

Distribution and Sources of Organochlorine Pesticides in Sediments of Khor Al Zubair, NW Arabian Gulf

Huda. H. Al-Kayoon 

Department of Biology, College of Science, University of Basrah, Basrah, Iraq.

*Corresponding Author E-mail: huda.khreibet@uobasrah.edu.iq

Received 21/07/2026

Accepted 15/09/2026

Published 25/09/2026

Abstract

Organochlorine pesticides (OCPs) are known to be Persistent Organic Pollutants (POPs) which cause severe risks for the aquatic environment as well as human health due to their high lipophilic properties, resistance in the environment, and ability for bioaccumulation. The current research aims to examine the distribution, concentration, and probable sources of 14 OCPs in surface sediments in five stations in Khor Al Zubair – the main estuarine channel in Southern Iraq flowing into the northwestern Arabian Gulf. The total concentration of OCPs (Σ OCPs) varied from 0.701 ng/g in Station 5 to 1.185 ng/g in Station 1. Heptachlor epoxide (0.620 ng/g in Station 1) and aldrin (0.232 ng/g in Station 5) were the major OCPs found. The grain size of sediment was found to be dominated by the presence of fine-grained sediments (clay and silt), with total organic carbon (TOC) concentration being quite variable. The statistical analysis of three replicates showed reliable data with low standard deviation. When compared to the regional data on OCP concentration in sediment samples from Iran, Kuwait, Bahrain, and other Arabian Gulf countries (Table 4), it appears that the OCP concentration in Khor Al Zubair sediments is relatively high, which could be caused by continuing inputs from agriculture and historic application, as well as mobilization from polluted soils. The prevalence of degradation products (heptachlor epoxide, DDE) over their parent compounds speaks in favor of both historical application and long-range atmospheric transportation.

Keywords: Organochlorine pesticides, sediments, Khor Al-Zubair, Arabian Gulf, persistent organic pollutants, sediment contamination.

