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Assessing and Comparing Toxicity of Industrial Effluent by Using the Nematode *Caenorhabditis elegans* and the Letucce Seed *Lactuca sativa*

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Industrial activities are responsible for the discharge of liquid effluents containing a large amount of persistent and toxic chemical compounds. Industrial effluents are therefore a major source of threat to the integrity of aquatic ecosystems. Even though there should be treatment plants designed to remove polluting compounds from effluents, they are not always implemented, nor do they work properly, resulting in poor quality treatment that does not comply with current environmental standards. In addition, there are many industries that do not have treatment plants and their discharges are clandestine. In Argentina, environmental regulations only require periodic determinations of physicochemical and bacteriological parameters, resulting in a short-sighted, static and limited analysis of effluent quality and their probable impact on the environment. It has been shown that some industrial effluents, although their quality is sufficient to comply with regulations, induce toxic effects. The aim of this study was to evaluate the toxicity of effluents from multiple industries located in the Matanza-Riachuelo river basin (Buenos Aires province, Argentina) and to compare the biological responses of two standard ecotoxicological tests: the nematode *Caenorhabditis elegans* and the lettuce seed *Lactuca sativa* .

Twelve different types of effluents representative of the textile, ceramics, petrochemical, food, paper, automotive, mechanical, pharmaceutical and construction industries were analysed. Physicochemical parameters such as pH, electrical conductivity, chemical oxygen demand, turbidity among other ions, organics and metals. The results indicated that toxicity is expressed differently between the biological tests with the nematode being more sensitive than vascular plant seeds. In addition, highly toxic effects were revealed

in the petrochemical, ceramic and construction industries, even when 1:50 dilutions were tested, pointing to the need to carefully review the toxic properties of complex effluent mixtures and matrices.

Results indicated that toxicity is a parameter that bring important information to be considered by environmental regulation in order to better protect the environment and human health.