

ABSTRACT

Coal Acid Mine Water Treatment Using Passive Treatment Method “Constructed Wetland” at PT. Indominco Mandiri, East Kutai Regency, East Borneo

Research activities carried out at *Settling Pond 36*, East Block of PT. Indominco Mandiri concession, East Kutai Regency, East Borneo. Coal mining activities at PT. Indominco Mandiri using open-pit mining system, with the backfilling method. One of the negative impacts that arising from coal mining activities at PT. Indominco Mandiri is the problem about coal acid mine water. The purpose of this study is to determine the water quality and the water treatment efficiency derived from “*Constructed Wetland*” (*CW*) Method.

One of the alternative solution that can be used to solving this problem is the treatment that called *CW* Method. Survey method, eksperimental method, laboratory test method, and mathematical methods are the methods that used in this research. In this study, *CW* was made into laboratory scale, with the size of the reactor is 110 cm x 100 cm x 80 cm. As for media materials, limestone, soil, organic and “*Eleocharis dulcis*” plants are used in this research. As for comparison, in media *CW* 1 not used plants, and *CW* 2 used “*Eleocharis dulcis*” plants. With that would know treatment efficiency produced by *CW* 1 and *CW* 2 every parameter that used. pH, Fe, Mn, and TSS are parameter that used with reference to the Minister of Environment Decree Number 113 Year 2003 about Enterprise Waste Water Quality Standard and or Coal Mining Activities and East Borneo Province Regulation Number 02 Year 2011 on Water Quality Management and Control of Water Pollution.

Based on the results of the research showed that the outcomed water from *CW* 1 and *CW* 2 method laboratory scale is appropriate with enterprise waste water quality standard and or coal mining activities. The average pH value of the water on the *CW* 1 dan *CW* 2 are 6.82, and 6.91 with efficiency of 54.70 %, and 55.24 %. The content of iron (Fe) on the *CW* 1 dan *CW* 2 decreased about 97.97 %, and 98.68 % to 0.07 mg/l, and 0.05 mg/l. While decreased efficiency of the manganese (Mn) content in *CW* 1 and *CW* 2 is about 62.17 %, and 95.93 % to 0.98 mg/l, and 0.12 mg/l. For the best TSS removal efficiency on the *CW* 1 and *CW* 2 is 3.70 % to 26 mg/l.

Keyword : Treatment, Coal Acid Mine Water, *Constructed Wetland*