ANALYSIS OF SOIL QUALITY INDEX IN AGRICULTURAL LAND AROUND THE TPST PIYUNGAN AREA, BANTUL REGENCY

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ABSTRACT

The Integrated Waste Processing Site (TPST) Piyungan in Bantul Regency, Special Region of Yogyakarta, had been operated for 28 years since 1996 and was permanently closed in 2024 due to overcapacity. This TPST had produced leachate containing organic and inorganic compounds and was potentially contaminating the surrounding agricultural land. This study analyzed the physical and chemical properties of the soil, calculated the Soil Quality Index (SQI), and evaluated the differences in soil quality based on the distance from TPST Piyungan. The research was conducted in the paddy field area of Sitimulyo Village using a survey method and purposive sampling technique. Soil samples were taken from three points, namely at a distance of 300 meters, 600 meters, and 900 meters from the TPST. The results showed that the SQI values were classified as good. The lowest SQI value was obtained at the location closest to the TPST, which was 0.657 (300 meters), followed by 0.673 (600 m) and 0.753 (900 m). The lower SQI value at the nearest point indicated signs of soil contamination, as it had higher bulk density, lower porosity and rooting depth, and lower nutrient availability such as phosphorus and nitrate compared to the more distant points. The existence of the TPST had affected the quality of surrounding agricultural soils, especially those located closer.

***Keywords**: Leachate, Soil Quality Index, soil quality, TPST Piyungan,*