

Changing hydrodynamics and its impact on contaminated remobilisation from estuarine sediments

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Estuarine sediments represent an important receptacle of contaminants, and often reflect accumulation over decadal timescales. Contaminants may be bound to different phases of sediment, such as oxides, clays and organic matter, or may occur in or as discrete phases (e.g. tyre particulates, paint flakes). Changing hydrodynamics, such as sustained periods of high or low river flow associated with climate change, may act to redistribute or remobilise contaminants through a variety of routes. Physical changes (e.g. increased energy) may resuspend sediment that is then exported to different regions of the estuary where water chemistry is different (e.g. salinity, pH, dissolved organic matter); chemical changes may consequently act to remobilise contaminants into the water column. Exposure of anoxic deposits may also remobilise contaminants through chemical oxidation or oxidation of host phases. Increased river flow will act to shift the salt wedge downestuary and expose sediments to different chemical regimes, resulting in remobilisation in many cases. In this presentation, the contaminants that are likely to be affected by these hydrodynamic changes, and in particular those affecting, directly or indirectly, long-term salinity, are discussed and modelled.