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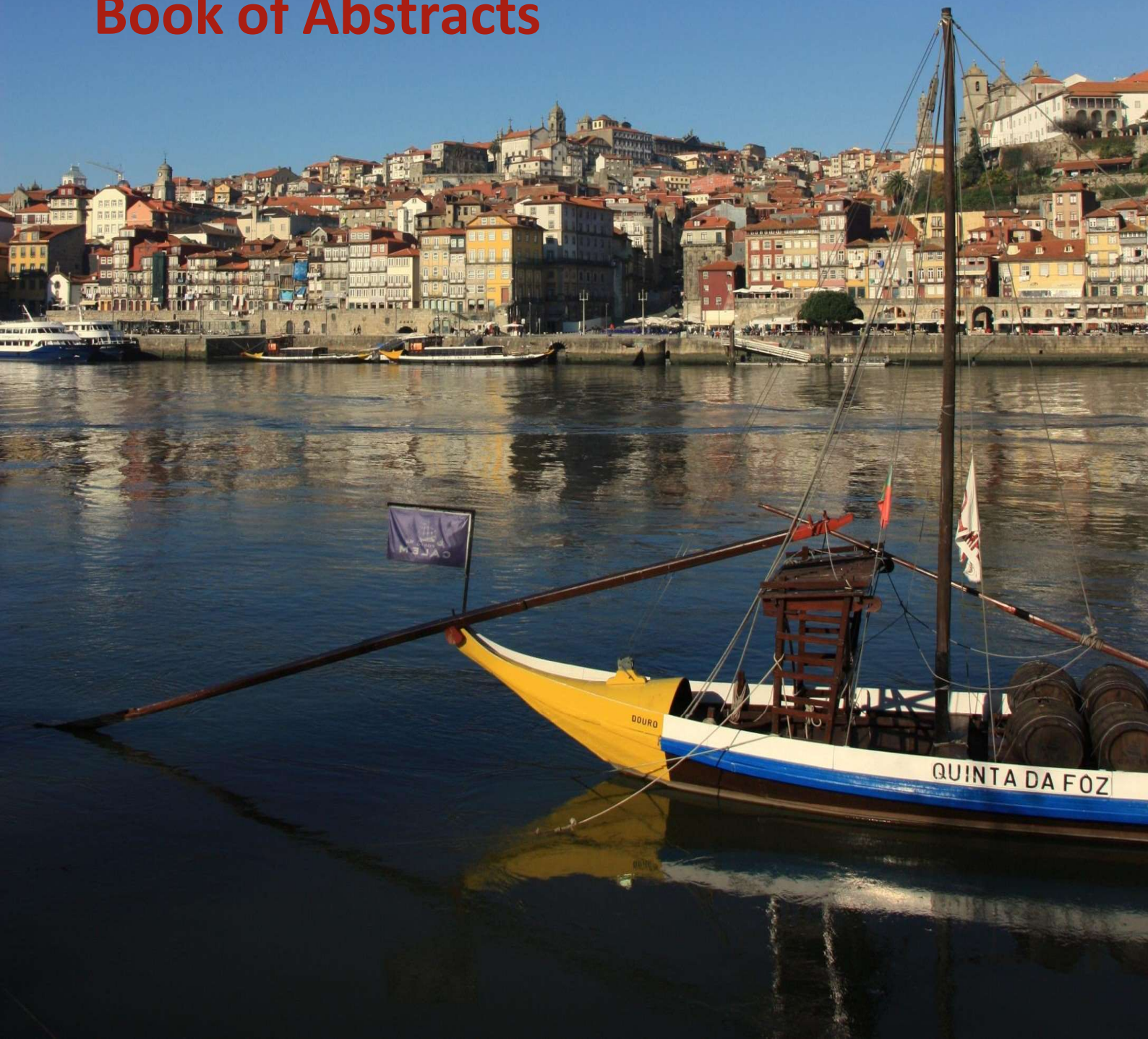

P35 Effects of low doses of external radiation from 137Cs on *Lactuca sativa* seedling and *Daphnia magna* reproduction

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Naturally occurring cesium exists as a stable isotope 133Cs in the earth crust in granites and in sedimentary rocks. Cesium has very low mobility in soil surfaces. Radioactive isotopes of cesium, 134Cs and 137Cs are formed in the generation of electricity at nuclear power plants. High levels of radioactive isotopes were released as a result of nuclear weapons testing and accidents in nuclear reactors. Once released it persists in the environment and can travel long distances before settling to earth by wet and dry deposition. Radioactive cesium can also be released to soil and water. The half-life of 137Cs is long, it is about 30 years, and causes long period exposures. The effects of exposure to low levels of radiation for non-human species is scarce and is mainly associated with scientific field studies after nuclear disasters. In this work we studied the effects of low levels of 137Cs radiation on the germination and root length of *Lactuca sativa* seeds. Three Petri dishes with 60 *Lactuca* seeds were exposed to different periods of irradiation (13, 56 and 90 days) by a 137Cs source. After each exposure period, 60 seeds were placed in 3 Petri dishes, in filter paper with distilled water, in the dark, at a room temperature of 21ºC. Percent germination and root and hypocotyl length after 120h were determined. *Daphnia magna* juveniles less than 24h of age where exposed to low dose of external 137Cs radiation over a period of 21 days, following the OECD 211 (2008) guidelines. Mortality, reproductive output of the parent animals and the total number of living offspring produced per parent alive at the end of the test were determined. In both tests radiation level was quantified numerically and with two detectors placed inside the exposure chamber. *Lactuca* seeds germination after 13 days exposure was reduced 10% and after 56 and 90 days was reduced 30%. Root and hypocotyl length also showed a reduction which can be related to previous exposure. *Daphnia* reproduction is a more sensitive endpoint in quantifying the 137Cs effects than mortality. The effects of chronic irradiation on reproductive output are influenced by the duration of the irradiation which corresponds to absorbed dose. Possible mechanisms of 137Cs toxicity for *Daphnia* reproduction and *Lactuca* seedling and environmental implications are discussed.