

## Interpreting Microbiological Sample Test Results for Public Swimming Pools

The Public Swimming Pools Regulation (A.R. 204/2014) requires a weekly water sample from all pools. These samples are submitted to the Provincial Laboratory of Public Health (ProvLab) for microbiological testing. The results of the microbiological test provide valuable data regarding the microbial quality of the pool water.

Pools are tested for the following:

- **Heterotrophic plate count (HPC)**
- **Total coliforms**
- ***Pseudomonas aeruginosa*** (only tested in pools above 30°C such as whirlpools and wading pools)

The results of an unsatisfactory microbiological water result(s) need to be interpreted in conjunction with:

- chemical tests such as chlorine and pH performed on-site at the time of sample collection; and
- a review of the maintenance records for the pool, including mechanical failures, contamination incidents and other events

### Tests:

#### *Heterotrophic Plate Count (HPC)*

The Heterotrophic Plate Count (HPC) is a procedure for estimating the number of live heterotrophic bacteria in swimming pools. These bacteria do not normally grow in chlorinated water. Significant HPC counts found in the pool may be an indicator of poor disinfection performance and problems with water treatment. The laboratory reports the result as “Colony Forming Units” (CFU).

#### Test result should read:

**Heterotrophic plate count (HPC):** No greater than 100 colony forming units per millilitre (CFU/mL) in a 100 millilitre sample

## Total Coliforms

Coliform bacteria can be found almost anywhere (e.g., human/animal faeces, soil and vegetation).

The test for Total Coliforms determines the presence or absence of these bacteria in 100 millilitres of sample. The presence of Total Coliforms can indicate inadequate disinfection and/or contamination of the sample.

### Test result should read:

**Total coliforms:** ABSENT in a 100 millilitre sample

## *Pseudomonas aeruginosa* (performed on water above 30°C or 86°F)

*Pseudomonas aeruginosa* can cause skin rashes and ear infections. Warm water conditions are ideal for these bacteria to survive, especially if the chlorine levels are not maintained properly. *Pseudomonas* can be especially difficult to manage as they form protective biofilms that shield them from chlorine or other disinfectants.

### Test result should read:

***Pseudomonas aeruginosa*:** NOT ISOLATED (only tested in pools above 30°C)

## When You Receive Unsatisfactory Results

If your recent water sample identified the presence of HPC, Total Coliforms and/or *Pseudomonas aeruginosa*, a public health inspector will call you to discuss the results. To determine what may have contributed to the unsatisfactory results it is important to look for other indicators of problems and consider all factors such as:

- High or unusual pH
- High turbidity
- Low free chlorine or low ORP
- High stabilizer (outdoor pools only)
- Poor filtration or other circulation problems
- Unusual contamination from high bather load, faecal accidents, source water, or the environment

- Inadequate treatment of water because the equipment available is insufficient to meet the treatment demands (e.g. undersized components)
- Temporary breakdown of disinfection or filtration equipment which may go undetected
- Deterioration of the pool facilities (i.e., cracked tiles)
- Poorly cleaned surfaces in the pool such as biofilm or scum lines or change room

Consecutive unsatisfactory samples may result in a closure order being issued against your facility. If the pool requires further treatment due to the microbiological result the following are examples of recommended procedures. These are suggestions only; the treatment process is the responsibility of the pool operator.

***For unsatisfactory HPC and Total Coliforms results:***

1. Increase Free Available Chlorine (FAC) level to 10 ppm and maintain pH at or near 7.2.
2. Run the water through the circulation system for at least 4-6 hours.
3. Adjust water chemistry to regular operating parameters.
4. Take a bacteriological water sample and send it to the lab.
5. Reopen the pool to the public when instructed by your public health inspector.

In consultation with your public health inspector, further treatment may be required when unsatisfactory microbiological sample results are identified.

***For unsatisfactory Pseudomonas aeruginosa results:***

If *Pseudomonas aeruginosa* has been identified in your recent water sample refer to the AHS "[\*Pseudomonas aeruginosa Information Sheet\*](#)" for treatment options, available at <https://www.albertahealthservices.ca/assets/wf/eph/wf-eh-pseudomona-in-hot-tubs.pdf> .

***For more information, call your local public health inspector.***

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