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Levels, compositions and distributions of organochlorine pesticide residues in soil 5–14 years after clean-up of former storage sites in Tanzania

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HIGHLIGHTS

- The level of contamination has been indicated to be high.
- No significant degradation of the parent compounds.
- Remediation measures are required to reduce the levels of the contaminants.

ABSTRACT

The levels, compositions and distributions of organochlorine pesticides and metabolites were determined in soil samples collected 5–14 years after clean-up was carried out at seven contaminated sites in Tanzania. Samples were collected from various depths (5–10 cm, 30 cm, and 50 cm for most sites and up to 300 cm for one site. Determination of the analytes was performed using a high resolution GC–MS and isotope dilution technology. DDT, DDD, DDE, HCH isomers, aldrin, dieldrin, endrin, endosulfans, chlordanes and heptachlor were the major compounds detected. The concentrations of total DDT and total HCH were up to 250000 and 164000 mg kg^{-1}, respectively, while the highest concentrations for other compounds ranged from 29 to 3300 mg kg^{-1}. The results indicated that there were no significant degradations/transformations of the pesticides for most of the sites. The highest concentrations of the compounds were mostly found in surface soil samples and there were variations in distribution among the sampling depths. The results indicate risks and concerns for public health and the environment.

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