

# **The Use of Portable Evaporative Coolers and Legionellosis Implications**

*Mike Koumi BSc (Hons) ©HYROP E.C.S. Dec 2007*

## **Legionnaires' disease:**

Evaporative cooling portable air conditioning units, have in the past been implicated in cases of Legionellosis particularly when used in high risk patient areas, usually when these units are poorly maintained.

## **Use of portable evaporative coolers on hospital premises:**

Because of the potential risk of Legionellosis, a number of NHS Trusts have banned their use on wards and general areas accessed by patients, particularly since their maintenance, and indeed their use on site, maybe unknown to Control of Infection and the maintenance departments.

## **Reducing the Risk of Legionellosis:**

Some units on the market, however, automatically drain when the unit are switched off. Low level probes constantly monitor the water level when shut down. In addition, when these units are first powered up the first operation is to empty the sump.

In mitigation of the risk, the temperature of the water circulating in evaporative coolers is approximately the "wet bulb temperature" of the air passing over the filters. In practice this means that, in a temperate climate, the water temperature rarely goes above 20°C even when the air on temperature exceeds 35°C.

To prevent corrosion all water contact surfaces should either be plastic or non-ferrous. When the water reaches a set point, determined on commissioning according to the local water quality, the sump should empty automatically and replenished with fresh water. This has the effect of preventing scale and removing of contaminants filtered from the air. During this drain cycle the sump should empty completely to assist in the removal of any sediment which may be present in the sump.

Growth of organisms filtered from the air should be suppressed by supplying the evaporative cooler with water with a low level of biocide. Alternatively, the water container (bottle/tank) is filled with clean fresh water on daily basis and that the water container is emptied after each daily use. It is also prudent to disinfect the water container on a Weekly basis using a suitable disinfectant. "Dry" units, on the other-hand, do not pose any risk of Legionellosis and do not require monitoring or treatment.

## **Design of Units:**

The design of the cooler should be such that only pure water evaporation occurs as the air passes over the filters. This removes the mechanism for the transmission of infections such as Legionnaires' disease.

The maximum air velocity in a cooler should be 1.9m/s. The "Munters" maximum speed for avoidance of droplets is 3m/s - thus a safety factor of over 50% is achieved.

By the implementation of a programmed maintenance system the standards of hygiene should provide a safe and secure system.

### **Deciding on their use:**

All hospitals need to decide whether they will allow or restrict their use, at least in patient areas, and this should be included in their Legionellosis Management & Control Policy and this information disseminated to all.