

Quality and Sustainability of waste water in hospital's Air conditioners

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Abstract - To approach the idea of sustainable buildings, a few developmental steps are needed, regarding energy, water, land and material conservation, together with environmental loading, and the qualities of the indoor and outdoor environments. Many studies have shown that is possible to re-use the wastewater from air conditioners. .

Key Words: Rainwater, air conditioners, hospital

1. USAGE OF AIR CONDITIONING WATER

One of the major waste products in homes and industries is wastewater. However, this should not be the case as it can be re-used as a way of conservation. This paper looks at when to re-use wastewater under two circumstances, when treated and not treated. The major focus is air conditioner water drain in hospitals.

Inasmuch as there are benefits, there are also concerns about their viability. Most hospitals use a condensate system in their air conditioning [7]. A classic air conditioning system consists of an air-handling unit that takes the air to the already occupied spaces. As the air goes back from the space it interacts with the outer air, this is necessary for a healthy environment [4]. As the air goes through the handling unit, it passes through a coil. This makes the temperature of the air to drop, and so the humidity from the added outside air and moisture is the result of the condensate [2]

The condensate is distilled water. It has a low mineral count, and may contain bacteria. It can increase airborne bacteria and Legionella. Studies have shown that it to be a source of in hospitals and surrounding areas [2]. Air contamination by condensate Legionella is so common that they are commercial kits for inhibiting growth of microbial in the condensate.

Air conditioning wastewater can be used untreated for various purposes. It can be used for decorative purposes such as water fountains, construction and mixing of concrete, subsurface irrigation and building of wetlands and, if passed through marsh plants it can be a very balanced source for a fishpond. It can also be used for flashing toilets and as make-up water for cooling towers [7].

In situations where the water is put in uses that can lead to skin touch or ingestion treatment is necessary. The

treatment is usually in the form of filtration and disinfection in order to raise the quality of water. This calls for a well maintained and designed Heating, Ventilation, and Air-Conditioning (HVAC) System in which the production of the condensate is free of microbial buildup and other contaminants [8]

The benefits of re-using drain water are diverse. It reduces the need for portable water, reduces costs, avoids water use restrictions, reduces infrastructure needed for cities, has tax incentives and rebates, and it reduces the sewerage charges of various cities (Amann, Ackerly and Wilson, 2013).

A good HVAC system is both expensive to install and maintain. Hospitals should consider factors such as; projections of supply, AC condensate collection, the type of storage and maintenance, water quality, permits and code required and maintenance fees [5]. They should have accurate projections of demand especially of water needed for landscape irrigation [3]

A good Heating, Ventilation, and Air-Conditioning (HVAC) System should improve the chemistry of cooling tower water and should have almost pure condensate thereby reducing the costs of treatment of the condensate [5].

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