

EVALUATION OF TOXICITY OF VARIOUS METAL ELEMENTS TO DIFFERENT MICROORGANISMS

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ABSTRACT

Co-treatment of municipal and industrial wastewater is currently taking place in several cases in municipal wastewater treatment plants. However, the addition of industrial wastewater may adversely affect the activity of the activated sludge microorganisms, as industrial discharges contain a number of substances with toxic properties like metals. The potential toxicity of four metals (copper, zinc, chromium and cadmium) on the activity of wastewater activated sludge bacteria was studied by using RODTOX biosensor and the results were correlated to the toxicity on bioluminescence bacteria *Vibrio fischeri*. Copper was found to be the most toxic element, while comparison of the results on the inhibition activity of activated sludge microorganisms and *Vibrio fischeri* showed that, luminescent bacteria were more sensitive and could be used for the prediction of the response of the RODTOX biosensor. Furthermore, examination of the interactive effect of a copper-zinc mixture and comparison of the observed experimental values and the theoretical predicted ones showed the significant synergistic action of the combined mixture.