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**Modern Approaches to Identification of Pollutants Causing Toxicity of Water and Bottom Sediments of the Aquatic Ecosystems (a Review)**

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**ABSTRACT**

The modern approaches to identification of pollutants that cause toxicity of water and bottom sediments were analyzed, which are mainly guided by the EDA (Effect Directed Analysis) methodology, based on biotesting of environmental mixtures in combination with successive reduction of the mixture complexity by physical-chemical manipulations/fractioning. The idea and procedure of TIE (Toxicity Identification Evaluation) consists in a sequence of analyses aimed at identification of substances causing toxicity in complex samples of the aquatic environment (matrices), in particular, bottom sediments. The performance of samples' examination according to this approach is divided into three phases: I − determination of the physical and chemical properties of the toxicity factor (Characterization); II − analytical determination of the toxicity factor (Identification), and III − prove that the determined toxicity factor is responsible for all detected negative effects (Confirmation). Various options for physical-chemical manipulation of water samples and bottom sediments in order to reduce their toxicity and narrow the range of assumptions regarding probable toxicity agent are considered. Data on biotesting methodology, its modern modifications, and some standardized methods in Ukraine and the world are given.

The urgent need and possibility of the toxicological research development in Ukraine towards application of the state-of-the-art procedures of identification of the pollutants causing toxicity of water and bottom sediments in the aquatic ecosystems is shown.

**KEY WORDS:** [toxicity](https://search.begellhouse.com/index.php?word_search=toxicity&facet_search=&facet=all&site=dl), [water and bottom sediments](https://search.begellhouse.com/index.php?word_search=water+and+bottom+sediments&facet_search=&facet=all&site=dl), [bioassay](https://search.begellhouse.com/index.php?word_search=bioassay&facet_search=&facet=all&site=dl), [TIE](https://search.begellhouse.com/index.php?word_search=TIE&facet_search=&facet=all&site=dl)