

# HEALTH & SAFETY

## COOLING TOWER SYSTEM RISK CLASSIFICATION

Critical Risk	Higher Risk <span style="float: right;">→ Lower Risk</span>			
<b>Stagnant Water</b>	System is idle more than one month <b>and</b> Recirculating pump with timer not fitted <b>and</b> 'Dead legs' exist	System is idle more than one month <b>and</b> Recirculating pump with timer not fitted <b>and</b> 'Dead legs' exist	<b>Any one of the following:</b> System is idle more than one month <b>or</b> 'Dead legs' exist	System operates continuously <b>and</b> No 'dead legs'
<b>Nutrient Growth</b>	<b>Any THREE of the following:</b> Environmental contamination <b>and</b> No corrosion control program <b>and</b> Wetted surfaces not protected from sunlight <b>and</b> No biocides used	<b>Any TWO of the following:</b> Environmental contamination <b>or</b> No corrosion control program <b>or</b> Wetted surfaces not protected from sunlight <b>or</b> No biocides used	<b>Any ONE of the following:</b> Environmental contamination <b>or</b> No corrosion control program <b>or</b> Wetted surfaces not protected from sunlight <b>or</b> No biocides used	No significant environmental contamination <b>and</b> Corrosion control program exists <b>and</b> Wetted surfaces protected from sunlight <b>and</b> Biocides used
<b>Poor Water Quality</b>	No automated biocide dosing device installed <b>and</b> No comprehensive water treatment program in place	No automated biocide dosing device installed <b>and</b> Comprehensive water treatment program in place	Automated biocide dosing device installed <b>and</b> No comprehensive water treatment program in place	Automated biocide dosing device installed <b>and</b> Comprehensive water treatment program in place
<b>Deficiencies in the Cooling Tower System</b>	Modern high efficiency drift eliminator not fitted <b>and</b> No review of system design <b>and</b> No review of system operation and performance	Modern high efficiency drift eliminator not fitted	Modern high efficiency drift eliminator fitted <b>and at least ONE of the following</b> No review of system design <b>or</b> No review of system operation and performance	Modern high efficiency drift eliminator fitted <b>and</b> System design reviewed <b>and</b> system operation and performance reviewed
<b>Location and Access</b>	System is located in an acute health or aged residential care facility <b>or</b> Very high numbers of people are potentially exposed	System is located near an acute health or aged residential care facility <b>or</b> High numbers of people are potentially exposed	System is not located near an acute health or aged residential care facility <b>and</b> Moderate numbers of people are potentially exposed	System is not located near an acute health or aged residential care facility <b>and</b> Low numbers of people are potentially exposed
<b>Risk Classification</b>	If your system matches any of the above responses the Risk Classification for this system is  <b>A<sup>1</sup></b>	If your system matches any of the above responses and does not match any of the responses in Risk Classification A the Risk Classification for this system is  <b>B</b>	If your system matches any of the above responses and does not match any of the responses in Risk Classification A or B the Risk Classification for this system is  <b>C</b>	If your system matches any of the above responses and does not match any of the responses in Risk Classification A, B or C the Risk Classification for this system is  <b>D</b>
	Higher Risk <span style="float: right;">→ Lower Risk</span>			

<sup>1</sup> The only exception to this table is with regard to Category A systems which would fall into this category only because of the **number** of people who are potentially exposed to the cooling tower system. In this case, an exception is provided to classify these systems within Category B provided that the system meets the prerequisites described over the page.  
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# EXCEPTIONS TO COOLING TOWER SYSTEM RISK CLASSIFICATION

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It is important to strive for ongoing improvement and continual minimisation of risks associated with cooling tower systems. Capital improvements can assist in this objective. As an incentive for organisations to continue upgrading their cooling tower systems, the risk classification table makes an exception with regard to systems classed as Category A, only because of the **number** of people who are potentially exposed to the cooling tower system. In this case, an exception is provided to classify these systems within Category B, **provided that the system meets the prerequisites described below.**

These systems can be categorised in Category B where the system meets the following prerequisites:

- There are either no 'dead legs', or where potential 'dead legs' exist, they have been activated.
- The system or part of the system is either not idle for more than a month, or where it is idle, a timer has been fitted to control a recirculating pump that circulates the water in the system at least once a day.
- There is a corrosion control program involving both anti-corrosive chemicals and corrosion monitoring, using corrosion coupons or an equivalent technique.
- The water in the system and the wetted surfaces of the system are protected from sunlight.
- Control measures are established and monitored.
- The system is fitted with a high degree of automation to monitor the water chemistry, incorporating:
  - Effective automated dosing systems to deliver all chemicals into the recirculating water. These are connected to alarms (and preferably building automation systems) to warn of pump failure or a failure in the supply system (to warn a human operator of the problem).
  - Chemicals or other agents to effectively minimise scale formation and fouling
  - Biodispersant is applied which is compatible with chemicals in use (including chlorine).
  - At least two biocides, including at least one oxidising biocide, that have separate chemical stores and separate dosing mechanisms.
  - Automated bleed-off systems using conductivity probes with a locking device to prevent bleed at the time of chemical dosing. This should ideally be connected to the building automation system.
  - pH meters connected to the building automation system.
- After all of the above actions have been taken, six months of intense testing to demonstrate consistent chemical and bacterial test results that indicate that the system is under control.

**Note that acute health or aged residential care facilities should *always* be classified as Category A, because of the population of vulnerable people.**