

CADMIUM AND COPPER TOXICITY ASSESSMENT IN ACTIVATED SLUDGE USING TTC BIOASSAY

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Abstract: The aim of this work was to determine the effect of various cadmium and copper concentrations on the activated sludge dehydrogenase activity. The investigations were carried out in six aerated chambers with activated sludge, volume of 1L each, by the continuous culture method (one control chamber, not contaminated with heavy metals and five with 0.5; 1; 2; 4; 8 mgL⁻¹ Cu⁺² and 0.1; 0.3; 0.9; 2.7; 8.1 mgL⁻¹ Cd²⁺). Cadmium sulfate and copper sulfate as a source of heavy metals were used. The concentrations of these metal ions, causing 50% dehydrogenase activity inhibition were determined. The particular attention was paid to the toxic effect of metal ions, as well as the variations of the microbial respiration activity proceeded during toxins exposition. The investigation showed that even the lowest concentration of the investigated metal ions caused significant changes of the activated sludge dehydrogenases activity. Copper ions showed to be more toxic than cadmium ions.