IOWA Health and Human Services

# Legionella Full Offline Emergency Cleaning and Disinfection *(remediation)* of Cooling Towers

*(ASHRAE Guideline 12-Based, section 8.2.9.4)*

This checklist is a useful tool to implement when determined by microbial test results, when other procedures are not effective, or when there is a suspected association of disease with the cooling water system.

## ◇ 1. Preparation & Safety

- ☐ **Assemble Remediation Team**
  Include water treatment professionals, facility engineers, and safety officers.
- ☐ **Provide PPE to All Personnel**
  Full-length protective clothing, gloves, goggles, boots, and respirators (HEPA + chemical cartridges).
- ☐ **Review current water treatment program**
  cleanliness ,maintenance, biocide program

## ◇ 2. System Shutdown

- ☐ **Remove heat load from the cooling system**
- ☐ **Shut off fans associated with the cooling tower**
- ☐ **Disengage all automated chemical feed and control equipment**
- ☐ **Shut off system blowdown and keep makeup water valves open and operating**
- ☐ **Close building air intake vents near the cooling tower**
  especially those downwind, until after the cleaning procedure is complete

## ◇ 3. Initial Circulation & Disinfection

- ☐ **Circulate Water Through All System Components**
  Include bypass lines, standby equipment, and remote sumps.
- ☐ **Add Oxidizing Disinfectant**
  - Target: **≥20 mg/L free available chlorine (FAC)**
- ☐ **Add appropriate dispersant and add antifoam if needed and corrosion inhibitors**
- ☐ **Adjust pH** by reducing cycles of concentration (if necessary) to achieve:
  - **<8.0** for chlorine-based disinfectants
  - **<8.5** for bromine-based disinfectants
- ☐ **Maintain a free available oxidant residual of 10mg/L for a minimum of 24 hours**
  shorter contact times can be effective at higher concentrations

## ◇ 4. System Draining & Mechanical Cleaning

- ☐ **Drain System to Sanitary Sewer**
  Follow local environmental regulations.
- ☐ **Physically Clean All Accessible Components**
  - Fill packs
  - Drift eliminators
  - Chillers
  - Strainers
  - Equalizer lines
  - Heat exchangers
  - Remote basins/sumps
  - Bypass/standby components

## ◇ 5. Secondary Disinfection

- ☐ **Refill System and Recirculate Water**
  ensure to include any bypass or standby components
- ☐ **Add Oxidizing Biocide**
  - Maintain **≥10 mg/L FAC for 1 hour**
- ☐ **Drain System Again to Sanitary Sewer**

## ◇ 6. System Restoration

- ☐ **Refill System with Fresh Water**
- ☐ **Return Chemical Feed and Control Equipment to Normal**
- ☐ **Consider Repassivation System Metallurgies** (if needed)
- ☐ **Resume Water Treatment Program**

## ◇ 7. Post-Remediation Monitoring

- ☐ **Retest for Legionella**
  In coordination with public health authorities.
- ☐ **Document All Activities**
  Include chemical types, concentrations, contact times, and test results.
- ☐ **Review and Update Water Management Plan**

I certify that all steps of the process above have been completed on (date or date range) _____

Print (first and last name): _____

Sign:_____ Date: _____