



Potential changes to metal bioavailability induced by flood events in sediments contaminated by mining legacy

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The intense exploration of metals since the Bronze Age created a legacy of contamination in UK rivers and streams. The sediment deposits contaminated by this mining legacy comprises a significant source of pollution to UK waters.

The impacts of climate change including increasing frequency of precipitation and flooding magnitude have the potential to release the legacy of metals trapped in sediments. Flooding events induce the re-suspension and transport of sediments resulting at the mobilisation of sediment-bound metals. In addition, in small streams with high gradients, contaminants may be remobilised in freshwater environments, but deposited downstream in brackish and fully saline estuaries with implications for the mobility, bioavailability and uptake of metals. The aim of this research is to determine the metal mobility of mine impacted sediments after re-suspension events through a mesocosm experiment. Sediments were collected from the Cotehele stream, located in SW England, due to the legacy from metal mining surrounding the area. The experiment comprises the exposure of the burrowing snails *Potamopyrgus antipodarum* to re-suspended and not re-suspended sediments with overlying waters salinity ranging from 0 to 30 ppt. The snails *Potamopyrgus antipodarum* were chosen for the uptake due to its capacity to tolerate salinities from 0 to 35 ppt and easy collection.

Water and sediment samples for each replicate were collected before and after the re-suspension event. Total metals in water, sediment and organism (uptake) will be analysed to assess the variations in metal concentrations after the sediment disturbance. Sequential extractions analysis will be performed to assess the differences in the partitioning of metals after and before the re-suspension event.