Niveles de plaguicidas organoclorados en sedimentos superficiales de un tramo del río Mololoa

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Levels of organochlorine pesticides in sediment Surface of a section of the Mololoa river

Abstract

The main use of Mololoa River is to serve as an irrigation source, but for many years wastewater dump into to the River has come from industrial and domestic activities from the Tepic City, Nayarit, México, and livestock and agricultural origin as well. Recently, 16.2 km. from this river were rectified and channeled to compensate its hydraulic capacity deficiency. These actions resulted into the sediments stir up therefore this research implied the analysis of samples before and after the dreadging looking for contaminants from anthropogenic activities. Considering these data, the aim of this work was to evaluate the contamination exposition level of these sediments with organochlorine pesticides (OCP) and with organic matter (OM). To do this, sediment samples were taken at four selected points (before and after river rectification), named E-1, E-2, E-3 and E-4 on the basis of the possible contaminant source: Agricultural, industrial, urban and suburban respectively. No OCP's were found in the sediments before the river was dreadged, however alpha, beta, gamma and delta-HCH, dieldrín, endosulfan II, endrin aldehyde and p,p´-DDT were found in sediments after river dreadging. These results imply that OCP's were used some years ago, and they were exposed when the river was dreadged. OCP's concentrations were higher at E-1 < E-2 < E-3 < E-4, according to the flow, suggesting that OCP level at E-4 is due to an accumulative effect from sources located upstream. Significant correlation between organic matter and OCP's level was found. OCP's levels detected were significantly lower than those reported for other rivers in Mexico and the world.

Key words: organochlorine pesticides, sediments, Mololoa River.

Resumen

El uso principal del río Mololoa es con fines de riego. Sin embargo, este cuerpo receptor ha recibido desde hace mucho tiempo las descargas de aguas residuales provenientes de la actividad doméstica e industrial de la ciudad de Tepic, Nayarit, México, así como las descargas de origen pecuario y las aguas de retorno agrícola generadas en su cuenca. Este río fue sometido a rectificación y encauzamiento, en un tramo de 16.2 km, debido a la deficiencia en su capacidad hidráulica. Las obras de rectificación implicaron la remoción de los sedimentos, por lo que en este estudio se analizaron las muestras de sedimento antes y después del dragado, con la finalidad de poner en evidencia posibles contaminantes, plaguicidas organoclorados (POC) y materia orgánica en particular, producto de actividades antropogénicas en el tramo mencionado. Para lograr esto, se muestrearon cuatro estaciones, antes y después de la rectificación del río, considerando la posible fuente de contaminantes, agrícola, industrial, urbano y rural, que fueron denominadas

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