

# *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 these bacteria to survive. The turbulent water and heavy bather load make it more difficult to maintain adequate disinfection. *Pseudomonas* can even survive the chemical treatment used to destroy most bacteria. The warm water opens the 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 that 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 the manufacturer's instructions. Replace sand as often as recommended (usually yearly). In the case of cartridge filters, clean them as often as 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 organisms 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 of 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-stabilized 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 the 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.

---

Contact us at 1-833-476-4743 or [submit a request online](#) at [ahs.ca/eph](http://ahs.ca/eph).

PUB-0780-201105 #

©2011 Alberta Health Services, Safe Healthy Environments



This work is licensed under a [Creative Commons Attribution-Non-commercial-Share Alike 4.0 International license](#). You are free to copy, distribute and adapt the work for non-commercial purposes, as long as you attribute the work to Alberta Health Services and abide by the other license terms. If you alter, transform, or build upon this work, you may distribute the resulting work only under the same, similar, or compatible license. The license does not apply to content for which the Alberta Health Services is not the copyright owner.

This material is intended for general information only and is provided on an "as is," "where is" basis. Although reasonable efforts were made to confirm the accuracy of the information, Alberta Health Services does not make any representation or warranty, express, implied or statutory, as to the accuracy, reliability, completeness, applicability or fitness for a particular purpose of such information.