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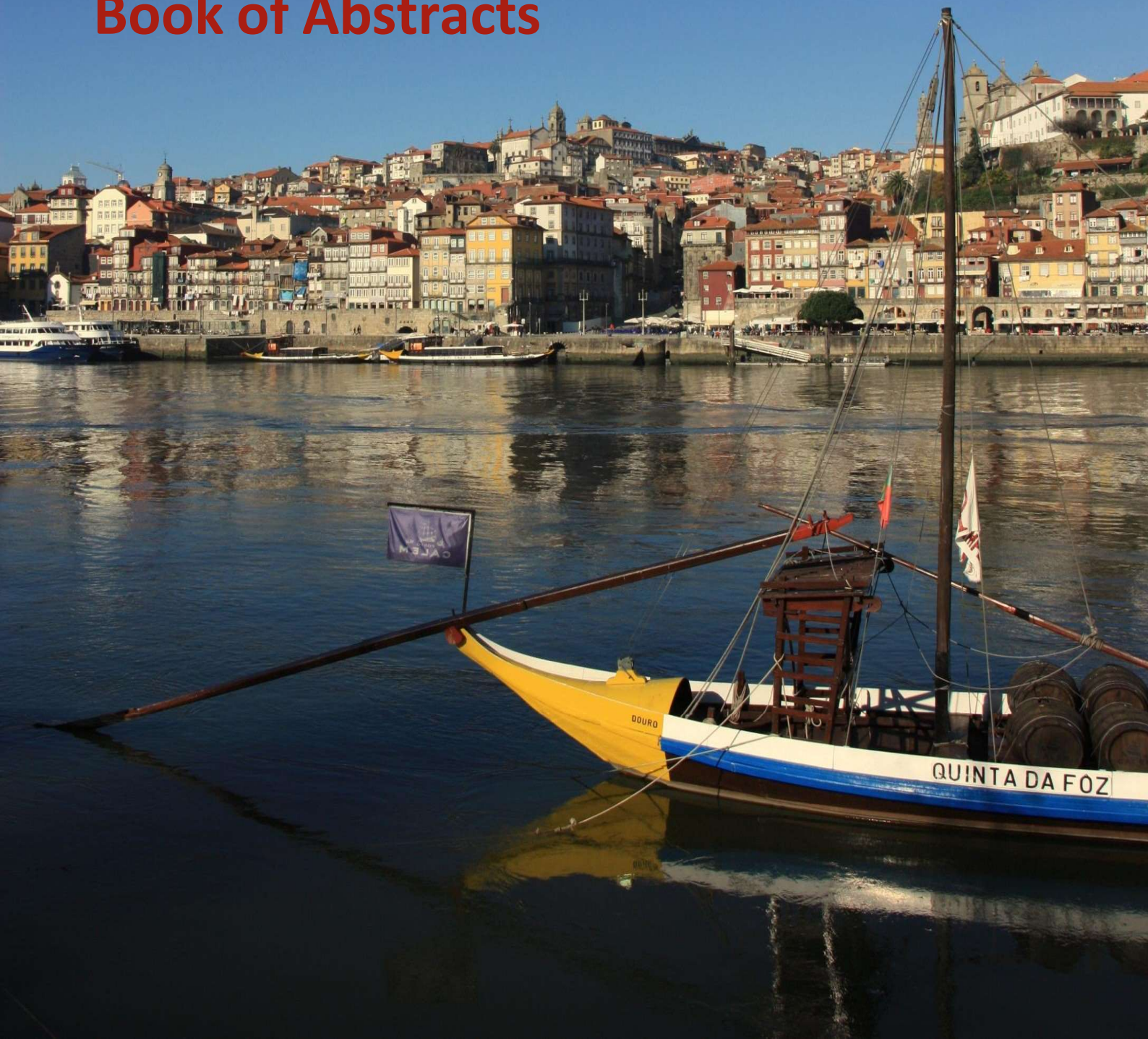

P37 Differential toxicity responses of green algae and cyanobacteria to formamide

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Formamide is used as a softener for paper and gums, as an ionizing solvent and in the manufacture of hydrocyanic acid and formic esters. In the clinical area, formamide is used as denaturing agent, so as to allow the separation of strands of nucleic acids in techniques such as hybridization, electrophoresis and sequencing. It is harmful by inhalation, in contact with skin and if swallowed, also animal studies have shown formamide to be a teratogen. Chronic effects on humans, includes damage to blood, kidneys, liver and central nervous system, teratogenic and mutagenic effects. Although its toxicity to humans is high, and relatively well studied, the effects on aquatic ecosystems are scarce. Microcystis aeruginosa is an unicellular cyanobacteria that grows especially well in eutrophic waters, nutrient rich, warm and stagnant. This cyanobacteria is frequent in a wide range of freshwater ecosystems and frequently form harmful algal blooms. *Chlorella vulgaris* is a unicellular freshwater green algae. The aim of this study was to evaluate and compare the ecotoxicological effect of formamide using as test organisms prokaryotic and eukaryotic species from freshwater ecossystem. We studied the growth inhibition of the freshwater *Chlorella vulgaris* and the cyanobacteria *Microcystis aeruginosa*. Tests were performed accordingly to the OECD Guideline 201, adapted. Exponentially growing *C. vulgaris* and *M. aeruginosa* were exposed to five formamide concentrations and a control with eight replicates per treatment (0,1%, 0,2%, 0,4%, 0,8% and 1,6%), over a period of 144 hours. The test was performed at a temperature of 21±2°C and a light:dark photoperiod of 14:10 hours. Biomass was quantified from measurements of optical density, every 24 hours. Average growth rate and percent inhibition of growth rate were determined. Both Chlorella and Microcystis controls grew exponentially. In both tests, and for all the formamide concentrations tested, there was an increase in biomass during the test. The only exception was at the highest formamide concentration with Microcystis in which the cell density remained constant. In the *Chlorella* test, growth rate inhibition occurred at concentrations 0.8% and 1.6%, reaching the maximum of 29% in 1.6%formamide concentration after 144h. At the lowest concentrations growth stimulation occurred during the first days of the test. In Microcystis test there was an inhibition of growth rate only at the two highest concentrations of formamide. The highest percent inhibition of growth rate was achieved at 144h at the 1,6% concentration (80%). Although with a similar toxicity pattern, hormesis at the beginning of the test, at lower concentrations and growth inhibition at the end and at the highest formamide concentrations, the prokaryotic Microcystis cells were more sensitive than *Chlorella.*