

**KAJIAN MAKROZOOBENTOS DAN KUALITAS AIR SEBAGAI INDIKATOR
PENCEMARAN LINGKUNGAN PADA SUNGAI OPAK AKIBAT BUANGAN
AIR LINDI TPST PIYUNGAN KABUPATEN BANTUL
DAERAH ISTIMEWA YOGYAKARTA**

INTISARI

Air lindi yang dialirkan dari TPST Piyungan ke Sungai Opak merupakan limbah yang mengandung konsentrasi zat organik dan anorganik yang berbahaya. Hal tersebut yang akan berpengaruh pada perubahan penurunan kualitas air Sungai Opak dan dapat menyebabkan terjadinya pencemaran perairan. Makadari itu, penelitian ini bertujuan untuk: (1) mengetahui struktur komunitas makrozoobentos di Sungai Opak, (2) menganalisis dan mengkaji tingkat kualitas air lindi dan kualitas air Sungai Opak dengan penentuan status baku mutu air, (3) serta merumuskan strategi pengelolaan lingkungan pada pencemaran air di Sungai Opak akibat aktivitas buangan air lindi TPST Piyungan. Penelitian dilakukan pada transek I (lokasi sebelum tempuran limbah lindi TPST Piyungan ke Sungai Opak), transek II (lokasi tempuran limbah lindi TPST Piyungan ke Sungai Opak), serta transek III dan IV (lokasi setelah tempuran limbah lindi TPST Piyungan ke Sungai Opak). Penelitian ini juga dilakukan di daerah hulu, untuk membuktikan bahwa telah terjadi pencemaran air di segmen Sungai Opak akibat buangan air lindi TPST Piyungan.

Metode yang digunakan dalam penelitian ini, yaitu metode observasi. Metode pemilihan objek kajian melalui teknik *purposive sampling*. Data disajikan secara kuantitatif dan kualitatif, yang dianalisis secara deskriptif. Data dalam penelitian ini mencakup komponen biotik, yaitu kepadatan relatif (KR), indeks keanekaragaman jenis (H'), indeks keseragaman (E), indeks dominansi (D), serta kelimpahan (K) makrozoobentos. Komponen abiotik, yaitu sifat fisik yang terdiri dari suhu, TDS, dan TSS serta sifat kimia yang terdiri dari pH, DO, BOD, COD, kadmium, nitrat, dan nitrit. Komponen kultural, yaitu terkait persepsi masyarakat dan strategi pengelolaan lingkungan.

Transek I memiliki nilai $H' = 2,157$; $E = 0,733$; $D = 0,242$; dan $K = 31,333$ ind/m²; makrozoobentos dengan KR terbanyak, yaitu *Corbicula javanica*, dan status kualitas perairan sudah tercemar ringan. Transek II memiliki nilai $H' = 0,71$; $E = 0,241$; $D = 0,278$; dan $K = 0,667$ ind/m²; makrozoobentos dengan KR terbanyak, yaitu *Tarebia* sp.(2) serta *Elongaria orientalis*, dan status kualitas perairan sudah tercemar sedang. Transek III memiliki nilai $H' = 0,98$; $E = 0,333$; $D = 0,084$; dan $K = 1,667$ ind/m²; makrozoobentos dengan KR terbanyak, yaitu *Cipangopaludina chinensis*, *Tarebia* sp.(2), serta *Corbicula javanica*, dan status kualitas perairan sudah tercemar sedang. Transek IV memiliki nilai $H' = 1,291$; $E = 0,438$; $D = 0,507$; dan $K = 8,556$ ind/m²; makrozoobentos dengan KR terbanyak, yaitu *Corbicula javanica*, dan status kualitas perairan sudah tercemar ringan. Hasil analisis persepsi masyarakat menyebutkan bahwa telah terjadi pergeseran fungsi Sungai Opak sejak adanya aktivitas pembuangan air lindi TPST Piyungan, sehingga diperlukan strategi pengelolaan lingkungan yang tepat dengan melibatkan seluruh masyarakat Yogyakarta, perangkat desa terkait, serta seluruh instansi pemerintahan daerah dan provinsi.

Kata Kunci : air lindi, bioindikator, kualitas air sungai, makrozoobentos

**MACROZOOBENTHOS AND WATER QUALITY STUDIES
AS INDICATORS OF ENVIRONMENTAL POLLUTION IN THE OPAK RIVER
DUE TO LEACHATE WATER DISPOSAL OF THE TPST PIYUNGAN
BANTUL DISTRICT SPECIAL REGION OF YOGYAKARTA**

ABSTRACT

The leachate that flows from the TPST Piyungan to the Opak River is waste that contains dangerous concentrations of organic and inorganic substances. This will affect changes in the water quality of the Opak River and can cause water pollution. Therefore, this research aims to: (1) determine the structure of the macrozoobentos community in the Opak River; (2) analyze and assess the level of leachate water quality and the water quality of the Opak River by determining the status of water quality standards; and (3) formulate environmental management strategies for water pollution in the Opak River due to the leachate activity of the TPST Piyungan. The research was conducted in transect I (the location before the TPST Piyungan's leachate dump into the Opak River), transect II (the location before the TPST Piyungan's leachate dump into the Opak River), as well as transects III and IV (locations after the flow of TPST Piyungan's leachate waste to the Opak River). This research was also conducted in the upstream area, to prove that water pollution has occurred in the Opak River segment due to leachate discharge from the TPST Piyungan.

The method used in this research is the observation method. The method for selecting study objects is through the purposive sampling technique. The data are presented quantitatively and qualitatively, which is analyzed descriptively. The data in this study includes biotic components, namely relative density, the diversity index (H'), uniformity index (E), dominance index (D), and macrozoobentos abundance. Abiotic components are physical properties consisting of temperature, TDS, and TSS. Chemical properties are consisting of pH, DO, BOD, COD, cadmium, nitrate, and nitrite. The cultural component is related to community perceptions and environmental management strategies.

Transect I, has a value of $H' = 2.157$; $E = 0.733$; $D = 0.242$; and $K = 31.333$ ind/m²; the macrozoobentos with the most abundance is *Corbicula javanica*, and the water quality status is slightly polluted. Transect II has a value of $H' = 0.71$; $E = 0.241$; $D = 0.278$; and $K = 0.667$ ind/m²; the macrozoobentos with the most abundance are *Tarebia* sp.(2) and *Elongaria orientalis*. The water quality status is fairly polluted. Transect III has a value of $H' = 0.98$; $E = 0.333$; $D = 0.084$; and $K = 1.667$ ind/m²; the macrozoobentos with the most abundance are *Cipangopaludina chinensis*, *Tarebia* sp.(2), and *Corbicula javanica*. The water quality status is fairly polluted. Transect IV has a value of $H' = 1.291$; $E = 0.438$; $D = 0.507$; and $K = 8.556$ ind/m²; the macrozoobentos with the most abundance is *Corbicula javanica*, and the water quality status is slightly polluted. The results of the analysis of community perceptions that there has been a shift in the function of the Opak River since the TPST Piyungan's leachate disposal activity, so an appropriate environmental management strategy is needed involving all Yogyakarta residents, related village officials, as well as all regional and provincial government agencies.

Keywords : leachate, bioindicator, river water quality, macrozoobentos