

The Occurrences of Heavy Metals in Water, Sediment and Wild Shrimps Caught from Barito Estuary, South Kalimantan, Indonesia

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ABSTRACT

The research investigated the occurrences of heavy metal (Pb, Cu, and Cd) in waters, sediments, and wild shrimps collected from the Barito River estuary. Water and sediment samples were collected from 11 study sites by purposive sampling. At the same time, shrimps samples were captured around the sites.

The study showed low levels of heavy metals in water samples; those were: Cd<0.0019 mg/L, Cu<0.001 mg/L, and Pb<0.0019 mg/L. Low levels of heavy metals were also detected in sediment samples, those were Cd <0.24 mg/kg, Cu <0.013-0.69 mg/kg, and Pb<0.024 mg/kg. Heavy metals contaminations were detected in *Parapenaeopsis sculptilis*, those were Cd = 2.802 mg/kg; Cu = 3.399 mg/kg, and Pb = 1.294 mg/kg. In *Acetes japonicus*, the heavy metals concentration were Cd =

2.127 mg./kg, Cu = 5.518 mg/ kg, and Pb = 2.723 mg/kg. In *Penaeus merguensi*, the heavy metals concentrations were Cd = 8.598 mg/kg, Cu = 6.403 mg/kg, and Pb= 5.433 mg/kg. This study indicated the increases of heavy metals concentrations from water to sediment and finally into the shrimps. The presence of heavy metals in shrimps indicated the bioaccumulation of toxic metals, especially for Pb and Cd concentrations which exceeded the tolerable limit according to JECFA.

KEYWORDS: Barito river, Heavy metal, Toxic metal bioaccumulation, Wild shrimps