



Facts about *Pseudomonas aeruginosa* in Swimming and Spa Pools

Environmental Health Guide

The following summary of key points regarding *Pseudomonas aeruginosa* has been extracted from WHO - 2006, Guidelines for safe recreational water environments Volume 2 - Swimming Pools and Similar Environments:

Characteristics

- Organism size ranges from 0.5µm - 1.0µm x 1.5µm - 4.0µm
- Resistant to a wide range of anti-biotics & disinfectants
- Grows well at temperatures up to 41°C

Pathogenesis

- Common *P. aeruginosa* infections include:
 - Folliculitis - (pustular rash of hair follicles on the skin) - occurs within 8hrs - 5days after the event and usually resolves within 5 days - most common in heated spa-pools
 - Otitis externa (swimmers ear) - most common for swimming pools
 - Urinary & respiratory tracts, wounds & cornea
- Occasional symptoms include:
 - head/muscle aches, burning eyes & fever (resembles inhalation of *P.aeruginosa* endotoxins)
- The suggested infective dose for healthy individuals is >1000 organisms/mL

Sources/ environments contributing to contamination/ proliferation

- Ubiquitous in water, vegetation and soil environments, however shedding from infected humans is the predominant source of contamination in swimming/ spa pools
- Surrounding warm/ damp environments can be a source of contamination (e.g. decks, drains, benches & floors)
- *P.aeruginosa* tends to accumulate in biofilms in filters that are poorly maintained & in areas where swimming/ spa pool hydraulics are poor (e.g. under moveable floors)
- Bathers are likely to pick up the organism on their hands/ feet and transfer them to the water
- Elevated organic loads in spas (particularly skin cells) protect organisms from disinfection, reduce the residual disinfectant level and provide a source of nutrients for organism growth



Risk Management

- Maintaining adequate residual disinfectant levels in swimming/ spa pools
- Frequent monitoring and adjustment of pH and disinfectant levels is essential
- Routine thorough cleaning of swimming/ spa pool interiors, including pipe-work
- Routine thorough cleaning of surrounding swimming/ spa pool surfaces
- Chlorination is superior to bromination in controlling *P.aeruginosa*
- Operators should strongly encourage patrons to shower, prior to swimming/ spa pool entry
- Control bather numbers and duration of spa exposure

Further Information:

For further information contact your local government Environmental Health officer

or

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