

## Assessment of the levels of polychlorinated biphenyls (PCBs) in Orogodo River sediments Agbor, Delta State, Nigeria

Oghenekohwiroro EDJERE<sup>1,\*</sup> and Osaro IYEKOWA<sup>2</sup>

<sup>1</sup>*Department of Environmental Management and Toxicology, Federal University of Petroleum Resources, Effurun, Delta State, Nigeria*

<sup>2</sup>*Department of Chemistry, University of Benin, Benin City, Nigeria*

**Abstract.** The study aimed at assessing the levels of polychlorinated biphenyls (PCBs) concentration in Orogodo River Sediments at Agbor, Delta State, Nigeria. Sixteen sediment samples at different sample point were collected and analyzed; obtained concentrations were compared with exiting standards. Sediment samples were extracted using a mixture of hexane and acetone (1:1), sonicated in an ultrasonic bath (15 min) and placed on a shaker for two hours. Chromatographic analysis was done after solvent exchange, was carried out on the final extract using *n*-hexane (1000  $\mu$ l) and injected (1  $\mu$ l) into a gas chromatographic system coupled with an electron capture detector (ECD). Results from this study revealed that the concentration of PCBs in all the sediment samples under investigation was highest with 0.198  $\mu$ g/kg in the Agric yard Agbor 2 sample point and lowest with 0.026  $\mu$ g/kg in the Behind Prison - Agbor 1. The concentration of PCBs for all the sediment samples analyzed ranged in the order: Agric Yard Agbor 2 < Slaughther Agbor 2 < River Ama 1 < Mr. Biggs Agbor 1 < Behind Prison Agbor 2 < River Ama 2 < Mr. Biggs Agbor 3 < Under Bridge Agbor 1 < Mr. Biggs Agbor 2 < River Ama 4 < Agric Yard Agbor 1 < Mr. Biggs Agbor 4 < SlaughtherAgbor 1 < River Ama 3 < Under Bridge Agbor 2 < Behind Prison Agbor 1. The obtained results in this study suggest the urgent need to establish a program for monitoring organochlorine pollutants in our rivers and sediment in other to curb any elevation in concentration of pollutants over the environmental quality standards and appropriate actions taken.

**Keywords:** Polychlorinated biphenyls, sediment, extraction, chromatography.

\*Corresponding author. *E-mail address:* edjere.oghenekohwiroro@fupre.edu.ng *Tel:* +2347088102415 (Oghenekohwiroro EDJERE)