

purpose

- to describe the procedure for a general cleaning of a cooling tower system with fill removed.
- *Reference material. WH&S Qld "Guide to Legionella Control in cooling water systems, including cooling towers.*

scope

- cleaning of commercial and industrial cooling towers and evaporative cooling equipment (with coil / fill media removed).

procedure**STEP 1- Before Chemical Disinfection and Mechanical Cleaning**

- Ensure correct PPE is worn
- check in on arrival and undertake any specific site inductions.
- set up site and prepare. try to obtain instructions from the mechanical contractor or site personnel as to the shut down procedure. a copy should be located on site. do not touch anything unless you are sure
 - shut off and isolate heat source (e.g. process plant, chiller)
 - Shut off and isolate cooling tower fans
 - Shut off the system blow-down valve and set system controller to manual
 - Keep make-up water valves open
 - Continue operating circulation pumps to keep circulating water through all areas of the cooling system.

STEP 2- Chemical Disinfection

- Add either a low foaming chlorine-compatible biocidal dispersant or low foaming bromine-compatible biocidal dispersant to the recirculating system.
- Add chlorine-based compound to achieve free residual chlorine (FRC) level of at least 10 mg/L₂₄. Then maintain the FRC at not less than 10 mg/L whilst continuously circulating the water through the system for a period of one hour, maintaining the pH of the water between 7.0 and 7.6. Measure the FRC and pH at 15-minute intervals
- During recirculation, a bleed off rate should be used to facilitate the removal of suspended particulate matter from the system. Ensure a controlled make-up flow so that all the system is adequately wetted.
- Flush all dead legs including sample line and pressure transmitters.
- Record the type and quantity of all chemicals used for disinfection and the time of the results of measurements of FRC or FRB and pH.

STEP 3- Mechanical Cleaning

- whilst the circulation period is taking place, time should be utilized to clean inlet louvres, and all accessible external areas of the tower. the aim should be to leave the outside of the tower in a neat and clean appearance
- clean any stains, trim excess sealer and have a general clean up in the tower area. this should take approximately 60 minutes depending

*continued...
procedure,*

continued

on tower size

- after 60 minutes shut down the system and isolate the fan and pump. drain system to waste then pressure clean and scrub all the accessible wetted areas and surfaces. Remove eliminators and clean. Check condition of tower and report. note if excess scale, sludge, algae build up and condition of sprays and structure. record the
- when closing down the system all valves and switches must be tagged with the use of the CTMS control board colour coded, or an equivalent system. all tags must be returned and accounted for on the control board before system start up and leaving site
- Optional if requested:
 - remove the entire fill pack and store on one side of tower pressure clean and scrub all the accessible wetted areas and surfaces
 - pack by pack of fill media, locate over the sump inside the unit and pressure clean, then store on the other side of the tower. use low water pressure if necessary. once all packs are clean refit inside and locate access doors
- clean basin and ensure all dirt and sludge is removed from the sump before refilling

STEP 4- After Mechanical Cleaning

- refill with fresh water and begin circulation
- If the water is not visually clear repeat step 2 and 3 where necessary
- record date of clean in the on site log book and on the tower clean label
- prepare the tower clean report and submit
- Check out from site, then call CTMS supervisor and advise complete. CTMS supervisor to advise water treatment company contact after completion of every clean.

**suggested
tool
requirement**

- 1500 psi water blaster. two (2) required
- aquavac. shifting spanners
- breathing masks and gloves to handle chemicals
- two (2) 20 metre hoses and assorted fittings
- liquid chlorine, biodispersant, anti foam agent, acid
- measuring container
- water proof ppe
- test kit and tablets
- electrical leads and safety led