LEGIONELLA

and the prevention of legionellosis

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The cover is based on a scanning electron micrograph depicting the in situ structure of a nitrifying biofilm from a functioning biological filter. The photograph, supplied by Dr Richard Bentham, was taken by Ben van den Akker, Flinders University, Adelaide, Australia, with the assistance of Flinders Microscope Imaging and Analysis Facility.

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Edited by:
Jamie Bartram, Yves Chartier, John V Lee,
Kathy Pond and Susanne Surman-Lee

Foreword

Legionellosis is a collection of infections that emerged in the second half of the 20th century, and that are caused by *Legionella pneumophila* and related *Legionella* bacteria. The severity of legionellosis varies from mild febrile illness (Pontiac fever) to a potentially fatal form of pneumonia (Legionnaires' disease) that can affect anyone, but principally affects those who are susceptible due to age, illness, immunosuppression or other risk factors, such as smoking. Water is the major natural reservoir for legionellae, and the bacteria are found worldwide in many different natural and artificial aquatic environments, such as cooling towers; water systems in hotels, homes, ships and factories; respiratory therapy equipment; fountains; misting devices; and spa pools. About 20% of the cases of legionellosis detected in Europe are considered to be travel-related; these cases present a particular set of problems because of difficulties in identifying the source of infection.

The World Health Organization (WHO) currently provides guidance on *Legionella* risk assessment and management in three principal documents:

- *Guidelines for Drinking-water Quality* (WHO, 2004)
- *Guidelines for Safe Recreational Water Environments* (WHO, 2006)
- *Guide to Ship Sanitation* (WHO, 2007).

As part of the ongoing review of the *Guidelines for Drinking-water Quality*, specific micro-organisms and chemicals are periodically evaluated, and documentation relating to protection and control of drinking-water quality is prepared. In 2001, a meeting was held in Adelaide, Australia, to discuss approaches to regulating microbial drinking-water quality, and development of risk assessment and risk management approaches, for incorporation into the 3rd edition of the *Guidelines for Drinking-water Quality* (WHO, 2004). At that meeting, health concerns relating to *Legionella* were identified as an area of increasing public and professional interest. The meeting recommended the development of this publication — *Legionella and the Prevention of Legionellosis* — to review the current state of knowledge about the impact of *Legionella* on health.

This book provides a comprehensive overview of the sources, ecology and laboratory identification of *Legionella*. It provides guidance on assessment and management of risks associated with potentially hazardous environments, such as cooling towers, pools and spa baths. The document also identifies necessary measures to prevent, or adequately control, the risk of exposure to *Legionella* bacteria for each particular environment. Outbreaks of legionellosis generally cause a high level of morbidity and mortality in the people exposed; therefore, the suspicion of an outbreak warrants immediate action. This publication reviews policies and practice for outbreak management and the institutional roles and responsibilities of an outbreak control team.

The development of this publication was guided by the recommendations of an expert meeting hosted by the Health Protection Agency's Centre for Infections (formerly the Central Public Health Laboratory), Colindale, London, on 18–20 June 2002, chaired by Dr John V Lee. It was also guided by a series of critical reviews undertaken by specialists in the field.

The production of this document was led by the Department of Public Health and Environment — Programme on Assessing and Managing Environmental Risks to Health at WHO, in cooperation with the Department of Epidemic and Pandemic Alert and Response at WHO.

This book will be useful to all those concerned with *Legionella* and health, including environmental and public health officers, health-care workers, the travel industry, researchers and special interest groups.

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