



University of Tehran

## **Oil pollution content estimation in the first hours of oil spill disaster via combining alometric and hydro-environmental models in mangroves' wetland**

Sadegh Partani<sup>1</sup>, Reza Ghiassi<sup>1</sup>, Ahmad Khodadadi<sup>2</sup>, Mohsen Saeedi<sup>3</sup> and Mahtab Asgharzadeh<sup>1</sup>

<sup>1</sup>University of Tehran, Iran

<sup>2</sup>Tarbiat Modares University, Iran

<sup>3</sup>Iran University of Science and Technology, Iran

### **Abstract**

Marine vegetation and coastlines ecosystems especially coastal flora in tropical and sub-tropical zones are very important habitats which play a substantial role in ecotone areas. Mangroves as one endangered and protected intertidal flora species are investigated in this research. This research is based on the natural physical model that carried out in the coastline in pneumatophores zone. Since mangroves areas in tropical and subtropical zones are subjected to oil pollution potentially, the protection of them and coastal habitats management is necessary seriously. This research conducts the natural physical models and field studies on oil spill pollution in coastal habitats to estimating the oil content amount which may adsorb during the first hours of oil slick contact. The results lead coastline management authorities to predict the oil pollution level due to an oil spill disaster and prepare for environmental disaster management. The field studies carried out on natural *Avicenna marina*'s pneumatophores habitats treating by weathered crude oil in north coastline of Persian Gulf in the Nayband National Park. The field study area is located in vicinity of Persian Gulf Oil and Gas Operation Industries (Pars Special Economic Energy Zone-PSEEZ) which including the important flora species and subjected to oil and gas industries' pollution potentials. Results released the estimation equation and relationship for oil content pollution trapped in the pneumatophores area according to effective parameters and alometric characteristics and pneumatophores' density. The distribution of pneumatophores also is considered for more clarification of different coastal zones. Mentioned equation is function of flora volume by tidal sea level fluctuation as height and mean diameter and density. Some other parameters of disaster condition such as sunlight, concentration, contact time and tidal situation and climate condition are involved to estimate the massive percent of oil content in short period time.

### **Biography**

Sadegh PARTANI, finished his M.Sc. from university of Tarbiat Modares in Civil-Environmental Engineering. He is PhD candidate of water-environmental engineering at university of Tehran. Already his PhD dissertation is done and he is on the verge of final defense. He is research associate at Modares Environmental Research Center of Tarbiat Modares University of Tehran (MERC) for more than 5 years and working on water and environmental national projects of Iran. He was research associate at Coastal studies Institute of Louisiana State University (CSI-LSU) of USA and was working on water quality management in coastal zone.

[Sadegh\\_Partani@yahoo.com](mailto:Sadegh_Partani@yahoo.com)