‘TOWARDS ZERO DISCHARGE’ : AN OVERVIEW OF WASTE MANAGEMENT FOR THE RUBBER INDUSTRY IN MALAYSIA

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ABSTRACT

The rubber industries in Malaysia can be divided into three main sectors: plantation, raw rubber processing and rubber product manufacturing. In each of these sectors, a significant amount of wastes are generated. Over the years, many waste minimization and resource recovery activities have been introduced in each sector and in some cases significant savings and/or income are realized. In this paper a general overview of the types of waste generated in each sector and the related activities that may culminate towards achieving zero discharge status for the integrated rubber industries are evaluated and reviewed.

1. Introduction to the Malaysian rubber industry

The rubber industry in Malaysia can trace its beginning to the early 1900 and has contributed greatly to the economic and social development of the country. The industry generated 13 billion ringgit(RM) GNP in 2001. The main types of rubber product, their respective characteristics and applications are shown in Table 1.1

2. Waste generation in the rubber industry

The rubber industry can be conveniently divided into three main sectors: upstream (plantation), midstream (raw rubber processing) and downstream (rubber product manufacturing). A significant amount of waste is generated by each sector as shown in Table 1.2. In upstream activities, solid wastes in the form of unwanted/old trees or parts of trees are the main wastes produced. In the past burning has been the normal practice to dispose of these wastes.

Midstream activities involve cup lump and block rubber processing and latex concentrate production. In these activities, the main form of waste comes from high water usage and release of substances that contribute to high BOD content. Malodor is also a major problem due to the release of volatile fatty acids during the drying process.

In the downstream activities the wastes produced are dependent on the type of product manufactured. In the case of glove manufacturing, solid sludge containing high levels of zinc is one of the main problems plaguing the glove industry.