

DETERMINATION OF ACUTE TOXICITY OF DIFFERENT TYPES OF WASTEWATER

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ABSTRACT

Toxicity tests for determination of acute toxicity of wastewaters is an interesting approach for e.g. evaluating treatment methods. Toxicity tests help assessing the potential damage of wastewater to organisms in the environment. Different test-organisms have dissimilar response to various wastewaters and the evaluation can often be difficult. Results of toxicity tests can be expressed in different units and commonly used values are EC₅₀ or EC₂₀ (the concentration that cause a response in 50% or 20% of the population after a predetermined exposure time). Additionally, the results can be expressed as NOEC (No Observed Effect Concentration) and LOEC (Lowest Observed Effect Concentration). Also the exposure time will vary between tests and must be included in the assessment. In this presentation different kinds of wastewaters have been examined with respect to acute toxic effects on two different aquatic organisms, the crustacean *Artemia salina* and *Vibrio fischeri*, the latter using the Microtox[®] apparatus. In one study, two different Advanced Oxidation Processes (AOPs), photo-Fenton oxidation and ozonation, have been investigated as post-treatment after the anaerobic degradation of raw textile wastewater. Here the performance of the AOPs has been compared based on their ability to reduce organic content, as COD, and acute toxicity. In another study, wastewaters from different wood species (pine, spruce, beech, larch and oak) were examined. Solutions including the anti-inflammatory pharmaceutical Diclofenac, Ibuprofen and acetylsalicylic acid (ASA), and the same compounds extracted from sediment and sludge from sewage treatment plants were tested in another study. Furthermore, studies were the crustacean *A. salina* was used, as a tool for evaluating different treatment procedures for leachate waters from landfills, will be presented. For most of the tested waters, results show that the bacteria *V. fischeri* was more sensitive than the crustacean *A. salina*, and in some cases no toxicity was detected with the shrimp toxicity-test.

KEYWORDS

Acute toxicity tests, *Artemia salina*, Textile wastewater, Wood-leachate, Landfill, Pharmaceuticals