

Prevention of Pilgrims from Legionnaires' Disease

Omar Bashir Ahmed*

Department of Environmental and Health Research, The Custodian of the Two Holy Mosques Institute for Hajj and Omraa, Umm Al-Qura University, Makkah, Saudi Arabia

***Corresponding Author:** Omar Bashir Ahmed, Department of Environmental and Health Research, The Custodian of the Two Holy Mosques Institute for Hajj and Omraa, Umm Al-Qura University, Makkah, Saudi Arabia.

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During mass gathering (pilgrimage), water supplies in the hotels need be safe for human consumption, convenient and free from contamination. Legionnaires' disease and Pontiac fever are often associated with travel and with staying in hotels. It has been shown that large buildings provide a rich environment for *Legionella* more than the small ones. Legionnaires' disease is caused by intracellular Gram negative bacteria called *Legionellae* which comprises more than 40 species (64 serogroups). The disease is characterized by cough, shortness of breath, muscle aches, headache and fever with pneumonia while the Pontiac fever is characterized by a milder flu-like illness without pneumonia. *Legionella pneumophila* is the most common pathogenic species, accounting for most of legionellosis cases in the world. The present review was undertaken in order to understand risk factors for *Legionella* contamination associated with water distribution systems and to know the most used methods for detection of *Legionella* colonization in such systems. In most hotels, the water supply system should function with water supplied after treatment with rapid filtration and chlorine disinfection. When water supply systems of the hotels use an elevated water tank system, the tap water should pass through the building's internal water supply system then distributed to users. In Saudi Arabia, the residual active chlorine concentration of water supplied from the faucet to should be at least 0.4 mg/L. The extensive-piping systems may result in variability of temperature and encourage biofilm accumulation, such factors may favor the growth and proliferation of *Legionella* spp. Temperature control and disinfection residuals should be maintained, in addition to prevention of biofilm formation in either stagnant or warm water. Regular examination of *Legionella* in the water distribution systems should include direct and proper collection of samples from the outlets. Different mid streams cold and hot water samples should be collected in at least 1-litre sterile bottles from different sites of the water distribution system (boiler, room showers, hot water recycling). The collected samples should be neutralized from the residual-free chlorine with sodium thiosulfate. The samples should be tested for temperature and PH readings. Isolation and enumeration of *Legionellae* by the standard culture method using selective media BCYE agar (buffered charcoal yeast extract with α -ketoglutarate, L-cysteine and ferric pyrophosphate) supplemented with vancomycin, polymyxin B, cycloheximide and glycine (GVPC medium) beside molecular techniques (Polymerase chain reaction). In conclusion pilgrims could be prevented from Legionnaires by treatment of water with rapid filtration and chlorination, then controlling the temperature of piping systems, monitoring and testing of *Legionellae* species in water supplied in pilgrims hotels.

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