

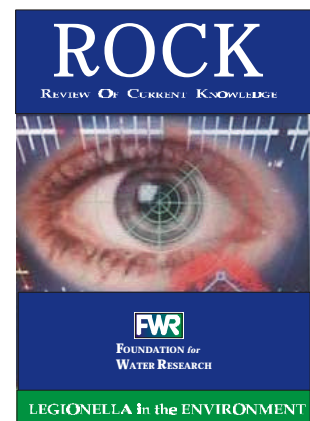
Title: <b>LEGIONELLA in the ENVIRONMENT</b>	
Research commissioned by: <b>Foundation for Water Research</b>	Research Contractor <b>John Lee</b>

This report is the fourth in a series of FWR Reviews of Current Knowledge (**ROCKs**). Each review focuses on a topical issue in the water environment area and provides concise, readable, scientific and technical information on the subject. They are intended to facilitate a wider understanding of the issues involved and to promote informed opinion about them.

This **ROCK** addresses Legionellae in the natural and man-made environments. They are rod-shaped bacteria that may cause mild or severe effects varying from Pontiac fever, a mild infection, to Legionnaire's disease, an acute form of fulminating pneumonia. Legionnaire's disease was first recognised as a result of an outbreak of acute pneumonia that occurred at the convention of the American legion in Philadelphia, USA in 1976. There have been many outbreaks of the disease since then, the latest (at the time of writing) occurring in Murcia, Spain in July 2001 with more than 370 confirmed cases.

The review is topical in that the health authorities in many countries are seeking to promote guidelines to minimise the risk of outbreaks of Legionnaire's disease and, should they occur, to put in place counter-measures to minimise the number of cases exhibiting clinical symptoms of the disease.

When it became possible to detect *L. pneumophila* and, later, other *Legionella* species, scientists were then able to study the occurrence and ecology of *Legionella*. Subsequent investigations have shown that *Legionella* species occur naturally in fresh water, sea water and moist natural environments throughout the world, although they are usually a minor component (less than 1%) of the bacterial population. The prime factor influencing their incidence is water temperature; the organisms having a predilection for warm water that is reflected by their incidence in man-made water systems. The majority of outbreaks have been associated with cooling towers, evaporative condensers, hot and cold water systems and spa pools (also known as whirlpool spas or jacuzzis).



The review explains the background of the growth of *Legionella* species in man-made water systems, its relationship with other bacteria and gives examples of outbreaks of Legionnaire's disease in different countries but, chiefly, those in England and Wales. It looks at the maintenance factors affecting colonisation of cooling water systems and the treatment of the cooling water, particularly the efficiency of biocides and other agents to control *Legionella* species in cooling water systems. It points out that the majority of outbreaks of Legionnaire's disease that have been associated with cooling towers or evaporative condensers have been associated with relatively

small systems. Large cooling towers such as those associated with power generation have never to date been shown to be a cause of legionellosis.

The review has a bibliography of more than 50 individual references. The total length is 48 pages (A5 size).

**September 2001**

**REPORT NO: FR/R0004 –PRICE £ 10.00**

**Copies of the full report can be obtained from FWR, Allen House, The Listons, Liston Road,  
Marlow, Bucks SL7 1FD, U.K.**

**Telephone: +44(0)1628 891589 Facsimile: +44(0)1628 472711 E-mail [office@fwr.org.uk](mailto:office@fwr.org.uk)  
Home page <http://www.fwr.org>**