

**Present-day Survey and Risk Assessment of Surface Water Microplastics in Taytay River
and Maningning Creek in Rizal Province, Philippines**

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Abstract

Microplastics (MPs) are an emerging pollutant of concern owing to their persistence and accumulation in all environmental compartments, as well as their associated toxicological effects on organisms and humans. In recent years, research on microplastic pollution has been conducted but mostly focused on the marine ecosystem, such that limited studies have been published involving freshwater systems, particularly in rivers and streams. Present-day knowledge on the occurrence of MPs in tributaries is still limited, however, these tributaries are the primary interface between land-based microplastic sources and drainage networks that transport MPs to important water bodies. Therefore, research on microplastics in tributary rivers and creeks merits attention to understand their impacts across the whole environment and, more importantly, devise control strategies for microplastic pollution abatement, specifically in the Philippines.

This study will conduct a survey and risk assessment on the occurrence of microplastics in the surface waters along the Taytay River and Maningning Creek sub-basin, a tributary of Laguna de Bay and situated in a densely- populated community in Rizal Province, Philippines. Specifically, this will focus on quantifying the abundance of MPs, characterize them in terms of type and size, and evaluate the ecological risk associated with microplastic toxicity. The results of this study will serve as present-day data on the abundance, distribution, and characteristics of MPs in the Taytay River and Maningning Creek and provide information that may aid in developing relevant mitigation strategies to rehabilitate the present-day condition of the tributaries.