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Accumulation and effects of persistent organic pollutants and biogeographical solutions: appraisal of global environment

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Abstract

Various persistent organic pollutants (POPs) are used in pharmaceuticals, personal care products, dyes, pesticides, and electrical devices to meet significant demand. Natural POPs, as well as anthropogenic synthetic carbon-based compounds, are hazardous pollutants. POPs are trendy but also toxic to living organisms. Bioaccumulation via the food web makes these susceptible to diseases and multiorgan dysfunction. The persistence, bioaccumulation potential, and adverse effects of POPs on humans and wildlife make them a major

environmental and public health concern in India. POPs are a problem in India due to the country's industrial sector, agricultural methods, and poor waste management. Protecting the Indian population's health and preserving the country's various ecosystems depend on finding a solution to the POP's problem. The current review article discusses POPs in terms of estimation techniques such GC–MS and the compiled effects of POPs on biota. Separating and identifying volatile organic molecules is often done using GC–MS, while non-volatile and polar chemicals are analysed using LC–MS. Separation methods such as HPLC are flexible and can be modified with a wide range of analytes. Concentrating and purifying analytes before instrumental analysis is possible using sample preparation and extraction technologies like CPE, SPE, and SPME. Strong extraction strategies like ACE and QuEChERS aim to streamline and simplify the procedure. MAE employs microwave radiation to heat samples, rapidly accelerating the extraction process. The article intends to discuss practical techniques for removing POPs from the environment, such as catalysis, coagulation, adsorption, and biological removal.

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Data availability

NA.

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