

**CONCENTRATION AND DISTRIBUTION OF HEAVY METALS  
MERCURY (Hg) AND LEAD (Pb) RESULTING FROM TRADITIONAL  
GOLD MINING IN THE WATER OF THE PLAMPANG RIVER,  
KAPANEWON KOKAP, KULON PROGO REGENCY**

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**ABSTRACT**

Traditional gold mining around the Plampang River, Kapanewon Kokap, Kulon Progo Regency, employs the amalgamation method involving mercury (Hg) in the gold separation process. This activity generates heavy metal waste in the form of mercury (Hg) and lead (Pb), which potentially pollutes the environment, particularly the river water. This study aims to determine the concentration and distribution of mercury and lead in the water of the Plampang River. The method used is a survey method, with monitoring station points determined purposively. Water sampling refers to SNI 8995:2021, while surface sediment sampling follows the U.S. EPA 2001 standard. Observed parameters in water samples include temperature, pH, total suspended solids (TSS), dissolved oxygen (DO), mercury (Hg), and lead (Pb), while sediment parameters include pH, cation exchange capacity (CEC), and organic carbon (C-organic). Data analysis was conducted by comparing the physical-chemical properties of water and surface sediments with river water quality standards based on Government Regulation No. 22 of 2021. Laboratory analysis results showed that the concentrations of mercury and lead were below the detection limits of the instrument, which are  $<0.07 \mu\text{g/L}$  for mercury and  $<0.0058 \text{ mg/L}$  for lead. The distribution of mercury and lead at all monitoring points remained below the Class II quality standard thresholds, namely  $0.002 \text{ mg/L}$  for mercury and  $0.03 \text{ mg/L}$  for lead.

**Keywords: Traditional Gold Mining, Amalgamation, Mercury, Lead**