

COMPARISON OF BIOLOGICAL TOXICITY OF AZO- AND ANTHRAQUINONE DYES USING VARIOUS ECOTOXICITY TESTS

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Toxicity effects of two azo dyes (Reactive Orange 16; Congo Red) and two anthraquinone dyes (Remazol Brilliant Blue R; Disperse Blue

3, DB3) were measured and compared using three types of biological toxicity tests: bacterial luminiscence inhibition test with *Vibrio fischeri* (Flash test), algal growth inhibition test with *Selenastrum capricornutum* and protozoan test with *Tetrahymena pyriformis*. In the protozoan test, growth impairment, viability assay (calcein AM/ethidium homodimer-1 assay), grazing and morphometric assays were used as the endpoints. DB3 was found to be the most toxic dye of all dye compounds tested. In the algal test (96-hour exposure) its toxicity (EC50) was 10-150-fold compared to the other dyes. In the Flash test, DB3 toxicity (EC50) at 0-min exposure was 2–6 times higher than those of other dyes, whereas, at 30-min exposure, the difference was 2.5-3.5-fold in maximum. In the protozoan tests a higher toxicity of DB3, compared to the other dyes, was observed in all assays except for the morphometric assay determining the cell area and the ratio of the shortest and longest cell axes.