

**Ima Isyana Maysyaroh, NPM. 220351100062.** Analisis Kadar Logam Kadmium (Cd) pada Air, Sedimen, dan Kerang Tahu (*Meretrix* sp.) di Perairan Pangeranan, Kabupaten Bangkalan. Di bawah bimbingan Febi Ayu Pramithasari, S.Pi., M.Si

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## **ABSTRAK**

Perairan Pangeranan di Kabupaten Bangkalan, Madura, merupakan wilayah tangkapan kerang tahu (*Meretrix* sp.) sekaligus jalur transportasi perahu nelayan. Kawasan ini berpotensi tercemar logam berat, terutama kadmium (Cd), yang bersifat toksik dan dapat terakumulasi pada biota. Penelitian ini bertujuan untuk menganalisis kadar kadmium pada air, sedimen, dan kerang tahu, mengevaluasi hasilnya terhadap baku mutu, serta menganalisis korelasi kadar kadmium pada media tersebut. Metode analisis kadar kadmium dalam penelitian ini menggunakan prinsip destruksi dengan larutan asam, kemudian kadar kadmium dianalisis dengan spektrofotometer serapan atom pada panjang gelombang 228,8 nm. Hasil penelitian menunjukkan bahwa kadar kadmium tertinggi terdapat pada sedimen yaitu 0,1256 mg/kg hingga 0,1801 mg/kg, diikuti kerang tahu 0,0303 mg/kg hingga 0,0623 mg/kg, dan air sebesar 0,0015 mg/L hingga 0,0023 mg/L. Kadar logam kadmium pada air melampaui baku mutu berdasarkan Peraturan Pemerintah Nomor 22 Tahun 2021 yang menetapkan batas maksimal 0,001 mg/L untuk kehidupan biota. Kadar kadmium pada sedimen tidak melampaui baku mutu sesuai ketentuan *ANZECC and ARMICANZ* (2000) sebesar 1,5 mg/kg, sedangkan kerang tahu masih dalam batas aman untuk dikonsumsi berdasarkan SNI 1 mg/kg dan WHO 0,1 mg/kg. Analisis regresi linier menunjukkan korelasi sangat kuat antara kadar kadmium pada air dan kerang tahu yaitu sebesar 94,62% serta korelasi sedimen dan kerang tahu sebesar 87,85%. Pemantauan kualitas air secara berkala dan penerapan langkah mitigasi perlu dilakukan untuk mencegah akumulasi kadmium dalam jangka panjang, mengingat bahwa kadar kadmium pada air telah melampaui baku mutu meskipun sedimen dan kerang tahu masih berada dalam batas aman, sehingga kegiatan perikanan di perairan tersebut tetap berkelanjutan.

**Kata Kunci:** Kadmium (Cd), Logam Berat, *Meretrix* sp., Pencemaran Air, Perairan Pangeranan

**Ima Isyana Maysyaroh, NPM. 220351100062.** Analysis of Cadmium (Cd) Concentrations in Water, Sediment, and Clam (*Meretrix* sp.) in Pangeranan Waters, Bangkalan Regency. Supervised by Febi Ayu Pramithasari, S.Pi., M.Si

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## **ABSTRACT**

Pangeranan Waters in Bangkalan Regency, Madura, serve as a harvesting area for *Meretrix* sp. and as a navigation route for fishing boats. This area is potentially contaminated by heavy metals, particularly cadmium (Cd), which is toxic and can accumulate in aquatic organisms. This study aimed to analyze cadmium concentrations in water, sediment, and *Meretrix* sp., evaluate the results against quality standards, and examine the correlation of cadmium concentrations among these media. The method for determining cadmium concentrations in this study applied a digestion principle using acid, followed by analysis with an atomic absorption spectrophotometer at a wavelength of 228,8 nm. The results showed that the highest cadmium concentrations were found in sediment, ranging from 0,1256 mg/kg to 0,1801 mg/kg, followed by *Meretrix* sp., from 0,0303 mg/kg to 0,0623 mg/kg, and water, from 0,0015 mg/L to 0,0023 mg/L. Cadmium levels in water exceeded the quality standard according to Government Regulation of the Republic of Indonesia Number 22 of 2021, which sets a maximum limit of 0,001 mg/L for aquatic life. Cadmium levels in sediment were below the *ANZECC and ARMCANZ* (2000) limit of 1,5 mg/kg, while *Meretrix* sp. remained within safe consumption limits according to SNI 1 mg/kg and WHO 0,1 mg/kg. Linear regression analysis indicated a very high correlation between cadmium concentrations in water and *Meretrix* sp., 94,62%, and between sediment and *Meretrix* sp., 87,85%. Regular water quality monitoring and mitigation measures are necessary to prevent long-term cadmium accumulation, considering that cadmium levels in water have exceeded the standard even though sediment and *Meretrix* sp. remain within safe limits, ensuring that fisheries in the area remain sustainable.

**Keywords:** Cadmium (Cd), Heavy Metal, *Meretrix* sp., Water Pollution, Pangeranan Waters