

Significance of *Legionella pneumophila* serogroup 1, *Legionella pneumophila* serogroup 2-14 and *Legionella* species (not pneumophila) isolations air-conditioning cooling water systems.

There are over 50 species presently identified of Legionella. Although Legionella pneumophila serogroup 1 has been identified as the cause of most outbreaks of Legionnaires' disease, around 20 other Legionella species have been identified as being able to cause human infections.

Legionella pneumophila serogroups 2-14

Legionella pneumophila species serogroup 3, 4 and 6 have been linked to disease in humans.

Legionella species (not pneumophila)

One study showed that *L. pneumophila* was responsible for the greatest percentage of cases (91.5%), followed by *Legionella longbeachae* (3.9%) and *L. bozemanii* (2.4%). The remainder of cases were due to *L. micdadei*, *L. feeleeii*, *L. dumoffii*, *Legionella wadsworthii*, and *L. anisa*. It is not clear whether these non-pneumophila Legionella species are inherently less pathogenic than *Legionella pneumophila*.

The fact remains that laboratory reports must not be treated differently based on the species of Legionella isolated. *Legionella pneumophila* serogroup 1, *Legionella pneumophila* serogroup 2-14 and Legionella species (not pneumophila) all contain bacteria capable of causing disease. This fact is reinforced by AS/NZS 3666.3:2011 which clearly states that the action required for the detection of Legionella in a water sample is to be solely based on the concentration of bacteria not on the specific species isolated. It should also be noted that laboratory reports state that the Legionella reported is not a count of that species but a count of Legionella and that the species reported is merely present. This means that multiple Legionella groups may be present in a sample and it is impossible for the laboratory to detect each one.

In fact the Australian Standard AS/NZS 3896:2017 for performing Legionella testing does not require isolates to be speciated and only requires the total Legionella species count to be reported alone, with a separate statement indicating the strain types/groups detected, rather than attempting to report counts of the strains detected.

Summary

The interpretation of a positive detection of Legionella in a water sample from air-conditioning cooling water samples **must only** be based on the concentration (cfu/ml) irrespective of the strain(s) of bacteria reported.

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References

AS/NZS 3666.3:2011 Air-handling and water systems of buildings – Microbial control Part 3: Performance-based maintenance of cooling water systems.

AS/NZS 3896:2017 Waters- Examination for Legionella spp including Legionella pneumophila.

<https://legionellacontrol.com/legionella/legionella-species/>

<http://conditions.health.qld.gov.au/HealthCondition/condition/14/33/87/Legionnaires-Disease>

<https://academic.oup.com/cid/article/35/8/990/330989>