AS/NZS 3896:2008

Australian/New Zealand Standard™

Waters—Examination for *Legionella* spp. including *Legionella pneumophila*

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee FT-020, Water Microbiology. It was approved on behalf of the Council of Standards Australia on 12 May 2008 and on behalf of the Council of Standards New Zealand on 26 May 2008.
This Standard was published on 28 July 2008.

The following are represented on Committee FT-020:

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Australian Food and Grocery Council
Australian Society for Microbiology
Department of Human Services, Vic.
Environmental Science and Research, New Zealand
Ministry of Health, New Zealand
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Additional Interests:

Commercial Testing Laboratories
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This Standard was issued in draft form for comment as DR 07001.

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Waters—Examination for *Legionella* spp. including *Legionella pneumophila*

Originated in Australia as AS 3896—1991.
Previous edition AS/NZS 3896:1998.
Third edition AS/NZS 3896:2008.

Jointly published by Standards Australia, GPO Box 476, Sydney, NSW 2001 and Standards New Zealand, Private Bag 2439, Wellington 6020

ISBN 0 7337 8825 4

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee FT-020, Water Microbiology, to supersede AS/NZS 3896:1998, *Waters—Examination for legionellae including Legionella pneumophila*. It stems from a need, expressed by health authorities, for a standard method for the enumeration of legionellae in waters for use during outbreaks of legionellosis including legionnaire's disease and for monitoring the efficacy of measures adopted for preventing the proliferation of legionellae in waters.

The committee did not recommend the adoption of ISO 11731:1998, *Water quality—Detection and enumeration of Legionella* and ISO 11731-2:2004, *Water quality—Detection and enumeration of Legionella*—Part 2: *Direct membrane filtration method for waters with low bacterial counts* as Australian/New Zealand Standards because the two ISO Standards do not align with current legislative requirements.

L. pneumophila serogroup 1 causes legionnaire's disease. However, some other *Legionella* are potentially pathogenic and may cause legionellosis. The revised Standard is designed to estimate the number of *Legionella pneumophila* and a range of other *Legionella* spp., the presence of which may indicate poorly managed water systems. The Method is suitable for use in a laboratory equipped to carry out routine microbiological work.

Although some *Legionella* other than *L. pneumophila* can be identified with commercially available kits, identification of others requires specialized testing using advanced techniques and equipment. Laboratories that cannot perform these specialized tests should consult a laboratory with the necessary facilities if further testing, beyond the scope of this Standard, is required to establish the identity of an organism confirmed by this Standard as a species of *Legionella* or as a *Legionella*-like organism.

This Standard is suitable for testing treated and untreated water samples. Because of the diverse nature of environmental samples and the different methods used for their initial treatment before cultural examination, it has not been possible to include such preparative treatments in this Standard. If low levels of *Legionella* spp. are anticipated in a test water concentration methods may be required.

A bibliography lists the main literature sources of information on the method and culture media used.

The laboratory should have a clearly defined quality control system to ensure that the apparatus, culture media, reagents and technique are suitable for the test. The use of positive controls is part of this system.

The 'informative' has been used in this Standard to define the application of the appendix to which it applies. An 'informative' appendix is only for information and guidance.

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1 SCOPE

This Standard sets out a method for isolating and estimating the number of *Legionella pneumophila* and a range of other *Legionella* spp. in water.

NOTES:

1 A flow chart of the procedure is shown in Appendix A.

2 This Method will isolate the species *L. pneumophila* but not all other *Legionella* spp. *L. pneumophila* serogroup 1 accounts for the majority of legionellae infections.

3 Conditions that favour the isolation of *L. pneumophila* do not necessarily apply to some *Legionella* spp. Steps are included to enhance the recovery of such species.

4 This Standard describes the testing of a sample of water as delivered to the laboratory and provides some information regarding sample size and delivery conditions.

2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS/NZS	
2031	Selection of containers and preservation of water samples for chemical and microbiological analysis— Microbiological
2243	Safety in laboratories
2243.3	Part 3: Microbiology

3 PRINCIPLE

The sample of water is treated and then cultured on specified media. Tests are carried out on suspect colonies of *Legionella*-like organisms (LLOs), and organisms which are presumed to be *Legionella* spp. are tested to distinguish *L. pneumophila* from other species. Isolates other than *L. pneumophila* are identified, if necessary, by specialized identification tests.

4 SAFETY PRECAUTIONS

The safety precautions to be used in microbiological laboratories as described in AS/NZS 2243.3 shall be observed.

Legionella cultures on solid culture media can be handled safely by trained staff on the open bench in a conventional microbiology laboratory conforming to Containment Level 2. Infection is caused by inhalation of the organism and it is advisable therefore to assess all techniques for their ability to produce aerosols. If in doubt, carry out the work in a biological safety cabinet.

5 CULTURE MEDIA, REAGENTS AND REFERENCE CULTURES

5.1 Culture media

(See Appendix B).