

DESALINIZATION AND BIO-PURIFICATION USING HYDRATES

A THESIS SUBMITTED TO  
THE GLOBAL ENVIRONMENTAL SCIENCE  
UNDERGRADUATE DIVISION IN PARTIAL FULFILLMENT  
OF THE REQUIREMENTS FOR THE DEGREE OF

BACHELOR OF SCIENCE

IN

GLOBAL ENVIRONMENTAL SCIENCE

MAY 2013

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## **ABSTRACT**

Scarcity of potable water is one of the main problems that must be faced by many societies and the world in the 21st century. Currently, water is purified using a variety of methods to remove unwanted chemical and biological contaminants. These processes, however, tend to require significant energy and the capital and operating costs can be large. My research focused on investigating the viability of using hydrates to purify water. Solid hydrates form from water (like ice) and this crystallization process generally excludes contaminants. Experiments were conducted in which hydrates were formed using saline solutions of known concentrations or water containing proxies for biological contaminants. The levels of salt or biological contaminants were measured before and after hydrate formation to determine whether the hydrates decontaminated the water. Results from multiple tests suggest that hydrates can be used as a first step in a water purification process.