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U.S.

CDC Finds Bacteria for Legionnaires' in Cooling Towers Across U.S.

Study deepens insight into link between the ubiquitous building equipment and the disease; cases have risen

A cooling tower in New York City was found to have traces of the Legionella, which may have helped cause a deadly 2015 outbreak of Legionnaires' disease in the city. PHOTO: ANDREW BURTON/GETTY IMAGES

By Betsy McKay

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The rate of Legionnaires' disease rose nearly fourfold in the U.S. between 2000 and 2014, and researchers are trying to figure out why. A new study offers some potential clues about the role of cooling towers, the equipment that expels waste heat from buildings' air conditioning or other systems.

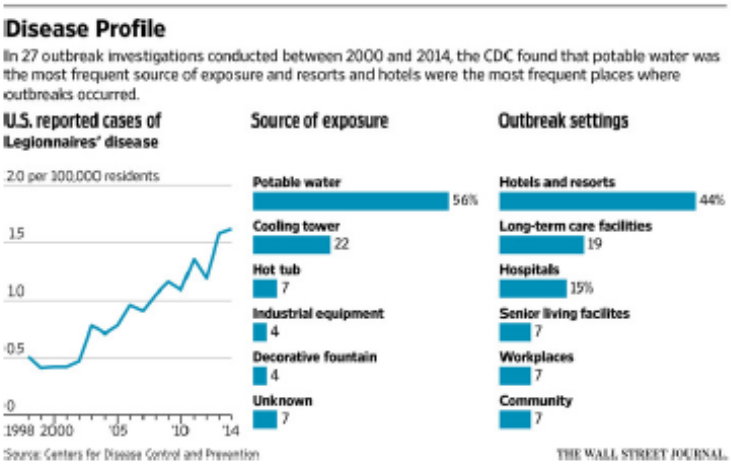
Researchers from the Centers for Disease Control and Prevention recently analyzed water from 196 cooling towers across the U.S. for Legionella, the bacteria that cause the severe and sometimes-fatal form of pneumonia. They found live Legionella bacteria in 79 of them, in most regions of the country.

Overall, they detected Legionella DNA—indicating the bacteria were either present or had been there at some point—in 164, or 84% of cooling towers from across the country.

Cooling towers are known to be a major source of outbreaks of Legionnaires' disease, including a large outbreak in New York City's South Bronx in 2015 in which 138 people were sickened and 16 died.

The bacteria can proliferate in the water system of cooling towers, then become airborne and inhaled. The CDC study is the first to show how widespread Legionella may be in these devices across the country, its authors said.

"Legionella DNA is ubiquitous in U.S. cooling towers," said Anna Llewellyn, a fellow at the pneumonia response and surveillance laboratory at the CDC, who called the findings "surprising." That "highlights the potential for cooling-tower-related outbreaks to occur anywhere in the U.S."



Dr. Llewellyn presented the study last week at a CDC conference in Atlanta and said it would be submitted soon for publication in a peer-reviewed journal.

Experts said the study offers important insights at a time when Legionnaires' cases have risen. "It reinforces the fact that cooling towers probably do play an important role in Legionella, and that trying to maintain them and test them and clean them will hopefully help prevent Legionella in the future," said Sharon Balter, medical epidemiologist and director of the food and water program at the New York City Department of Health and Mental Hygiene, who attended the presentation.

Dr. Llewellyn cautioned that just because a cooling tower has Legionella doesn't necessarily mean it is spreading disease. It isn't known how much Legionella makes a person sick. The researchers now plan to study what factors contribute to a cooling tower's risk of becoming a source of an outbreak, she said.

Legionella is found naturally in lakes and other bodies of water, but generally not in large enough amounts to threaten health, said Laura Cooley, a medical epidemiologist on the CDC's Legionella team. But it can multiply in the pipes and tanks of a building's water system, in water that is tepid, stagnant or has too little disinfectant, she said.

Legionella is found naturally in lakes and other bodies of water, but generally not in large enough amounts to threaten health, said Laura Cooley, a medical epidemiologist on the CDC's Legionella team. But it can multiply in the pipes and tanks of a building's water system, in water that is tepid, stagnant or has too little disinfectant, she said.

The contaminated water then can be aerosolized in the evaporating mist of a cooling tank, a showerhead or whirlpool spa, and inhaled, Dr. Cooley said. "There have been cases of disease associated with very low levels of legionella in water," she said.

Cooling towers were the source of the largest number of cases of Legionnaires' disease and the second largest source of exposure in a CDC analysis published in 2016 of 27 outbreaks that occurred between 2000 and 2014.

Legionella experts say there are many possible reasons for the recent rise in Legionnaires' disease cases, from improved testing for the disease to aging infrastructure. The CDC says 6,079 cases of Legionellosis—Legionnaire's disease and a few cases of a related disease, Pontiac fever—were reported in 2015.

Experts agree that keeping the water systems clean is important in preventing Legionella, though maintenance of those systems to prevent Legionella isn't regulated in most of the U.S.

Engineers and public-health authorities are pushing building operators to improve water-system maintenance. New York City now requires that building owners register cooling towers and maintain them regularly, with regular testing for the bacteria, Dr. Balter said.

The American Society of Heating, Refrigerating and Air-Conditioning Engineers, or ASHRAE, published voluntary standards in 2015 to prevent Legionella growth in water systems. It isn't known how many building owners and operators have adopted them, said Michael Patton, an ASHRAE volunteer member involved in developing the standards.

The CDC released a tool kit last year on preventing Legionella growth in water systems. "It's an interactive process where you have to constantly be reviewing the water in your building," Dr. Cooley said.

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