

National Aeronautics and
Space Administration
Office of the Administrator
Washington, DC 20546-0001



July 2, 2002

TO: Environmental Contracting Officer's
Technical Representatives and Environmental Health
Program Managers

FROM: AM/Director, Occupational Health

SUBJECT: Legionella Bacteria Contamination of Potable Water

Most of you are aware of the situation at Ames Research Center where the routine investigation of an indoor air-quality complaint led to the identification of Legionella bacteria. After considerable discussion with OSHA, Legionella experts, and our colleagues in Safety and Facilities Management, the Office of the Chief Health and Medical Officer determined that a standardized approach was best.

A coordinated policy letter was drafted, expeditiously signed by the principals, and is being distributed to Headquarters Officials-in-Charge and Center Director's today. On June 27, the Principal Center was authorized to send an electronic copy of the draft as a "heads up" after becoming aware that some Centers has already started taking independent action. A copy of the final signed policy letter is enclosed.

Over the coming months it is reasonable to expect that NASA Occupational Health industrial hygiene personnel will be working with Facilities personnel to determine the best long-term solution for controlling Legionella.

A handwritten signature in black ink, appearing to read "Catherine M. Angotti". The signature is fluid and cursive, with a large initial "C" and "A".

Catherine M. Angotti, R.D., L.D.

Enclosure



July 1, 2002

TO: Officials-In-Charge of Headquarters Offices
Director, NASA Centers
Director, Jet Propulsion Laboratory

FROM: AM/Chief, Health and Medical Officer
J/Assistant Administrator for Management Systems
Q/Associate Administrator for Safety and Mission Assurance

SUBJECT: Legionella Bacteria Contamination of Potable Water

During a recent industrial hygiene investigation of an indoor air-quality complaint in a building at a NASA Center, Legionella bacteria was detected in the closed-water distribution systems. Repeat sampling and laboratory culturing demonstrated that the bacteria exceeded acceptable levels at this building and with further testing, at several other buildings. By either super-chlorinating the water supply, boosting the water temperature to 158 degrees Fahrenheit (70 degrees Celsius), or both, depending on the level of colony-forming units and the individual system, remediation has been both swift and effective.

Since the Philadelphia outbreak of Legionnaire's Disease in 1976, NASA has issued several memorandums concerning the Legionella bacteria. All previous correspondence alerted NASA Centers to the potential for naturally existing Legionella bacteria in the water supply and the need to follow preventive measures for arresting its growth. Neither the Center for Disease Control (CDC) nor the Occupational Safety and Health Administration (OSHA) presently require and do not recommend the routine culturing of water systems for the Legionella bacteria.

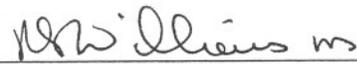
Legionella bacteria may flourish in improperly designed or maintained potable water systems. For the immediate situation, NASA recommends thermal controls rather than chemical. To accomplish decontamination and prevent further problems, the water in the distribution system must be heated to a temperature equal to or exceeding 140 degrees Fahrenheit (60 degrees Celsius). In addition, it is important to periodically flush all water lines and tanks that may stagnate. OSHA requires that the hot water existing at the taps be approximately 122 degrees Fahrenheit (50 degrees Celsius), which is the lower limit of scalding risk. Center facility, safety, and health personnel should coordinate any changes regarding temperature settings. Normal levels of chlorinating for potable water in the local water supply should keep the bacteria in check for properly designed and active water distribution piping.

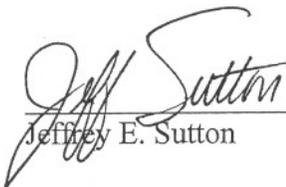
We will make a final recommendation on long-term Legionella control pending the outcome of a detailed analysis of heating costs, cold water supply runs, energy conservation policy, chlorine costs, levels and impact on drinking water, implications of being a secondary water treatment facility, and the effect of augmented chlorination treatments on an aging plumbing system.

The presence of the Legionella organism does not imply infection as the organism can be found naturally without being associated with cases of disease. The risk of bacterial infection in humans generally only occurs when 1) Legionella is present in the water system in large numbers (i.e., conditions must be favorable for the bacteria to flourish); 2) there is a mechanism for dispersal causing inhalation due to misting or vaporization (i.e., showers, Jacuzzis, humidifiers, etc.); and 3) the human host is susceptible (i.e., people that are elderly, infirm, immunocompromised, heavy smokers, etc.). Routine medical testing for the presence of antibodies is not recommended as it merely indicates a past exposure to the bacteria and is inconclusive. In the presence of good water system maintenance programs, periodic or routine monitoring for Legionella in potable water distribution systems is neither required nor necessary. For open water systems such as those for cooling towers and evaporative condensers, facility maintenance organizations should continue to inspect for bacterial or algal growth and, where indicated, treat with the proper biocides. Periodic sampling, not testing for specific organisms, may be done to assure the adequacy of applied preventive measures.

The risk for contracting Legionnaires Disease in the home is predicated on the same basic factors as discussed above for the NASA workplace. Homes on a municipal water supply normally have bactericidal treatments applied at the water treatment plant. Home water heaters should be maintained at the operating temperature indicated above to kill the bacteria. With an increased temperature, care must be taken to avoid scalding injuries at the faucet, especially for children and the elderly. Modern temperature controlling faucets can remedy this hazard. Stagnant or unused water lines should be flushed periodically and the manufacturer's instructions for maintaining and flushing the water heater should be followed.

Enclosed for your information is a copy of OSHA's technical manual, which provides additional information on preventive measures for the control of Legionella bacteria.


Richard S. Williams, M.D


Jeffrey E. Sutton


Bryan O'Connor

Enclosure

Officials-in-Charge of Headquarters Offices:

AI/Dr. Mulville
AA/Mr. Stadd
AB/Mr. Christensen
AC/Gen. Armstrong
AE/Mr. Hudkins (Acting)
AF/Mr. Venneri
AO/Mr. Holcomb
AS/Dr. Lucid
B/Mr. Varholy (Acting)
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GRC/Mr. Campbell
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LaRC/Mr. Freeman (Acting)
MSFC/Mr. Stephenson
SSC/Mr. Estess

Director, Jet Propulsion Laboratory:

Dr. Elachi

cc:

A/Ms. Senke
AM/Staff
CIC/Ms. Grimes