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Levels and patterns of organochlorine pesticides and their degradation products in rainwater in Kibaha Coast Region, Tanzania

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HIGHLIGHTS

- High levels of organochlorine pesticides and metabolites detected in rainwater.
- Contamination patterns indicated input of significantly non-degraded technical mixtures possibly from a point source.
- A decrease in concentrations with time was indicated.
- The findings indicate risks and concerns for public and environmental health.

ABSTRACT

The levels and patterns of organochlorine pesticides and degradation products in rainwater samples collected in relation to a contaminated site in Kibaha district, Tanzania were investigated. The compounds detected in the samples by GC–MS and isotope dilution methodology included DDT, DDE, DDD, HCHs, dieldrin, heptachlor, chlordane, endrin and hexachlorobenzene. The concentrations of total DDT and total HCH ranged 0.005–3200 μg L^{-1} and 0.01–170 μg L^{-1}, respectively and they indicated input of significantly non-degraded technical mixtures. The highest concentrations for other compounds ranged 0.001–1.3 μg L^{-1}. The highest concentrations were found in samples collected in the vicinity of the contaminated site and the concentrations at other points showed a general even distribution suggesting repeated volatilization and deposition mechanisms. The strong positive correlations in the concentrations of the compounds indicated a common source. A decrease in concentrations with time was indicated, although the decrease was not significant during the period of sampling. The findings indicate risks and concerns for public and environmental health.

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