IMPLEMENTATION OF AN INTEGRATED POLLUTION CONTROL STRATEGY: A CASE STUDY OF MUNCAR FISH PROCESSING AREA

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ABSTRACT

Muncar is one of a few major fish processing complex, which contributes significantly to the local as well as national economic development since most of the products is export oriented. Majority of industry is characterized by the use of a relatively old type of machinery and facility and of improper waste control and management. The fish processing as well as its related economic activity has now caused a serious environmental problem especially nuisance and water/coastal pollution. The important environmental aspects identified include high process water consumption, less efficient use of energy and materials, and minimum implementation of industrial waste control and management. In order to contribute to the government in establishing the framework of environmental management program in the area and in particular to assist the industry in improving its production and environmental performance, an integrated industrial pollution control strategy is proposed. The strategy consists of input as well as output pollution control measures based on a comprehensive and reliable data of existing environmental performance. The ultimate goal is to sustain and balance the environmental functions, namely economical, social and ecological functions. The overall strategy exhibits a multi-year program implementation and involving many relevant government institutions and industries. This paper describes the proposed strategy, which is now adopted by the government as a pollution control program of Muncar for the year 2007-2012. At this present stage, the work focuses on potential implementation of input pollution control measures using cleaner production approach, such as waste prevention, reduction, reuse and recycle and their benefits to industry and environment.

***Keywords**: cleaner production, fish processing, pollution control program, waste control and management.*

INTRODUCTION

Muncar so far gave considerable economic contribution to the region as well as national particularly in absorbing employment (industry, fishermen, transportation services, and other economic activities), generating devisa, and tax. In 2006 it was recorded some 72 large scale and 96 small scale industries in the area, consisting of canning, cold storage, fish meal, fish oil, salted fish, "pindang", and fermented fish sauce (Figure 1). The business value of the region is estimated to be around 600 billion rupiah (value of raw materials) or almost 2000 billion rupiah (value of products) annually.

Despite of the economic benefit, the industrial activity in Muncar also leads to environmental drawbacks. Some problems are identified during this study. Good manufacturing practices have not been implemented by majority of processing industry. Effluent of fish processing activities is leaving the plant without treatment. As a result, the environment is heavily polluted. The situation occurs partly due also to lack of counselling, technical assistance and law enforcement by the government, unavailability of master plan of the egion, and lack of proper infrastructure (management of fishing port, road and drainage, and transportation facility). Due to the poor pollution control the water resources in this area are being depleted and contaminated at alarming rates. Tables 1 and 2 show the water characteristics of the receiving water bodies in Muncar, collected during an industrial survey in 2007 by the State Ministry for Environment (KLH). The tables are intended to describe the general information about the level of pollution in the sampled location. The interrelation among parameters can not here be analysed because of the limited data available. The Storet method for calculating the pollution index (Kepmen LH. No. 115/2003) is not here applicable because the data presented in the tables are based on grab-samples. Some parameters, such as total suspended solid, BOD_5 and COD, are far out of the quality standard of water body according to PP No. 82/2001 about Water Quality Management and Water Pollution Control or KepMen LH No. 51/2004 about Sea Water Quality. The river water and coastal water pollution are most probably as result of the industrial wastewater discharge without proper treatments.

The more important pollutant is industrial wastewater as compared to solid waste and gas emission. Bad odor is resulted from biological decomposition of organics in the drainage systems. The effluent is mainly generated from process water (washing, cleaning, pressed liquid, and residual water) that contains dissolved organics dissolved and suspended solids, nutrient and fat. Activity of small-