

# *Pseudomonas aeruginosa* Information Sheet

*Pseudomonas aeruginosa* in whirlpool water is of public health concern because it can cause skin rashes and ear infections. The water conditions in whirlpools are ideal for this bacteria to survive. The turbulent water and heavy bather load makes it more difficult to maintain adequate disinfection. *Pseudomonas* can even survive the chemical treatment used to destroy most bacteria. The warm water opens up pores of the skin and permits bacterial invasion.

## PREVENTIVE MEASURES

1. Exclude persons having obvious or known infections.
2. Require patrons to take a cleansing shower using warm water and soap before entering the pool. (*Pseudomonas* can be present on the skin).
3. Quickly remove all waste which may enter the pool.
  - a. Ensure that the filtration system is operating properly.
    - Frequent filtering of the water is very important. A whirlpool greater than 4 m<sup>3</sup> (4000 liters) in volume requires a minimum of three (3) complete water turnovers every hour. A whirlpool less than 4 m<sup>3</sup> (4000 liters) in volume requires a minimum of four (4) turnovers every hour.
    - Maintain your filters by following manufacturer's instructions. Replace sand as often as recommended (usually yearly). In the case of cartridge filters, clean as often as is necessary. Clean filters and filter media help prevent it from harbouring resistant strains of *Pseudomonas*.
  - b. Remove the scum line at least once a day (or more frequently if necessary).
    - Body oils can build up fast, leaving a layer of fat that will adhere to the whirlpool; bacteria can then grow underneath that layer.
  - c. Change the water as often as necessary.
    - Unoxidized materials in the pool can accumulate and reduce the effectiveness of your chlorine disinfectant.
4. Destroy disease-producing organism by maintaining a proper disinfectant residual and pH. For best results in a whirlpool:
  - a. The free chlorine residual should be at least 3 - 5 ppm and higher as necessary.
  - b. The pH level must be between 6.8 and 7.6, optimum 7.0 - 7.2
5. Submit water samples to the Provincial Laboratory of Public Health at least once a week.

## *PSEUDOMONAS ISOLATION IN WATER SAMPLE*

When *Pseudomonas aeruginosa* has been identified in your recent water sample, you must treat the whirlpool and submit another sample. Consecutive unsatisfactory samples may result in a closure order being issued against your facility. The following are examples of procedures that have shown to be successful in treating whirlpools for *Pseudomonas*. These are suggestions only; the treatment process is the responsibility of the responsible person.

1. Backwash.
2. a) Increase Free Available Chlorine (FAC) level to 20 - 50 ppm (with non-stabilised chlorine) and maintain a pH of 7.5 or lower, or  
b) Increase the FAC to 10 ppm and lower the pH to 6.8 - 7.0, or  
c) Use a commercial treatment that utilizes an alternative disinfectant / oxidizer (Accelerated Hydrogen peroxide or Chlorine Dioxide). Follow manufacturer's instructions.
3. Run the water through the circulation system for at least 4 - 6 hours.
4. Completely drain the whirlpool.
5. Scrub the whirlpool pool surfaces with acid or sanitizer.
6. Rinse off acid / sanitizer.
7. Refill the pool.
8. Adjust water chemistry to regular operating parameters.
9. Take a water sample and send it to the lab.
10. Reopen the pool to the public as instructed by your health inspector.

## *REMOVING RESISTANT STRAINS*

1. Super-chlorinate to 50 ppm, maintain proper pH (6.8 - 7.6), and leave re-circulation system on overnight.
2. Drain and follow previous procedure.

**For more information, please contact your nearest Environmental Public Health office.**

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Calgary Main Office  
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Grande Prairie Main Office  
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