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PROTISTS AS INDICATORS OF TOXICANTS ENTRANCE IN ACTIVATED SLUDGE PROCESSES.

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Protists have proved to be an interesting tool for assessing the occurrence of pollution in the wastewater biological treatment systems along with its role in the control of pollution itself, through the grazing of dispersed bacteria and maintenance of a healthy trophic web in those artificial ecosystems.

In this work, toxicity was assessed by studying the response of the activated sludge community of protists to the exposure to three toxicants - copper, zinc and cycloheximide by means of a series of assays using a wastewater treatment plant prototype. Along with the community descriptive parameters such as density, taxonomic richness and the use of biological indexes – the Shannon-Wiener and the Sludge Biotic indexes, several operating parameters were determined in order to allow for the comparison and, eventually, the correlation between the former and the latter.

The Sludge Biotic Index was, by far, the best tool in detecting intoxicant effects of the protistan community. Considering all the parameters studied, copper was more toxic than zinc, which is corroborated by previous works. Cycloheximide, in the range of concentrations tested, was less toxic than the heavy metals and has caused some incomprehensible fluctuations.

The results emphasize the ability of activated sludge biological communities, both decomposers and protists, to survive and to react to toxicants entrance, allowing the depuration processes to go on. High concentrations of copper and zinc can, on the contrary, prevent the satisfactory plant efficiency and the healthy state of the microfauna, including its survival. This work highlights the role of the protistan communities as indicators of possible toxicants entrance, besides the well-documented indicator value of plant operation conditions and efficiency.