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The effects of resuspension on the fate of Hg in contaminated sediments (Nalón estuary, Spain)

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Sediments of the Nalón estuary (Cantabrian Sea, Spain) are important repositories of mercury as a direct consequence of the runoffs from the historical Hg mining activity developed in the Nalón river basin. Previous studies have shown that sediment acts as secondary source of Hg species to the overlying water column in natural conditions. However, evidence for the effects of resuspension on the dynamics of Hg species is still lacking. The effect of resuspension on the cycling of inorganic mercury (IHg) and methylmercury (MeHg) between the sediment and water column was investigated in a mesocosm study. Two experiments were conducted in July 2017 based on unaltered material collected from sites heavily impacted by Hg and periodically subjected to dredging activities. Designed to mimic the resuspension of particles, both experiments revealed that the release of Hg species from the solid to the dissolved phase became negligible quickly after the event. MeHg values did not change according to total dissolved mercury (THg), suggesting that the enhancement of methylation processes may occur during this processes. The results reported in this research may be useful for the local fishing activities and environmental management, as well as for planning dredging activities on the area in order to decrease potential impacts on the aquatic environment.