

Water Testing – Recreational, Pool and Spa

Pool and Spa Water

The Queensland Health Swimming and Spa Pool Water Quality and Operational Guidelines recommends for heated spa pools that the Plate Count should be less than 100 CFU/mL and that a *Pseudomonas aeruginosa* count, a Faecal coliform count and an *Escherichia coli* count be less than 1 CFU /100mL. Other authorities recommend a total coliform count and a coagulase positive staphylococci count of less than 1 CFU /100mL. In some situations a *Legionella* count should also be performed where the result should be less than 10 CFU /mL. All spa pools should be free of *Legionella* at levels above 10 CFU /mL. The aerosol production in such close proximity to spa pools users represents a very high health risk when the water contains *Legionella* bacteria.

Recreational Water

Water-based recreational activities are popular in Australia. Although the country has an extensive coastline, there are highly localised pressures on accessible areas, particularly around major urban areas. The same is true for estuarine and freshwater rivers and lakes which are increasingly being developed and managed for recreational purposes. Water-quality guidelines are necessary to protect human health during recreational activities such as a swimming and boating, and to preserve the aesthetic appeal of water bodies. Such guidelines are used in monitoring and managing a range of physical, microbial and chemical characteristics that determine whether a body of water is suitable for recreational use (NHMRC Guidelines for Managing Risks in Recreational Waters 2008).

Recreational water can be categorised into primary (where head immersion is likely), secondary (where only wading is performed) and tertiary (where no skin contact occurs, such as in decorative fountains). The National Health and Medical Research Council of Australia (NHMRC) recommends that marine waters should have a an Enterococci count not exceeding 40 CFU /100mL and that an Enterococci count exceeding 500 CFU/100mL is an indicator of significant risk of developing an infection following 10 minutes of bathing with three head immersions. This guideline does not relate to children, the elderly or immuno-compromised who would have lower immunity and might require a greater degree of protection.

Similar guidelines are not yet available for fresh and estuarine waters because of the lack of research data.

Previously Faecal coliforms and *E. coli* have been used as indicators for recreational water, but they are currently considered to be unsuitable parameters for marine water evaluations due to insufficient data. *E. coli* is intrinsically suitable for fresh waters. The World Health Organisation advocates the analysis for Enterococci as the single preferred faecal indicator.

In general there is no health risks associated with tertiary contact recreational water. However, the presence of bacteria such as *Legionella* and *Pseudomonas aeruginosa* can be significant if aerosol production and drift of mists can carry to people in the area of the fountain.