

Design Obligations in Relation to Easy, Safe and Simple Access to Cooling Towers

The following is a summary of reference clauses and documents utilised in assessing design options. Our experience has demonstrated individuals and organisations choose to interpret reference material in different ways to satisfy their order of priority of the design criteria.

In principle the designer should:

- Become intimate with the installation, its environment and the manufacturers operating and maintenance manual.
- Understand the legal obligations as referred to in relevant Australian Standards, Departments of Health Guidelines, Workplace Health and Safety Acts and Regulations.
- Identify the problem/task.
- Determine how serious the problem/task is and assess the risks by reviewing the relevant Work Method Statement.
- Carry out a Job Safety Analysis.
- Decide what needs to be done to solve the problem by eliminating or controlling the risk if the problem cannot be eliminated.
- Consider the obligations of all stakeholders and review the risk assessment process and control measures to ensure risks are adequately addressed by all parties.
- Apply the final test of what would be the likely responses to challenging and probing questioning in a possible legal forum as to what considerations were given to other possibilities that would, should or could have resulted in the workplace being more safe than the “as built” design and installation upon or in which an incident occurred and would, should or could have prevented the incident from occurring.

During the design and installation phase, consideration should be given to the following references.

[Australian Standard 3666](#)

Clause 4.1.1 - Access for maintenance:

“Easy and safe access for cleaning, inspection and maintenance shall be available to and about all plant, equipment and components covered in this Section”.

Clause 4.1.5 - Cooling towers:

“Cooling towers shall be fabricated from corrosion-resistant materials, and shall be designed for ease of maintenance, particularly for cleaning of fill, water distribution system, basin and sumps.”

[SAA HB 32 as referred to by the Queensland Workplace Health and Safety Plant Advisory Standard](#)

Clause 6.2 - Access for maintenance:

“The Cooling Tower installation..... should allow for all wetted surfaces of such plant (including any hot water distribution channels, nozzles and any pipework headers) to be accessible for cleaning.”

“Cleanability and maintainability are very important factors in reducing the potential for microbial growths in condenser water systems”.

“There should be adequate access available to the heat exchange fill for the purposes of removal for routine cleaning.....”

“Where appropriate, non-slip access walkways should be provided inside the cooling tower and where necessary, outside (around) the basin or base of the tower to help facilitate access to other areas requiring inspection, maintenance and cleaning.”

“Cooling tower installations should be provided with appropriate fixed access ladders, internal and external walkways, handrails, toe guards and platforms in accordance with AS 1657 to facilitate safe access for necessary inspection, maintenance and cleaning. Such activities carried out on top of cooling towers in windy locations can be hazardous unless such safety protection is provided.”

Queensland Government Workplace Health and Safety Supplement No.2 to the PLANT ADVISORY STANDARD

Clause 3 - Design and installation of cooling water systems:

“Easy and safe access should be available to cooling water systems. The design of the system should facilitate regular maintenance and cleaning.”

Clause 5.3 - Who else has workplace health and safety obligations in relation to microbial control in cooling systems of buildings?

Under Section 32 of the Workplace Health and Safety Act, a designer of plant or specified high risk plant for use at a relevant place has an obligation to:

- *Ensure the plant is designed to be safe and without risk to health when used properly.*

Under Section 33 of the Workplace Health and Safety Act, an installer of plant or specified high risk plant at a relevant workplace has an obligation to:

- *Install the plant in a way that is safe and without risk to health; and*
- *Ensure that nothing about the way the plant was installed makes it unsafe and a risk to health when used properly.*

Under Sections 28 and 29 of the Workplace Health and Safety Act, an employer and a self-employed person have an obligation to ensure his or her own safety and to ensure that the workplace health and safety of others is not affected by the way the person conducts the person’s undertaking.

Regulation 61A of the Workplace Health and Safety Regulations places the responsibility on the employer to control risks resulting from entry to a confined space. It is essential that a risk assessment is undertaken by a competent person (refer Australian Standard AS 2856).