SOLAR PHOTOCATALYTIC ARSENIC REMOVAL METHOD FOR DRINKING WATER

A dissertation submitted to the

Faculty of Science and Technology

Uva Wellassa University

in partial fullfilment of the requirements for the award of the

Degree of Bachelor of Science

by

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2013

Abstract

Arsenic is a widespread contaminant in the environment around the world. The most abundant species of arsenic in groundwater are arsenite [As(III)] and arsenate [As(V)]. Several arsenic removal processes can reach good removal yields only if arsenic is present as As(V). For this reason it is often necessary to proceed with a preliminary oxidation of As(III) to As(V) prior to the removal technology. Several studies have focused on arsenic oxidation with conventional reagents and advanced oxidation processes. In the present study the arsenic oxidation was evaluated using hydrogen peroxide, ferric chloride,solarirradiation and their combination in distilled water samples. Hydrogen peroxide and solar irradiation alone are not effective at the arsenic oxidation. Good arsenic oxidation and removal yields can be reached in presence of hydrogen peroxide combined withferric ions and solar illumination. Initial arsenic samples of 200μg L^{-1} were treated to obtain 91.5% of maximum arsenic removal efficiency.

Key words: advanced oxidation process, arsenic oxidation, hydrogen peroxide, solar irradiation