

REUSE POTENTIAL OF ABLUTION WATER FROM IIUM MASJID

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Abstract

A significant amount of water is required daily for IIUM Masjid, which can accommodate at least about 9000 people during the special prayer times. Unfortunately, the water used for ablution is discharged directly to the drain without any plan to recycle and reuse. Quantity and quality of the used water after ablution is determined in this study. Laboratory tests have indicated that, the used ablution water is not much polluted and can be easily recycled and reused for general cleaning and landscaping purpose, after sand filtration. On the other hand, treatment and reuse of commercial greywater would be too expensive in the contexts of Malaysian climate, where the rain-fed water is sufficiently available. It is realised that a low maintenance treatment system can be constructed to store, treat and reuse ablution water from the Masjid. The treated water can easily be used for the landscaping and toilet flushing activities, which will reduce the water consumption in the university.

Keywords: Ablution Water, Landscaping, Masjid, Recycle and Reuse, Sand Filter, Toilet Flushing.

1. Introduction

Ablution means the act of washing selected parts of the body by using clean water. Muslims and Muslimahs are required to clean certain parts of the body in preparation for the prayers (salat). Islam strongly recommends that the Muslims perform their prayers at the Masjid. Besides the daily prayers, IIUM Masjid is also very active in conducting many types of religious and social community activities and programs. In most of the cases, the participants are required to make ablution before entering the Masjid.

The Sultan Haji Ahmad Shah Masjid is located at the center of the main campus of IIUM at Gombak, interconnecting the hostels, administrative and academic buildings. It can accommodate at least 9000 people at one time. Inside the Masjid, there are two places for ablution, one for the males and the other for the females. There are additional three ablution

places outside the Masjid for the males. There is no separate water meter for the Masjid to determine the exact amount of water used every month of the year.

However, according to the Masjid Office, the estimated average total number of people prays in the normal working day (except Friday), during the semester is, around 3000 per day. Although the price of water is not so high in Malaysia, it would be good for the environment and conservation of resources if the used ablution water is recycled and reused for various permissible activities in the campus. Literature on the use of ablution water is rare (Prathapar, et al., 2006). As such, the quality of the used ablution water was assessed and its potential to be used as recycled water in the campus is reported in this paper. The main objective of the short study was to determine the quantity and quality of ablution water used in the IIUM Masjid to assess its potential to be used as recycled water in the campus for

non-potable usages.

2. Materials and Methods

Samples of used ablution water were collected from three main locations of the IIUM Masjid (Plate 1) to estimate the quantity of water used and its quality discharged to the drains. Ablution water samples were collected and analyzed for a period of 2 months. The following parameters were tested: Total Dissolved Solid (TDS), Turbidity, Total Suspended Solid (TSS), Chemical Oxygen Demand (COD) and Total Nitrogen (TN). The Standard Methods (APHA, 1998) were used to determine the quality of the used ablution water before and after treatment with sand filter.



Plate 1: Central Masjid at IIUM

3. Results and Discussion

The daily water consumption due to ablution in the IIUM Masjid is about 7 L/Cap.day. As such, the monthly water consumption would range within 650 and 750 m³/month. Although, in terms of monetary value the cost or savings due to recycling of 750 m³/month is not very high but in relation to the conservation of natural resources and energy the recycling and reuse of the ablution water would be a viable option, if the quality of the used water is not so polluted.

Ablution water quality was measured in terms of a few selected parameters (Table 1). It was observed that the mean value of the parameters were lower than the Ministry of Health (MOH) Standard for drinking water quality in Malaysia. However, it does not necessarily indicate that the used ablution water is suitable for potable usages. Because, the other important parameter, such as *E. coli* was not measured in this study.

Table 1: Water Quality Data after Ablution

Parameter	Unit	Mean	SD	MOH Standard
TDS	mg/L	25.1	1.53	< 1000
TSS	mg/L	19.9	3.90	15-30
Turbidity	NTU	3.5	0.84	<5.00
COD	mg/L	16.9	5.07	N.A
TN	mg/L	0.47	0.15	N.A

Although, the data indicated that quality of selected chemical and physical parameters are acceptable, occasional increase in the aesthetic pollutants can be high. Therefore, to ensure good quality of recycle water the used ablution water should be treated through sand filters (Metcalf and Eddy, 2003) with sand media having effective size ranging between 0.35 and to 0.55 mm, and uniformity coefficient should be range between 1.3 and 1.7 (Davis and Cornwell, 2008).

4. Conclusions

This study revealed that the concentration of COD, TSS, TDS, turbidity and TN in the used ablution water was quite low. Therefore, the ablution water discharged from IIUM Masjid could be recycled in order to conserve resources. The ablution water could be recycled and use for flushing toilets and landscaping of the surrounding areas.

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