

Potential health risk from Organochlorine pesticides in Tecocomulco Hidalgo, Mexico

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The objective of this research is to estimate the potential health risks due to chronic exposure to organochlorine pesticides in the Tecocomulco Hidalgo lagoon, Mexico. The identification and quantification of organochlorine pesticides from the sediment of the lagoon was carried out, the presence of six compounds (Aldrin, DDT, Endosulfan, Endrin, Dieldrin and Lindane) was verified, of which five are above the maximum permissible levels in the rule, Guidance for Sediment Quality Assessments. The dose-response relationship was evaluated through the biological effect through the analysis of effect indicators. The following indicators were calculated: risk index, daily exposure dose, potential for toxicity, potential for mutagenicity, probability of cancer, risk of cancer development, and cancer incidence. Five compounds have a higher hazard ratio than the norm (Aldrin > Endosulfan > DDT > Endrin > Dieldrin). The six compounds are toxic, mutagenic, teratogenic and carcinogenic, with DDT > lindane > Endosulfan being the pesticides with the highest incidence of cancer. Due to the agricultural activities in the study area, it was determined that there is a high vulnerability of the exposed sectors, a high index of danger due to the observed concentrations, a high exposure rate and a high capacity for toxic, mutagenic, teratogenic damage and carcinogenic; therefore, there is a potential high health risk associated with exposure to these compounds.