Investigation of antifouling agents pollution (Irgarol 1051 and Diuron) in seawater and sediments from ports and marinas of Bushehr

Project manager: **Dr. Abolfazl Saleh**
Contributor: **Neda Sheijooni Fumani, Saeideh Molaei, Ehsan Abedi, Dr. Ali Mehdinia, Dr. Homeira Agah, Shirin Rahmanpour**

Abstract

In the present study, antifouling booster biocides, irgarol 1051 and diuron, were measured in seawater and sediments in ports and marinas of Bushehr, Iran. To the best of our knowledge, in the Persian Gulf there is no any record about analysis of these compounds in coastal waters, however there are considerable amount of information about the concentration of antifouling booster biocides in Europe, America and East Asia. In this study, sediments and seawater samples were taken from ports and marinas of Bushehr. Environmental parameters such as pH, salinity, temperature and dissolved oxygen were measured in-situ. Seawater samples were analyzed using a new-developed microfunnel-supported liquid-phase microextraction method (MF-LPME) followed by HPLC-UV analysis. Sediment samples were extracted using ultrasound-assisted extraction, cleaned-up by dispersive liquid-liquid microextraction and analyzed applying GC-MS. Results showed that in seawater samples taken from ports and marinas, irgarol 1051 were found at the range of less than LOD to 63.4 ng/L (in Jalali marina). Diuron was found to be at the range of less than LOD to 29.1 ng/L. 3,4-dichloroaniline (DCA), as degradation product of diuron, was analyzed and it's maximum concentration was recorded for Jalali marina (390 ng/L). Results for

analysis of irgarol 1051 in sediments showed a maximum of 35.4 ng/g in Bandargah marina. A comparison between the results of this study and those of other published works showed that irgarol 1051 and diuron pollution in ports and marinas of Bushehr was less than average of reports from other parts of the world.

Keywords

Antifouling booster biocides; Irgariol 1051; Diuron; 3, 4- dichloroaniline, Microfunnel- supported liquid-phase microextraction; Bushehr; Persian Gulf