ECOLOGICAL RISK ASSESSMENT APPLIED TO URBAN COASTAL LAGOONS IN THE METROPOLITAN REGION OF RIO DE JANEIRO - BRAZIL

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Abstract
Urban coastal lagoons are extremely important in regulating water flows and as a species maintainer between terrestrial and aquatic environments. Furthermore, they are environments that make up the landscape and social life of cities. However, they are continuously exposed to degrading human actions, which threaten their biodiversity. The Jacarepaguá Lagoon Complex (JPALC), formed by four lagoons, and the Piratininga Lagoon (PL) had their urbanization process started more than 20 years ago, which resulted in silting and occupation of their banks. The lack of adequate sanitation infrastructure has resulted in sewage being released into these lagoons. The objective was to promote an Ecological Risk Assessment (ERA) for JPALC and PL, based on four lines of evidence (LoE): Water Quality, Chemical, Ecotoxicological and Ecological. Surface water samples are being collected at six sampling points in JPALC, five in PL and one in a reference area (P0), every three months from Aug/2022 to Aug/2023. The Water Quality LoE will be based on physicochemical parameters to estimate the Water Quality Risk; Chemical LoE in the quantification of chemical substances of interest (pharmaceuticals, plastic additives, pesticides and metals) to estimate Chemical Risk; Ecotoxicological LoE in ecotoxicity assays to estimate Ecotoxicological Risk; and Ecological LoE in the analysis of the ecological composition of species in phytoplankton and in the physiological assessment of fish to estimate the Ecological Risk. The environmental risk will be estimated integrating the risks of all LoE. The difference in salinity between the lagoons will be one of the major challenges for the project. We hope this information can be used for risk management actions to mitigate current and future ecological risks. Furthermore, it is expected to discuss these results with the environmental protection control, to contribute to the reduction of contamination impacts on water bodies in the State of Rio de Janeiro.

Keywords: Aquatic environment, Tropical lagoon, Environmental risk.