



Particulate lead export from contaminated peatlands

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Peatland soils are generally regarded as sinks of atmospherically deposited lead. However, the erosion of peatland soils has the potential to transform them from sinks to sources of lead contamination to fluvial systems. The peat moorlands of the Peak District National Park (UK) are contaminated with high concentrations of lead – the legacy of centuries of anthropogenic heavy metal emissions from nearby urban and industrial conurbations. The high metal burden is particularly significant due to the severe erosion of peatland soils in this upland area. Detailed suspended sediment monitoring reveals that the fluvial particulate lead flux from the Peak District moorlands can be as high as $26.2 \pm 1.33 \text{ kg km}^{-2} \text{ a}^{-1}$. This is almost ten times higher than the current rate of atmospheric lead deposition. Many of the streams in the Peak District recharge drinking water reservoirs. Mapping of Howden reservoir, and subsequent sediment coring and geochemical analysis, reveals that approximately 7200 kg of lead is stored in the reservoir sediments. Reservoirs in the Peak District have greatly increased the capacity of many catchments to retain lead mobilised from eroding moorlands. Atmospherically contaminated upland peat catchments characterised by high suspended yields and no reservoir sink may be a major source of diffuse metal pollution to the lower reaches of the fluvial system.