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## **COMBINED ASSESSMENT OF CHEMICAL AND ECOTOXICOLOGICAL DATA FOR THE MANAGEMENT OF CONTAMINATED MARINE SEDIMENTS**

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### **Abstract**

Sediments in coastal areas can accumulate a variety of contaminants, acting as both carriers and long-term secondary sources of contamination for aquatic ecosystems. Nowadays, there is a growing interest on developing new assessment criteria of sediment ecological quality for setting priorities and management strategies of contaminated materials. According to the literature, the weight of evidence (WOE) approach has been developed to provide a multidisciplinary characterization which combines different studies such as chemical analyses, laboratory and field-based studies to assess the bioavailability of pollutants and ecotoxicological assays. However, applications on complex case studies are limited. In order to strengthen the current literature, this study presents the first results of the application of a WOE model (Sediquisoft) to a marine chronically polluted area. To this aim, a laboratory experimental investigation was carried out on the polluted sediments of the Mar Piccolo in Taranto (Southern Italy). The combination of chemical and ecotoxicological data confirmed the results obtained with the conventional approaches, highlighting sediment contamination. Even more, the obtained biological responses highlighted an unexpected toxic effect not revealed by conventional approaches: the level of contamination did not seem to be proportional to the ecotoxicological assessment. All these observations have raised numerous questions about the potential mobility of pollutants and additional risks to the environment. The Sediquisoft model has proven to be a useful tool for processing complex scientific data, playing an important role in contaminated sediment risk assessment supporting stakeholders and decision makers.

*Keywords:* chemical/ecotoxicological data, contaminated sediments, Mar Piccolo, Sediquisoft

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