CHAPTER 1

INTRODUCTION

1.1 Background of Study

Water is an essential solvent that has been used for daily activities for millenniums. Water is an important aspect of life not only for human but also other living things. Water quality is the measurement of the suitability of a water source according to the water condition to be used for certain activities such as for personal consumption, industrial uses and also recreational activities. There are two standards that classify the water quality in Malaysia which is National Water Quality Standards for Malaysia and DOE Water Quality Index Classification. There are three types of water quality parameter namely physical, chemical and biological parameter. Parameters such as dissolve oxygen(DO), biochemical oxygen demand(BOD), chemical oxygen demand(COD), total suspended solid(TSS), suspended solid(SS), Ammonical nitrogen(AN), turbidity, heavy metal, total coliform and temperature are essential in classifying water quality.

Human activities, such as domestic activities, industrial activities and recreational activities are the main concern when dealing with water quality. The industrialization in Malaysia increases the need for factories to be built. With lax in enforcement and preventative effort by authority, most rivers in Malaysia are affected by chemical,
biological and physical waste. Low exposure to environmental issues saw an increase in physical waste being dump into rivers during recreational activities.

According to the Environmental Quality Report 2014, 48% of rivers in Malaysia were polluted which was higher than the previous year. Clean rivers are essential as 97% of our water supply come from rivers and lake. The trend from the report shows the decrease in total number of clean rivers. More of our river systems are being contaminated by agriculture activities and industrial effluents, which are some of the source of pollution to river. Residential area also contributed to river pollution but most of the pollution comes from rural area where there is no centralize waste management system implemented.

Sungai Balok is one of the rivers in Pahang located in Gebeng. Along this river, there are residential and industrial areas. The vicinity of this river to the local industrial area had impacted the river severely. The physical changes to the river such as colouration and smell are a sign of the severity of the pollution in Sungai Balok.

This research is prepared to study on water pollution due to industrial activities and Water Quality Index (WQI) especially in Sungai Balok, Pahang. Water Quality Index (WQI) is a water pollution indicator that used to determine the physic-chemical parameters of surface water.

1.2 Problem Statement

Due to the worldwide concern that good quality freshwater may become a scarce resource in the near future, developing countries and countries with transition economies have increased their interest in water quality monitoring programs during the past decades (Pesce and Wunderlin, 2000). Water consumption for agriculture, industry and domestic activities are essential but the effect of these activities cause river system to become polluted by the after effects of the activities. The demand of clean water is ever increasing due to population growth in Malaysia. River as one of the main source of clean water needed to be classified for specific use and purpose. The quality of water is classified in
term of physical, biological and chemical parameters. There is a level of heterogeneous in
temporal and spatial variation of river characterization. Therefore, there is problem in
finding out the water quality of a river. Pinpointing the source of river pollution is
necessary to effectively curb pollutant from being dump into the river to minimize the
chance of pollution from happening again.

Anthropogenic activities have been one of the causes for the damage to watershed
system. Anthropogenic activities such as mining, artificial construction, tourism and hot-
spring exploitation lead to the degradation of the environment. Pesticides can be introduced
into aquatic environments through intentional application, aerial drift, run-off from
agricultural applications or run-off from accidental release in agriculture practices. The
impacts of the presence of pesticides derived from agricultural practices have generally
been associated with significant detrimental changes in the biological communities of
riverine environments. Municipal wastes mainly consist of human faeces and contain
relatively few chemical pollutants, yet they are notable for high concentration of pathogenic
organisms.

The physical, chemical and biological parameters of Sungai Balok needed to be
investigated because they area effecting the river water quality. Precipitation and rainfall
may dilute chemical waste for a period of time. However untreated waste such as heavy
metals from industrial sector is still a main concern for water quality. A constant and
thorough observation and investigation will helps identify the pattern of changes in Sungai
Balok water quality annually whether it is improving or reducing in quality level. This
information is essential to the characterization of Sungai Balok in the future.

1.3 Objectives

The objectives of the study are;

I. To evaluate the spatial variation of water quality in the Sungai Balok