KAJIAN KERENTANAN DAN STATUS MUTU AIRTANAH SERTA AIR SUNGAI AKIBAT INDUSTRI TEPUNG PATI AREN DAN MIE SOUN DI KECAMATAN TULUNG, KABUPATEN KLATEN, PROVINSI JAWA TENGAH

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INTISARI

Peningkatan jumlah penduduk mengakibatkan meningkatnya jumlah produksi industri dan meningkatnya kebutuhan air bersih, namun peningkatan tersebut juga mengakibatkan menurunnya kualitas air. Berdasarkan data spasial yang didapatkan dari DPUPR Kabupaten Klaten dan survey lapangan didapatkan bahwa kondisi air bersih sebagian desa di Kecamatan Tulung, Kabupaten Klaten berbau. Terdapat industri tepung pati aren dan mie soun yang saling terkait di daerah penelitian. Industri tersebut berdiri sejak tahun 1960 menghasilkan limbah cair. Tidak adanya upaya pengolahan air limbah mengakibatkan limbah cair langsung dibuang dengan cara limbah dialirkan ke lahan pertanian dan sungai melalui saluran drainase sehingga dapat berpotensi untuk menurunkan kualitas air.

Penurunan kualitas air tanah dan air sungai dapat dipengaruhi oleh faktor alami yaitu kondisi geofisik dan faktor non alami yaitu kegiatan manusia. Indikasi pencemaran ditandai dengan sebagian air sumur tidak dapat di konsumsi, air sungai celengan berbau dan berwarna keruh dapat disebabkan karena tingkat kerentanan air yang rendah. Penelitian ini bertujuan untuk menganalisis tingkat kerentanan dan status mutu airtanah dan air sungai serta merencanakan arahan pengelolaan air limbah di daerah penelitian. Penelitian dilakukan dengan menggunakan metode kualitatif dan kuantitatif. Tingkat kerentanan airtanah dianalisis menggunakan metode DRASTIC dan tingkat kerentanan air sungai menggunakan metode PCSM (*point count system model*). Status mutu air menggunakan metode Indeks Pencemaran (IP), pengambilan sampel dilakukan dengan metode duplo secara *purposive sampling* yang didasari dari arah aliran air dan tingkat kerentanan air. Pengujian kualitas air menggunakan parameter BOD, COD, TSS, suhu, pH dan *total coliform*.

Berdasarkan hasil penelitian diperoleh tingkat kerentanan airtanah sedang dan tingkat kerentanan tinggi. Tingkat kerentanan air sungai agak rentan dan cukup rentan. Status mutu airtanah diseluruh titik pengambilan sampel memiliki klasifikasi mutu air tercemar ringan dengan nilai IP titik pengamatan (LP) 7 sebesar 3,8537, Lp 17 sebesar 3,5556, Lp 31 sebesar 3,6112 dan Lp 35 sebesar 3,1824. Status mutu air sungai memiliki klasifikasi mutu air tercemar berat dengan indeks pencemaran Lp 6 sebesar 17,2547, Lp 15 sebesar 17,7470, Lp 32 sebesar 12,3554. Arahan pengolahan limbah dengan pendekatan teknologi yaitu dengan menggunakan unit pengolahan bak ekualisasi, bak netralisasi, bak sedimentasi, biofilter hibrid anaerob dan biofilter aerob.

Kata Kunci : Kerentanan, DRASTIC, PCSM, Status Mutu, Tepung Pati Aren, Mie Soun

VULNERABILITY ASSESSMENT AND QUALITY STATUS OF GROUNDWATER AND RIVER WATER DUE TO THE PALM STARCH AND SOUN NOODLE INDUSTRIES IN TULUNG DISTRICT, KLATEN REGENCY, CENTRAL JAVA PROVINCE

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ABSTRACT

The increase in population has resulted in an increase industrial production and an increase in the need for clean water, but the increase has also resulted in a decrease in water quality. Based on spatial data obtained from the Klaten Regency DPUPR and field surveys, it was found that clean water conditions in some villages in Tulung District, Klaten Regency smelled. There are interrelated palm starch and soun noodle industries in the research area. The industry was founded in 1960 to produce liquid waste. The absence of wastewater treatment efforts results in liquid waste being directly disposed of by means of waste flowed into agricultural land and rivers through drainage channels so that it can have the potential to reduce water quality.

The decline in the quality of groundwater and river water can be influenced by natural factors, namely geophysical conditions and non-natural factors, namely human activities. Indications of pollution are characterized by a part of the groundwater cannot be consumed, the celengan river water smells and has a turbid colors, it can be caused due to the low level of water vulnerability. This study aims to analyze the level of vulnerability and quality status of groundwater and river water and plan wastewater management directions in the research area. The research was conducted using qualitative and quantitative methods. The level of groundwater vulnerability was analyzed using the DRASTIC method and the level of vulnerability of river water using the PCSM (point count system model) method. Water quality status using the Pollution Index (IP) method, sampling is carried out using the duplo method by purposive sampling which is based on the direction of water flow and the level of water vulnerability. Water quality testing using BOD, COD, TSS, temperature, pH and total coliform parameters.

Based on the results of the study obtained a moderate level of groundwater vulnerability and a high degree of vulnerability. The level of vulnerability of river water is rather vulnerable and quite vulnerable. The status of groundwater quality at all sampling points has a classification of lightly polluted water quality with an observation point 7 of 3.8537, observation point 17 of 3.5556, observation point 31 of 3.6112 and observation point 35 of 3.1824. The water quality status of the river has a classification of heavily polluted water quality with a pollution index of observation point 6 of 17.2547, observation point 15 of 17.7470, observation point 32 of 12.3554. The direction of waste treatment with a technological approach is to use equalization tub treatment units, neutralization tanks, sedimentation tanks, anaerobic hybrid biofilters and aerobic biofilters.

Keywords : Vulnerability, DRASTIC, PCSM, Water Quality Status, Palm Starch Flour, Soun Noodles