plumbing" includes all piping, fixtures, appurtenances and appliances for a supply of water for all purposes, including without limitation lawn sprinkler systems and backflow prevention devices connected to lawn sprinkler systems, from the source of a private water supply on the premises or from the main in the street, alley or at the curb to, within and about any building or buildings where a person or persons live, work or assemble* (emphasis added.) To the extent that the Illinois Environmental Protection Agency (IEPA) regulates and regularly communicates with operators of public water supplies, this memorandum serves to inform IEPA and its permittees of the enforcement of certain plumbing construction requirements that impact connections to water mains.

II. RISK MANAGEMENT PRINCIPLES

High-risk areas for *Legionella* and other opportunistic water-borne pathogen's growth, include anywhere that water can remain stagnant. While *Legionella* are commonly known to exist in building process systems such as cooling towers, empirical evidence and science are pointing more frequently to potable water systems as likely sources of this and other water-borne pathogens. (WHO) Within its purview, IDPH is revisiting the Illinois Plumbing Code ("Code" or "890") with an eye toward reducing risks to public health associated with water-borne pathogens. Best practices such as those found in the ASHRAE 188-2015 Standard and others are

guiding the evaluation of current plumbing standards in Illinois. While amendments to the Code are likely to occur as a result of this evaluation, many of the risk management principles currently being discussed have already been a part of the Code for quite some time. As the Illinois Plumbing Code is the *Minimum Code of Plumbing Standards* (225 ILCS 320/1) for the State of Illinois, any other standard, ordinance or requirement may only be the same or more stringent (225 ILCS 320/36.)

III. PREVENTION STRATEGIES

Maintaining proper water quality is key to preventing overgrowth of *Legionella* and the incidence of legionellosis. One way this can be achieved is by ensuring that plumbing systems are properly designed, installed and operated. The Code contemplates a key aspect of water quality in 890.1200 c), where it prohibits the existence of any unused section of water distribution piping (“dead ends”) that exceed more than 24” in length. 890.120 further defines “dead end” and the two code sections in concert address stagnant water in plumbing. The existence of dead ends in plumbing systems is a violation of the Code.

To the extent that current practices in the construction of plumbing create dead ends, IDPH is taking appropriate enforcement action to ensure that corrections are made. One such practice that has been discussed is the installation of separate domestic and fire suppression water supplies from the main in the street to the building(s) being served. Fire service water supply lines installed to serve only the building fire suppression system commonly do not experience any flow unless there is a fire in the building. Given the circumstances of these installations, when a dedicated fire suppression water service line meets the definition of a dead end, it is prohibited by the Code.

One appropriate, code-complaint approach may be to install a combined building water service capable of meeting the larger of the domestic or fire suppression system flow requirements, following the rationale that the domestic service and the fire service supplies will not be flowing at design capacity at the same time. There are numerous other engineering solutions that may be developed and implemented that can ensure that dead ends are not created. Where new construction or renovation of separate water services is occurring, compliance with the Code will be enforced as discussed in this memorandum. Existing plumbing installations may require correction in accordance with 890.110. Where extenuating circumstances warrant, variances may be granted, by IDPH, pursuant to 890.140.

IDPH anticipates that IEPA will share in its efforts to reduce the occurrence of dead leg piping that directly connects potential bacteria reservoirs to community water distribution mains in Illinois. Please respond with any questions concerning this communication.

IV. RESOURCES

DPH’s Health Beat publication regarding legionellosis is appended to this memorandum. More information about *Legionella* and water management standards can be found at:

American Society for Heating, Refrigerating and Air-conditioning Engineers (ASHRAE) Standard 188-2015:

<https://www.ashrae.org/standards-research--technology/standards--guidelines/other-ashrae-standards-referenced-in-code>

ASHRAE- Assessing Legionella Risk:

www.ashrae.org/File%20Library/docLib/Public/2004322131027_326.pdf

World Health Organization:

http://www.who.int/water_sanitation_health/emerging/legionella.pdf

U.S. Centers for Disease Control:

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

U.S. Department of Veteran's Affairs:

http://www.va.gov/vhapublications/ViewPublication.asp?pub_ID=3033

Please refer to this CDC guide in the development of water management teams and programs:

<http://www.cdc.gov/legionella/maintenance/wmp-toolkit.html>

cc: Laurie Dougherty – ISAWWA
Ed Cramer – ASPE Central Illinois
April Ricketts – ASPE Chicago
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LEGIONELLOSIS

What is legionellosis?

Legionellosis is a bacterial disease caused by *Legionella pneumophila*. The disease, which may occur in outbreaks or as single cases, can cause mild respiratory illness or pneumonia. The most common form of the disease is known as "Legionnaires' disease."

How common is legionellosis?

It is estimated that about 8,000 to 18,000 people develop legionellosis in the United States each year. An additional unknown number are infected with the *Legionella* bacterium but have mild symptoms or no illness at all. Last year in Illinois, approximately 200 individuals developed the disease.

Why is it called legionellosis?

An outbreak of this disease occurred in Philadelphia in 1976, largely among people attending an American Legion convention; this led to the name "Legionnaires' disease." Subsequently, the bacterium causing the illness was named *Legionella* and the name of the illness was changed to legionellosis.

Is this a new disease?

No. While the bacterium was only identified following the 1976 convention, earlier cases have been confirmed as far back as 1947 and cases probably occurred before that date.

Where are *Legionella* found?

Legionella are widely distributed in our environment. They have been found in creeks and ponds, hot and cold water taps (primarily hot water taps), hot water tanks, water in cooling towers and evaporative condensers, and whirlpool spas.

Most people contract the disease by inhaling mist from a water source contaminated

with the bacteria. In some cases, the disease may be transmitted by other ways, such as aspirating contaminated water. All studies to date have shown that person-to-person spread does not occur. Outbreaks occur following the exposure of many individuals to a common source of the bacteria in the environment. When a single case occurs, it is extremely difficult to pinpoint a source. Environmental testing is recommended only when multiple cases have the same potential exposure.

How severe is the illness?

Legionellosis can be a mild respiratory illness or it can be severe enough to cause death. Studies have shown that about 5 percent to 30 percent of known cases have been fatal. From 1 percent to 20 percent of healthy adults have antibodies showing previous exposure to the organism, but only a small percentage have a history of previous pneumonia. This suggests that many cases of Legionnaires' disease go undiagnosed.

Who gets legionellosis?

People of any age may get Legionnaires' disease, but the disease most often affects middle-aged and older persons, particularly those who smoke heavily. People with underlying illness, such as cancer, kidney disease, diabetes, AIDS, chronic lung disease or heart failure, or who have had an organ transplant also are at higher risk. Individuals who take corticosteroids (e.g., prednisone, azathioprine or cyclosporine) are also at higher risk.

What are the usual symptoms of legionellosis?

The most common symptoms of legionellosis are fever (102 degrees F - 105 degrees F), chills, and a cough (which may be dry or productive). Some patients also have muscle aches, headaches, tiredness, loss of appetite and, occasionally, diarrhea. Chest X-rays usually confirm pneumonia. Legionnaires' disease cannot be distinguished from other causes of pneumonia based on symptoms alone. Special testing is required to establish this diagnosis.

How soon do symptoms occur?

The period between exposure and onset of illness for Legionnaires' disease is two to 10 days, but most often five to six days.

How is legionellosis diagnosed?

Legionellosis usually is diagnosed by one of four methods. The organism can be seen under a microscope in sputum or tissue using special stains. The bacteria also may be cultured from sputum or tissue; this usually takes two to five days. Passing a small,

lighted tube into the lungs (a procedure called bronchoscopy) or sometimes even an operation may be required to obtain a specimen for staining or culturing. The bacteria also can be detected in the urine. Comparison of blood tests obtained during the illness and several weeks later may be needed to make the diagnosis when other methods are inconclusive or are negative.

What is the treatment for legionellosis?

Antibiotics appear to be effective in treating the disease; erythromycin is currently recommended as the drug of choice. Other drugs are available for patients unable to tolerate erythromycin.