

The Confined Spaces Regulations 1997

Application to Evaporative Condensers & Cooling Towers

Technicians regularly need to enter condensers and towers in order to service and maintain equipment, for example cleaning out the sump or repainting. The IOR Technical Committee draws the attention of contractors to the need to identify specific risks and to assess whether such a space should come within the scope of the Confined Spaces Regulations 1997 or not. In carrying out this evaluation they should consider the following. Note that text from the regulations is shown in **bold italics**; plain text is the IOR Technical Committee's guidance on the text.

1. Definition of Confined Space

A "confined space" means **any place, including any chamber, tank, vat, silo, pit, trench, pipe, sewer, flue, well or other similar space in which, by virtue of its enclosed nature, there arises a reasonably foreseeable specified risk**. Note that the definition states that there needs to be a reasonably foreseeable specified risk present before the regulation applies. Consideration should therefore be given to specified risks identified to assess whether they apply and, if they do, whether they are reasonably foreseeable.

"specified risk" means a risk of :-

a) serious injury to any person at work arising from a fire or explosion;

The risk of fire or explosion within a condenser during routine inspection is no greater than the normal risk for the area around a condenser and is not reasonably foreseeable. If hot works were to take place within a condenser this would not be the case

b) without prejudice to paragraph (a)-

(i) the loss of consciousness of any person at work arising from an increase in body temperature;

A condenser or cooling tower is open to the outdoors environment, therefore, it is not reasonably foreseeable that the body temperature of a person working inside a condenser would be affected any differently to someone working on the outside of the condenser. Therefore, it is not reasonably foreseeable that body temperature would increase.

(ii) the loss of consciousness or asphyxiation of any person at work arising from gas, fume, vapour or the lack of oxygen;

A condenser is open to the outdoors environment and the tube coil carrying refrigerant through the inside of the condenser is of steel construction and has no valves or mechanical joints within the confines of the condenser. Whilst it is unlikely that a refrigerant leak would occur, it is possible, but it's not reasonably foreseeable that the size of the leak would be sufficient to cause a loss of consciousness. Furthermore, if a leak did occur the "open to atmosphere" nature of a condenser is unlikely to allow the leak to accumulate to such an extent to cause the asphyxiation of a person at work inside. In the case of a cooling tower there is no refrigerant or any other vapour circulated.

c) the drowning of any person at work arising from an increase in the level of a liquid; or

Evaporative condensers operate with a minimal quantity and level of water in either a shallow flat sump or deeper "V" shaped sump. The design of the sump would not allow the level to rise as water would spill out of the overflow. No one should enter a "V" shaped sump without emptying it of water first and in most designs of condenser with a flat sump a walkway is provided above the level of the water. Therefore it is not reasonably foreseeable that there could be an increase in the level of the water to the extent that it would increase the risk of drowning.

d)the asphyxiation of any person at work arising from a free flowing solid or the inability to reach a respirable environment due to entrapment by a free flowing solid;

There is no need to consider free-flowing solids in the assessment of an evaporative condenser or cooling tower.

2. Permit to Work

It is recommended that the owner/operator of the site make entry to a condenser a permit to work activity so that site staff are made aware that someone may be working inside a condenser or cooling tower. It is further recommended that the permit should insist on accompaniment. The method statement for the work to be conducted should include a procedure for getting an incapacitated person out of the condenser.

3. References and sources of further information

- The Confined Spaces Regulations 1997, Statutory Instruments 1997 No 1713
- Approved Code of Practice (ACOP) L101 Safe Work in Confined Spaces published by the HSE as a free download
- Confined spaces: brief guide to working safely INDG258 (rev1). Published by the HSE as a free download

All are available from <http://www.hse.gov.uk/confinedspace/>

- More information about Permits to work is available at <http://www.hse.gov.uk/safemaintenance/permits.htm>

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