

Environmental research on the sediments of the river mouth of the River Nanakita

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It is said that heavy metals have the tendency of being deposited at the river mouth, where sea and river water are mixed (Oshima et al, 2000). The purpose of this study is to find the cause of heavy metals accumulation at the river mouth.

Samples for chemical analyses were taken from the river mouth of the River Nanakita in Miyagi prefecture. First, PH and salinity were analyzed from water sample. Second, sediment samples were dealt by a sequential extraction method to find out the species of deposited heavy metals and the mechanism of its accumulation. In this scheme, heavy metals are extracted from samples, step by step, by using different reagents as weakly-bound (exchangeable) phase, carbonatic phase, easily reducible phase, oxidisable phase and strongly-bound phase. Third, the transition of constituent minerals by the sequential extraction was examined.

The value of PH and salinity at the river mouth was higher than that of the upper stream. And heavy metal accumulation was also found there. They were mainly weakly-bound (exchangeable) phase, carbonatic phase and oxidisable phase. Heavy metals which were weakly-bond (exchangeable) phase were found in many kinds of heavy metals. On the other hand, those of carbonatic and oxidisable phase were limited to a few metals. Heavy metal concentration was changed by the depth of sediments. And, the transition of constituent minerals by the sequential extraction was not seen. The constituent minerals at the river mouth were quartz, plagioclase and clay minerals.

At the river mouth, wedge-shaped zone of sea and river water seemed to be developed. And heavy metal accumulation there was caused by clay minerals and organic complexes (mainly humic acid). And the concentration of heavy metals also depended on living things. Heavy metals fixed by clay minerals were not in rich at the surface of sediments, but at lower of them.