

**MINISTRY OF HIGHER EDUCATION
& SCIENTIFIC RESEARCH
UNIVERSITY OF TECHNOLOGY
CHEMICAL ENGINEERING DEPARTMENT**



Removal of Crude Oil Deposits from Storage Tanks using Chemical and Physical Treatments

A Research

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Abstract

Oily sludge is one of the most significant wastes generated in the petroleum industry. It is a complex emulsion of various petroleum hydrocarbons, water, heavy metals, and solid particles. Where oil sludge affects the storage capacity for crude oil storage tanks, and due to its hazardous nature and increased generation quantities around the world, the effective treatment of oily sludge has attracted widespread attention.

The present work introduces a comprehensive review of treating methods which will help researchers and practitioners to have a good understanding of both recent developments and future research directions. Also the aim of the present work is to suggest proposals for improving the desludging method which is currently used by the South Oil Company.

ASTM standard methods were used to classify the oil sludge from crude oil storage tank in South Oil Company at Al-Zubair 1 site in Basrah, the classification revealed that crude oil sludge contains: 23 % water content, 10 % volatile hydrocarbons, 7.6 % solid content, and 59.4 % non-volatile hydrocarbons content.

In the present work two different methods were proposed for enhancement of desludging rate over that used by South Oil Company at Al-Zubair 1 site, the thermal method and chemical method with solvent, the objective of these two methods was to increase the rate of rheology of crude oil sludge. Consequently, the desludging rate increased.

The composition of oily sludge with respect to petroleum hydrocarbons justify the oil recovery treatment which was proposed by two different methods (i.e., froth flotation method and ultrasound method).

Comparing between above mentioned methods from point of view of economic aspect, the thermal method for desludging and froth flotation for oil recovery was favored.