

Copper mine tailings disposal: consequences for the interstitial polychaete *Saccocirrus sonomacus* (Canalipalpata: Protodrilida)

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Abstract

The hypothesis investigated in this paper is that the interstitial polychaete *Saccocirrus sonomacus* is excluded from beaches impacted by tailing disposal as a result of the blocking of the interstitial space and not by a response to the toxicity of elevated copper concentrations. Field evidence suggested that abundances of *S. sonomacus* on beaches where they would be expected to occur under natural conditions are lower when a beach has received a significant amount of tailings. In choice experiments, *S. sonomacus* always preferred an open coarse sand matrix to one where the interstitial spaces had been blocked by fine sand (a tailings substitute). Using *invitro* bioassays, we found that the LC₅₀ for *S. sonomacus* with copper was 44 µg Cu l⁻¹, this being higher than the values of interstitial labile copper measured on the beaches investigated in this study. We therefore accept the hypothesis of a physically mediated exclusion rather than a toxically mediated one.