

# Investigation on Ceramic Membrane Based Filter Backwash Water Recycling

Ms.Kalaimathy.S.N and, Visvanathan.C,

Asian Institute of Technology -Thailand

National Water Supply & Drainage Board,

[sundarvathani@gmail.com](mailto:sundarvathani@gmail.com),

0094714467290

Key words: Filter backwash water recycling, ceramic membrane filtration, *Cryptosporidium*, *Giardia*

## Abstract

Filtration is the most important and essential process involved to the removal of suspended and colloidal matters, bacteria and other microorganisms in a conventional potable water treatment system. In general, sand media is used for this purpose and get clogged due to the suspended impurities present in water. This results in reduction of rate of filtration. To bring back the filtration to the original rate, nearly 1.42% of treated water is used for backwashing in Bangkok water treatment plant in Thailand.

This wastewater after backwashing is generally discharged without treatment to the nearby natural watercourses. Besides substantial water losses, such disposal causes physical, chemical and bacterial pollution of the water bodies. On the other hand this water requires proper treatment before dispose to the environment which consumes high cost. The increasing population results in increasing the water demand, has resulted in the thinking of utilizing every drop of water effectively. It is therefore desirable to utilize the large quantity of filter backwash water going down to the drain for recycling.

This research was focused on develop a method for recycling the filter backwash water using ceramic membrane based pilot scale experiment for reduction of the pollutants exists in the filter backwash waters. Ceramic micro filters (CMF) have the higher potential for removing *Cryptosporidium* and *Giardia* exists in natural water sources which are concentrated in filter backwash waters. The experiment confirmed high removal for colour, turbidity, iron, manganese and aluminium for 0.1 and 1µm membranes. In terms of bacteria removal the filtrate received from 0.1 µm membrane showed 100% removal for *coliform* and *E.coli*, however the 1µm membrane filtrate contains significant amount of *coliform* and *E.coli* organisms. In addition the CMF system showed the high water recovery lead to minimize the wastewater volume for sludge dewatering process.