

# GEW99-14

## 607.5

**Proponent:** John Williams, CBO, Chair, representing ICC Adhoc Health Care Committee (AHC@iccsafe.org)

**Revise as follows:**

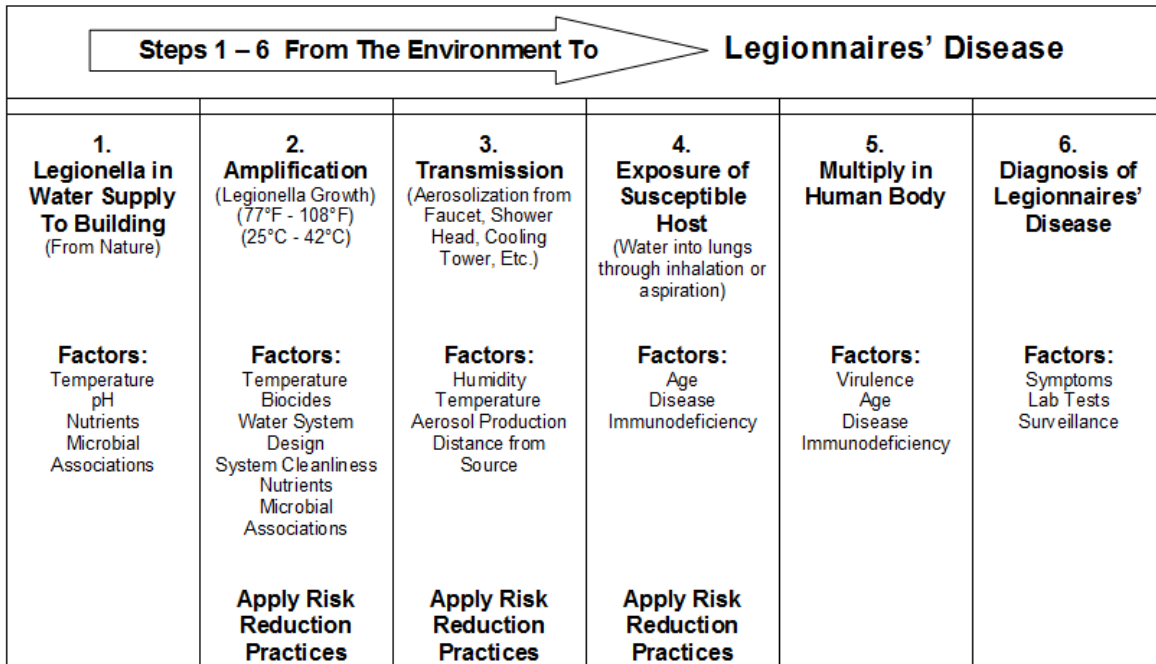
**607.5 Waste water heat recovery system.** The following building types shall be provided with a waste water heat recovery system that will preheat the incoming water used for hot water functions by not less than 10°F (5.6°C):

1. Group A-2, restaurants and banquet halls;
2. Group F, laundries;
3. Group R-1, boarding houses (transient), hotels (transient), motels (transient);
4. Group R-2 buildings;
5. Group A-3, health clubs and spas; and
6. Group I-2, ~~hospitals, psychiatric hospitals and~~ nursing homes.

**Exception:** Waste water heat recovery systems are not required for single-story slab- on-grade and single-story on crawl-space buildings.

**Reason:** Legionellosis is a recognized hazard that can kill or cause serious physical harm to building occupants. The term Legionellosis refers collectively to two distinct clinical illnesses, Legionnaires' disease and Pontiac fever. Legionnaires' disease is when the bacterium Legionella causes severe pneumonia. Pontiac fever is when Legionella infection results in a less severe, non-pneumonic, influenza-like illness. The US Centers for Disease Control and Prevention (CDC) has estimated that there are between 8,000 and 18,000 cases of Legionnaires' disease in the United States each year, and that more than 10 percent of these cases are fatal. Legionellosis results predominantly from exposure to Legionella associated with building water systems. Estimates suggest that 20% of Legionnaires' disease cases are outbreak related (more than one confirmed case in a one year period), but the majority are not outbreak-related (sporadic) (MMWR 2011). Outbreaks have been associated with whirlpool spas, cooling towers, decorative fountains, hotels, water systems of hospitals and nursing homes, and cruise ships. Persons at increased risk for legionellosis include, but are not limited to, the elderly, dialysis patients, persons who smoke, and persons with underlying medical conditions that weaken the immune system. However, a significant percentage of cases are in persons that are not part of any identified at-risk population. Building water systems vary substantially in their design and propensity for transmission of Legionella. Conditions that are favorable for the amplification of legionellae growth include the presence of other bacteria, amoebae and other protozoan hosts, water temperatures of 25-42°C (77-108°F), stagnation, scale, sediment and biofilms. Legionellosis is not transmitted person-to-person. Multiple modes have been identified for transmission of *Legionella* to humans; there is evidence for aerosolization, aspiration, and direct instillation into the lung during medical procedures. In most instances, transmission to humans occurs when water that contains *Legionella* is aerosolized in respirable droplets

## Legionella Transmission From Nature to Human Disease



**Figure 1 Legionella Transmission: Factors and events leading to Legionnaires' disease.**

*Adapted from Barbaree (1991)<sup>3</sup>*

The most effective control for most diseases, including legionellosis, is prevention of transmission at as many points as possible in the disease's chain of transmission. The rationale for this is that if one preventive measure fails, others will be in place and act as failsafe mechanisms. With this philosophy in mind, it may be desirable to design interventions to prevent transmission of legionellosis at as many points as possible in the disease's chain of transmission. General concepts are presented so that readers may develop an understanding of the types of conditions that may allow amplification and transmission of Legionella.

Maintaining hot and cold water temperatures within prescribed ranges throughout the entire system has been shown to reduce the proliferation of Legionella. Cold water should be distributed and delivered at temperatures below 77°F (25°C). If cold water temperatures exceed 77°F (25°C) in any part of the system, the potential for proliferation of Legionella increases significantly.

ASHRAE GUIDELINE Reducing the Risk of Legionellosis Associated with Building Water Systems, Copyright 2000 American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.

A Waste Water Heat Recovery System is designed to recover heat from the hot water used in showers, bathtubs, sinks, dishwashers, and clothes washers. They generally have the ability to store recovered heat for later use. These systems will impact the ability to properly control the water temperature within parts of the plumbing systems providing prime opportunities for the proliferation of Legionella and other bacteria within the building water system and therefore expose the high risk population.

**Cost Impact:** Will not increase the cost of construction.

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