Drink. Water Eng. Sci. Discuss.,
https://doi.org/10.5194/dwes-2018-27-AC1, 2019


Open Access Drinking Water Engineering and Science Discussions

# *Interactive comment on* "The Ability of Froth Formed without Chemicals to Hold Bacteria" *by* Ghanim Hassan and Robert G. J. Edyvean

**Ghanim Hassan and Robert G. J. Edyvean**

dr.ghanim@mtu.edu.iq

Received and published: 13 February 2019

Indeed, I feel just like you and there are too many figures but to the best of my knowledge, this is the best form I can present my work.

Interactive comment on Drink. Water Eng. Sci. Discuss., https://doi.org/10.5194/dwes-2018-27, 2019.



**The Ability of Froth Formed without Chemicals to Hold Bacteria**

Dr. Ghanim Hassan*, Department of Water Resources Techniques, Middle Technical University, Baghdad, Iraq, dr.ghanim@mtu.edu.iq

Dr. Robert G. J. Edyvean, Department of Chemical and Biological Engineering, The University of Sheffield, Sheffield, UK, r.edyvean@sheffield.ac.uk.

Key wards: Froth flotation, Bacterial Bio-purification, Drinking water

**Abstract**

Froth flotation is a solid-liquid separation technique that uses hydrophobicity as a driving force. Bacteria and other drinking water microorganisms tend to be hydrophobic and can be removed from water using this application. The biggest limitation against using froth flotation in the drinking water industry is the difficulty of producing froth without chemical "frothers" and holding bacteria in this froth without chemical collectors which deteriorate water taste and odor. Recently, researchers at the University of Sheffield described a method for producing froth using only water and compressed air (Hassan, 2015). This has enabled froth flotation to be studied as an alternative to biocides for the removal of bacteria from drinking water.

This work examines the ability of froth, produced by controlling air pumping through a water column, to hold bacteria. Bacteria are moved to the top of the column and collected in the froth. The operating conditions determine the percentage of bacteria removed.

At optimum conditions, froth can hold up to $2\times10^8$ cfu/ml of bacteria. It has been found that air pumping at 130 l/min in a 20 cm diameter column will give the highest froth bacterial content. Time to reach stable froth bacterial concentration is decreased by increasing other variables.

• Correspondence Author: Dr. Ghanim Hassan, dr.ghanim @mtu.edu.iq, 00964-7704335364.

**Fig. 1.**