



District Environmental Services  
**DISINFECTION OF RECREATIONAL WATER FACILITIES  
CONTAMINATED WITH *LEGIONELLA***

Riverside County Department of Environmental Health conducts routine inspections of over 7,500 recreational water facilities and investigates complaints to prevent waterborne illness. This guide is to help you in the event that you have a Legionnaires' disease case at your facility. If you have any questions or concerns, please contact your local Environmental Health Specialist.

According to the Centers for Disease Control (CDC), [Outbreaks of Legionnaires' disease and Pontiac fever have been linked to spas contaminated with \*Legionella\*](#). Failing to regularly scrub pool and spa surfaces to remove biofilm, the slime layer that protects *Legionella* from disinfectants, and failing to maintain adequate disinfectant levels promotes *Legionella* growth. Spa users, especially, can be infected with *Legionella* when they breathe in tiny water droplets, such as steam, that contain *Legionella*. Children, smokers, those over 50 years of age, and individuals with lung disease are at particular risk. [Proper pool/spa maintenance and operation](#) should prevent the growth of *Legionella*; however, **if a case of Legionnaires' disease or Pontiac fever is linked to a pool/spa, it is important to take samples for laboratory testing and then disinfect the pool/spa to prevent others from being infected.**



You may want to consider hiring a consultant with expertise in *Legionella* elimination to safely conduct the testing and disinfection process. The [CDC recommends these best practices](#) to disinfect a spa or other recreational water facility contaminated with *Legionella*:

1. **Close the spa / pool immediately** and shut down all jets and pumps, but do not drain the water.
2. **Contact your [local environmental health office](#)** for information about laboratory testing for *Legionella*.
3. If the local environmental health office determines that laboratory testing is needed, consult the *CDC Sampling Procedure and Potential Sampling Sites* (<https://www.cdc.gov/legionella/downloads/cdc-sampling-procedure.pdf>) A list of certified *Legionella*-testing laboratories can be found at <https://wwwn.cdc.gov/elite/Public/MemberList.aspx>.
4. Proceed as directed below **after samples have been taken**; it is not necessary to wait for laboratory test results. However, the spa / pool shall not be re-opened until all test results are negative for *Legionella*.
5. **Drain** all water from the spa / pool. Dispose of the water to waste or as directed by the Environmental Health Department.
6. **Scrub VIGOROUSLY** all spa / pool surfaces, skimming devices, and circulation components with free chlorine at a minimum concentration of 5 parts per million (ppm) to remove any biofilm or slime. After scrubbing, rinse the spa / pool with clean water and flush.

7. **Replace** filters (for cartridge or diatomaceous earth filters) or filter media (for sand filters). Bag and dispose as normal solid waste.
8. **Inspect** the spa / pool thoroughly for any broken or poorly functioning components such as valves, sensors, tubing, or disinfectant feeders. Make any needed repairs.
9. **Refill** the spa / pool with clean water.
10. **Superchlorinate** using 20 ppm free chlorine.
  - a. For a spa
    - i. Keep the aeration jets off and let the superchlorinated water circulate for at least 1 hour through all of the components of the spa including the compensation/surge tank, filter housing, and piping.
    - ii. Turn on the aeration jets to circulate the superchlorinated water for at least 9 additional hours. Ensure that 20 ppm of free chlorine is maintained in the system for the **entire 10 hours**.
  - b. For a pool, allow the superchlorinated water to circulate for at least 10 hours while maintaining the water at 20 ppm free chlorine the entire time.
11. **Flush** the entire system to remove the superchlorinated water from all equipment prior to repeat sampling.
12. **Take repeat samples** at least 24 hours after the spa / pool has been restored to normal operating conditions in order to confirm that *Legionella* has been eliminated. Water and biofilm samples should be taken from any part of the spa / pool that originally tested positive for *Legionella*.
13. Keep the spa / pool closed until this repeat testing has confirmed the elimination of *Legionella*. If laboratory testing is positive for *Legionella*, repeat steps 4–11 until all testing is negative for *Legionella*. **When all tests are negative, the spa / pool can be re-opened.**
14. Ensure that chlorine (3.0 ppm-10 ppm) and pH levels (7.2-7.8) meet proper standards before re-opening the spa / pool. **Maintain water quality** standards. Continued *Legionella* testing may be considered on a case-by-case basis to ensure complete elimination of *Legionella*.
15. If the spa / pool is associated with an outbreak, a **continued laboratory testing schedule** may be considered to ensure complete elimination of *Legionella*. If at any time during this laboratory testing schedule *Legionella* is found, report this to your local Environmental Health office, disinfect again and start the testing schedule over.



This image is of a typical pool/spa water chemistry test kit for measuring chlorine, bromine, and pH.

Note: There are no data to suggest that personal protective equipment is required for disinfecting a hot tub, but N95 respirator masks may be worn during the disinfection process. Respirators must be used in accordance with a comprehensive respiratory protection program, which includes fit testing, training, and medical clearance (see OSHA standard [29 CFR 1910.134](#)). For more information about N95 respirators, visit the National Institute for Occupational Safety and Health (NIOSH) [website](#).

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