

PENGENDALIAN PENCEMARAN AIR SUNGAI DAN AIRTANAH AKIBAT PEMBUANGAN LIMBAH CAIR INDUSTRI TAHU DI DESA SOMOPURO, KECAMATAN JOGONALAN, KABUPATEN KLATEN, JAWA TENGAH

Oleh:
Sheila Ayu Anggreini
114160048

INTISARI

Desa somopuro, Kecamatan Jogonalan, Kabupaten Klaten, Jawa Tengah merupakan salah satu desa yang memiliki industri tahu berskala rumah tangga, namun hingga saat ini belum terdapat upaya dalam mengelola limbah cair industrinya. Limbah cair industri tahu selalu dibuang pada selokan tanpa dilakukan pengolahan. Air selokan yang dijadikan sebagai tempat pembuangan limbah cair industri tahu selanjutnya mengalir menuju sungai yang difungsikan sebagai irigasi. Tujuan penelitian ini adalah mengidentifikasi karakteristik limbah cair, air sungai, dan airtanah di lokasi penelitian, mengetahui tingkat kerentanan air permukaan dan airtanah serta kesesuaian zonasi kerentanan dengan kualitas airnya, dan merekomendasikan arahan pengendalian pencemaran.

Metode yang digunakan dalam penelitian ini adalah survey dan pemetaan, uji laboratorium dan metode matematis. Survey dan pemetaan adalah teknik untuk memvisualisasikan data primer atau sekunder yang telah didapatkan. Metode matematis berupa skoring DRASTIC dan PCSM dengan software Arcgis untuk melakukan *overlay* setiap parameter kerentanan serta perhitungan indeks pencemaran dengan 4 - 5 parameter uji kualitas air. Uji laboratorium dilakukan pada air limbah, airtanah dan air sungai dengan teknik sampling *purposive sampling* serta dianalisis deskriptif.

Hasil penelitian menunjukkan kualitas air limbah cair industri tahu memiliki parameter BOD, COD, TSS, dan pH yang tidak sesuai baku mutu. Kualitas sungai memiliki nilai indeks pencemaran 0,7444 - 2,7162 yang termasuk kategori tidak tercemar dan tercemar ringan, sedangkan airtanah memiliki nilai indeks pencemaran sebesar 0,74 – 1,5747 yang termasuk kategori tidak tercemar dan tercemar ringan. Tingkat kerentanan air sungai terbagi menjadi 2 kelas, yaitu kerentanan cukup rentan seluas 17 Ha (65,3846%) dan kerentanan sangat rentan seluas 9 Ha (34,6154%). Validasi terdapat 66,67% kesesuaian dan 33,33% ketidaksesuaian antara zonasi kerentanan air permukaan dengan kualitas Sungai Panggang. Sedangkan tingkat kerentanan airtanah terbagi menjadi 2 kelas yaitu kerentanan tinggi seluas 148 Ha (69,8113%) dan kerentanan sangat tinggi 64 Ha (30,1887%). Validasi terdapat 33,33% kesesuaian dan 66,67% ketidaksesuaian antara zonasi kerentanan airtanah dengan kualitas airtanah. Arahan pengendalian pencemaran berfokus untuk mengolah sumber limbah melalui perancangan IPAL komunal dengan sistem biofilter anaerob – aerob.

Kata kunci: Air sungai, Airtanah, Biofilter anaerob – aerob, Industri Tahu, Kerentanan.

**CONTROL OF SURFACE WATER AND GROUNDWATER POLLUTION
DUE TO THE DISPOSAL OF TOFU INDUSTRIAL WASTEWATER IN
SOMOPURO VILLAGE , JOGONALAN DISTRICT, KLATEN REGENCY,
CENTRAL JAVA**

By:
Sheila Ayu Anggreini
114160048

ABSTRACT

Somopuro Village, Jogonalan District, Klaten Regency, Central Java is one of the villages that has a household scale tofu Industry, but until now there has been no effort to manage its wastewater. The wastewater is always disposed in sewers without prior treatment. The sewers which is used as a place for wastewater disposal then flows into a surface water which functions as an irrigation river. The purpose of this study were to identify the characteristics of wastewater, surface water, and groundwater, to determine the level of vulnerability of surface water and groundwater as well as the compability of vulnerability zoning with water quality and to recommend directions for pollution control.

The method used in this research are survey and mapping, laboratory test, and mathematial method. Survey and mapping are technique to visualized data which has been acquired from primary or secondary data. Mathematical method are used in the form of DRASTIC and PCSM scoring with Arcgis software to *overlay* each parameter of vulnerability as well as the calculation of polution index with 4 - 5 quality test parameters water quality. There are also laboratory test for wastewater, groundwater and surface water using purposive sampling technique and descriptive analysis.

The results showed that the quality of tofu wastewater had parameters BOD, COD, TSS and pH that exceeded the quality standard. Surface water has a pollution index value of 0,744 – 2,7162 which is categorized as non-polluted and lightly polluted whereas groundwater has pollution index value of 0,74 – 1,5747 which is categorized as non-polluted and lightly polluted. The level of surface vulnerability is divided into 2 classes, namely quite vulnerable covering an area of 17 Ha (63,3846%) and very vulnerable covering an area of 9 Ha (34,6154%). Validation contain 66,67% compatibility and 33,33% incompatibility between surface water vulnerability and surface water quality of Panggang River. Whereas the level of groundwater vulnerability is divided into 2 classes, namely high vulnerable covering an area of 148 Ha (69,8113%) and very high vulnerable covering an area of 64 Ha (30,1887%). Validation contain 33,33% compatibility and 66,67% incompatibility between groundwater vulnerability and groundwater quality. Pollution control directives focus on treating waste sources through the design of communal WWTPs with an anaerobic - aerobic biofilter system

Keywords: Surface Water, Groundwater, Anaerobic - aerobic, Tofu Industrial, Vulnerability.