

AI3507

19th International Symposium on Ostracoda

Ecotoxic effects of a uranium mine receiving effluent in Guangdong: ostracods as indicators

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Abstract: With the development of nuclear industry, uranium mining has led to an increasingly serious environmental contamination of radionuclide uranium. The study evaluated the environmental contamination level of a uranium mine in northern Guangdong (Fig 1), using physicochemical and biological methods. According to the single factor index method, it was found that the radionuclide U had higher hazard index (Pi values) and heavy pollution level around the pit, while the tailing pond had lower pollution level. The results of the potential risk index method analysis showed that the ecological risk level of U and Cd was serious, and the rest of the heavy metals were of low risk, but the combined ecological risk of each sample still reached the serious risk level. The samples were evaluated for toxicity using ostracods, and the experimental results showed that *Cypridopsis vidua* and *Heterocypris* sp. both showed excellent sensitivity to contaminated water (Fig 2), reflecting the relationship between individual mortality and the degree of contamination. The mortality rate at the tailings pond (T1) with the highest level of contamination was much higher than the rest of the sample sites, and the degree of contamination gradually decreased with increasing distance, causing a decrease in mortality.

Keywords: ostracods; uranium mines; ecotoxicity; pollution evaluation

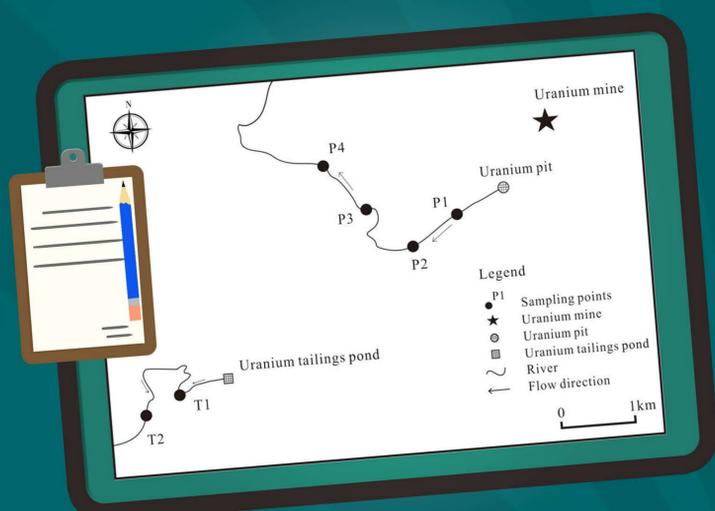


Fig. 1 Sampling diagram of a uranium mining and smelting area in North Guangdong

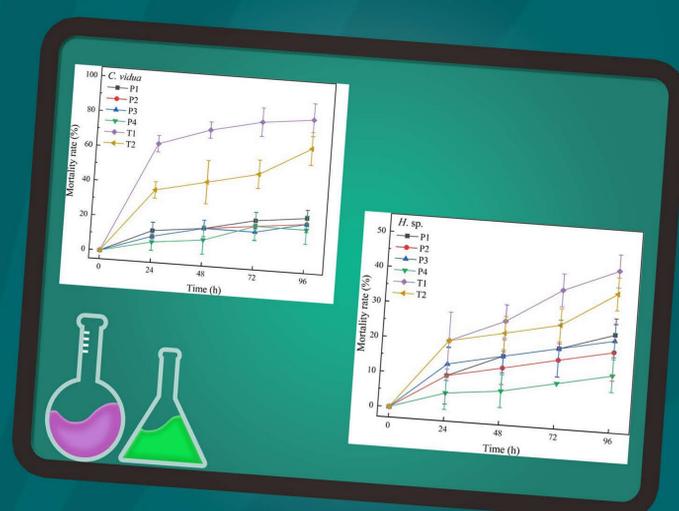


Fig. 2 Time-mortality curves of *C. vidua* and *H. sp.*

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