Index Models for Environmental Micro- and Nano-Sized Plastics

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Abstract

The definition of environmental indexes is one of the most widely used methods and methodologies for the study of exposure to polluting agents, and it is a highly helpful instrument for describing the quality of the environment in a simple and straightforward manner. In this study, index models were presented and described that can be used in evaluating the contamination, pollution and health risks of environmental micro (MPs) and nanoplastics (NPs) to ecosystems and humans. Index models such as plastic contamination factors (pCf) and pollution load index (pPLI), plastic- bioconcentration or accumulation factors (pBCf or pBAf), plastic-biota-sediment accumulation factor (pBSAf), biota accumulation load index (BALI), polymer risks indices (pRi), polymer ecological risks index (pERI) while plastic estimated daily intake (pEDI) and plastic carcinogenic risks (pCR) were described for oral, dermal and inhalation pathways. All index modeled were further described based on polymer types of MPs/NPs. The final value is represented by a quantity that measures a weighted combination of sub-indices and defined by an appropriate mathematical function. The central concept is to present an indicator that can describe, in a clear and concise manner, the level of MPs/NPs in the environment, thereby indicating where it would be necessary

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to intervene and where it would not in order to improve overall environmental conditions.

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Biography

Christian Ebere Enyoh is currently a Research Fellow at the Department of Chemistry, Imo State University, Nigeria. He holds a Master of Science degree in Analytical Chemistry from the same University. His research is currently focused on micro and nano plastics and other emerging pollutants, including their monitoring and remediation. He led a research project which provided for the first time the impact of macro and micro plastics in soil on phytochemicals in plant in Nigeria. Christian received the Japanese MEXT scholarship for Ph.D. in environmental science with focus on microplastics at the Saitama University. He is a member of the Chemical Society of Nigeria and has over 100 publications to his credit.

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