

Separation and determination of mercury sulfide and mercury bound to the organic matter in river sediment

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The influence of the concentration, volume of HCl and temperature to the dissolution of black HgS and cinnabar was investigated to develop a method on separation and determination of the species of Hg bound to the sulfide and organic matter in the sediment. The dissolution of HgS in HCl increased greatly with the increasing concentration of HCl when the concentration of HCl exceeded 4mol/L, especially with the higher temperature. Furthermore, the dissolution of HgS in HCl increased with increasing of temperature. The dissolutions of black HgS and cinnabar in 100mL 10mol/L HCl were 10.77mg and 5.98mg at 25°C, respectively, and HgS in the sediment could be dissolved completely by HCl when the concentration of HgS in the sediment reached to be of the order of magnitude of milligram. In this study, the sequential extraction method based on that Hg bound to Cl⁻ is the main reason of dissolution of HgS in HCl was developed. According to the determination of samples in the sediment, it resulted that the Hg bound to organic matter was more difficult than bound to sulfide to be dissolved in HCl.

Key words: HgS; HCl; Cl⁻; sequential extraction