

Our Reference: NEA-EHDHQ-CIRCULAR-ADVISORY-00012P

Date : 25 January 2016

## **CIRCULAR TO PROFESSIONAL INSTITUTES**

Who should know:

Developers, Architects, Engineers, Contractors and Builders

Dear Sir/Madam,

### **Environmental Health Measures for Swimming Pools and Cooling Towers**

As part of the building plan clearance process, the Qualified Persons ("QPs") are required to submit the Building Plan on Environmental Health ("Plan") for their proposed development to the Central Building Plan Department ("CBPD") of the National Environment Agency ("NEA").

2. This circular provides details on certain environmental health measures that shall be considered in the Plan – if the Plan involves the installation of swimming pool(s) and cooling tower(s) in any premises.

#### **New Design Criteria for Swimming Pool Systems**

3. The Code of Practice on Environmental Health ("COPEH"), Section 7, stipulates the design criteria for swimming pool systems. The QPs are required to comply with these criteria.

4. In addition, the QPs shall also comply with the following additional requirements relating to installation of swimming pools and balancing tanks<sup>1</sup> of swimming pools. These requirements are to address concerns over any possible contamination of water that may occur in the swimming pools and balancing tanks, which will affect the quality of water in the pools, and put the swimmers at risk of contracting diseases.

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<sup>1</sup> A balancing tank (also called a surge tank) in a swimming pool system serves as the water holding tank that receives water from the swimming pool and from the fresh water supply line, and stores it before the water is returned to the pool via a system of recirculating pumps, filters and other water fittings.

- (a) Balancing tanks of swimming pools shall not be located directly below sanitary or sewerage pipes, or such other pipes conveying fluids that may cause contamination to the water in the balancing tanks. In addition, balancing tanks shall not contain any of such pipes.
- (b) Similar to balancing tanks, location of swimming pools shall be limited to conditions stipulated in paragraph 4(a).
- (c) There shall be easy and safe access to the balancing tank to allow for maintenance and inspection of the tank.
- (d) If overflow pipes or air vents are installed on the balancing tanks, their openings shall be fitted with mosquito proof nettings having aperture size not exceeding 0.65 mm, and made of a durable material that is non-corrodible or corrosion-resistant.

5. During submission of the Plan, QPs shall declare in their application to CBPD that the requirements stipulated in paragraph 4 are met.

### **Location of Cooling Towers**

6. During the operation of a cooling tower, aerosols are emitted from the top of the cooling tower, along with the exhaust air. While a drift eliminator installed within the cooling tower will minimize the release of aerosols, it will not entirely prevent them from escaping from the cooling tower.

7. The aerosols may contain biocides and other chemicals added to the cooling tower, as well as *Legionella* bacteria if the water in the cooling tower is not adequately disinfected.

8. If a cooling tower is located in such areas where there is a likelihood of people being exposed to the aerosols, such a situation may lead to incidents of public nuisance and may pose a risk to human health.

9. Under the Code of Practice for the Control of *Legionella* Bacteria in Cooling Towers, the following guidelines are provided.

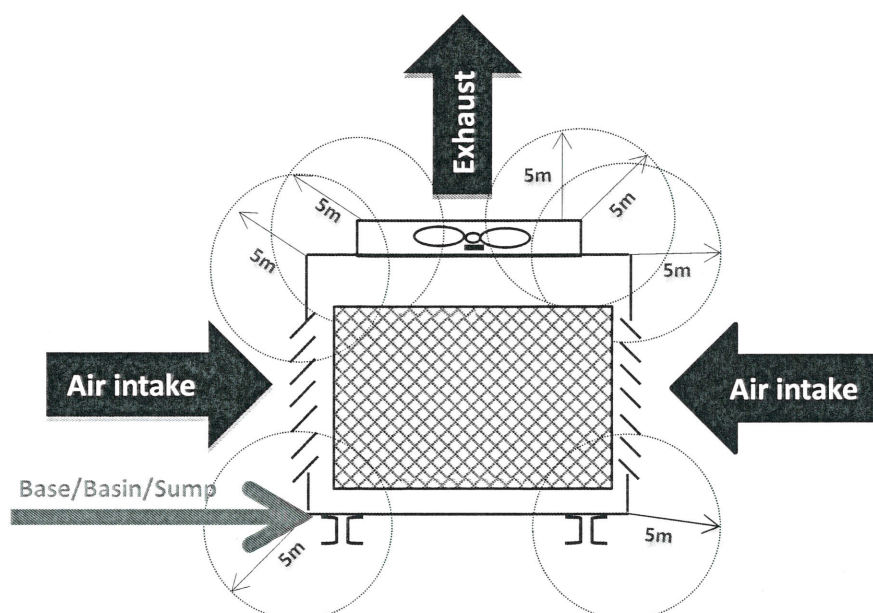
#### **5 Location of cooling tower**

5.1 The cooling tower shall be located at least 5 metres away (measured from the base of the cooling tower) from air circulating and ventilating inlets, open windows and occupied areas, pedestrian thoroughfares, trafficable areas, areas of public access, exhaust discharges from

kitchens, air handling system or other areas where nutrients conveyed from these systems could assist in the growth of *legionella*.

5.2 When locating a cooling tower, the influence of adjacent buildings and of prevailing wind direction and the wind distribution over these buildings shall be taken into account. It shall be located away from the downwind of air intakes for the building.

10. The above-mentioned guidelines shall be complied with when siting the cooling towers. On the measurement point for the minimum 5 metres setback, this 5 metres distance shall include measurement from the nearest edge or structure of the cooling towers, including the base/basin/sump, packing, exhaust and outlet point of exhaust hood, if any installed (see Fig. 1).



**Figure 1:** Typical example of a cooling tower showing measurement of the 5 metres setback from the edge/structure of the cooling tower. Block arrows indicate the direction of air flow for a cooling tower.

11. As a good practice, a review of the proposed site should be carried out and if deemed necessary, a greater distance than the minimum 5 metres setback should be provided to avoid possible future problems with the operation of cooling towers<sup>2</sup>. Similar consideration should also be given to ensure a minimum distance of 5 metres setback distance to cooling towers operating in a nearby property.

### Planning of New Developments

12. It would be appreciated if you could communicate to the members of your organisation to incorporate the points mentioned in paragraphs 4, 5, 9, 10 and 11

<sup>2</sup> For example, in areas where there are plans to build healthcare facilities or fresh air intakes.



during the planning of new developments, in addition to all other requirements under the COPEH which may apply.

13. We look forward to your cooperation and continued support. If you or your members have any queries concerning this circular, please contact NEA at Tel: 1800-2255-632 or email: [contact\\_nea@nea.gov.sg](mailto:contact_nea@nea.gov.sg).

14. Thank you.



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