



Decontamination protocol for cooling towers

A decontamination protocol may need to be initiated for cooling towers:

- 1. within close proximity of where a case or cases of Legionnaires' Disease may have potentially been exposed or**
- 2. if adverse sample detecting >1000 cfu/mL *Legionella pneumophila* is collected**

The Department of Health supports the following decontamination process. Other decontamination procedures can be followed as long as they meet the requirements of the *Health (Air-handling and Water Systems) Regulations 1994* and Australian Standards AS3666.

Emergency decontamination procedure - online

1. Dose reticulating water with a biodispersant and a halogen-based compound, equivalent to at least 5mg/L of free residual chlorine for at least one hour, whilst maintaining an appropriate pH and monitor at intervals of 15 minutes
2. Review water treatment program, tower operation and maintenance program
3. Correct any faults and implement any necessary changes
4. Record all actions and observations in the maintenance report
5. Recommission and repassivate the circulating cooling water system, and reinstate the water treatment program

Cooling tower emergency decontamination procedure – offline

1. Follow all relevant occupational health and safety procedures, including the use of personal protective equipment (refer to AS/NZS 3666.2 Appendix A)
2. Cease any chemical treatment. Isolate cooling tower fans. Add a low-foaming, chlorine-compatible biodispersant to the water making sure to recirculate through the system.

Disinfect the system by dosing the water with:

- sodium hypochlorite, equivalent to at least 5 - 10 mg/L of free residual chlorine for at least 1 hour, while maintaining the pH of the water between 7.0 and 7.6. Monitor the free residual chlorine level every 15 minutes to ensure levels are maintained. Add the disinfectant slowly, over 5–10 minutes, to a turbulent zone of the tower basin to promote its rapid dispersion. Use an anti-foaming agent if excessive foaming occurs.

3. Isolate system and drain cooling tower water to waste disposal in a manner approved by the local water authority. The entire system should be drained including any bypass pumps. Use of a wet vacuum cleaner can make it easier to remove waste material from the basin floor. Ensure all system drains are opened to enable all drain lines to be flushed with disinfected water.
4. Clean all wetted surfaces of the cooling tower in accordance with the requirements of the appropriate regulatory authority. Ensure all cleaning activities are according to manufacturer's instructions.
5. Refill with clean water and switch on water circulation pumps.
6. Refill with clean water and switch on the recirculating pump. Dose water with sodium hypochlorite to maintain a free chlorine residual of 1- 5mg/L at pH 7.0 – 7.6. This must be monitored every 15 minutes for a minimum of 30 minutes.
7. Immediately reinstate comprehensive effective water treatment, including use of biocide(s) and anti corrosives, and scale control. Recommission system.
8. Record all actions in the maintenance logbook.

System investigation

Owners should undertake investigations and implement any corrective actions as necessary to ensure the protection of public health and compliance with the Regulations. This may include shutting the system down or take additional precautions until such time that the system owner can demonstrate that the system is safe to recommission.

Verification samples

Decontaminating the system alone is only part of the response as Legionella control requires ongoing management.

Verification samples should be collected and tested for Legionella 3-7 days following the completion of the decontamination procedure. Additionally, the monitoring and maintenance regime should be reviewed and opportunities identified to ensure the regime is robust and effective.

The relevant enforcement agency can review all investigations initiated by the facility and satisfy themselves that the risk is being monitored and managed effectively.

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