CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Water is a well known essential element to human, animals, and many living things on Earth. Water plays important roles in living things and most abundant molecules on Earth’s surface that need to be study because of its speciality. One molecule of water contained two hydrogen atoms that covalently bonded to one oxygen atom that produce chemical formula of H₂O. It has many sources of water in the Earth. There are: surface water; water that came from rain or hail that usually collected in catchment, river or lakes; that usually be a community water supplies, springs; water that collected in the bottom of a hills or sloping. Water covers 71% of Earth’s surface and most friction of water percentage came from seas and oceans water. Only about 0.3% of water on Earth came from river and lakes.

However this small percentage of water sources may not be neglected their roles in human and living things life. Rivers also play important roles towards living things activities such as use as roads, recreational parks, some rivers produce electric power and also can be used as source of drinking water. One third of the drinking water is come from rivers, lakes and canals.

There is more than 150 rivers system in Malaysia that contributed to 97% of raw water supply source. Even there is a large amount of water, but it is still not enough to
ensure sufficient water supply for Malaysians. This is due to non-uniform temporal and spatial distribution of rainfall. Pollution is the biggest risk to our river. The river water quality obviously has the decline in the environmental health of a river basin. The sources of pollution come from residential, industrial sewerage and effluents from livestock farms, road construction and heavy metals from nearby factories. According to the Environmental Quality Report 2009, 46% river water of Malaysia was polluted which was higher than previous couple of years.

Pekan’s river is one of the most important rivers in Pahang state. Along this river, there is lot of human kind’s activities such as residential and industrial parks. Along the Pekan river, there are so many human activities that directly and indirectly affect the quality of the Pekan river.

This research is prepared to study on water pollution due to industrial activities and Water Quality Index (WQI) especially in Pekan river, 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

The quality of rivers water is depending on many factors such as its topography, land use, climate, geology and the biological process. However, there is also another possible factor such as human activities. Many factories built near the rivers to get the river water and used as machinery power or to cool down the machinery. However, there are so many rivers polluted due to industrial activities. The industrial may not properly manage their industrial liquid wastage and drained the wastage into the nearest river. This cause pollution to the rivers and effect their water quality index.

Pekan’s river has been chosen as study area in this research due to its fast development around the Pekan area. Many people live around this river and this cause impairment of water quality in this river. People involve directly and indirectly to this river. Hence, this river is very important to the nearest community.
The industrial accidentally discharged the chemical waste product into the Pekan’s river. Usually, chemical waste product contained high pollutant substances such as mercury, copper, lead, zinc and cadmium that would cause pollution to the Pekan river water and may affect the living things around the ecology. These substances will increase the water temperature and decreasing the dissolved oxygen level in the Pekan’s river. Heavy metals will pose health effect to human beings and aquatic life. The underwater life that exposed to heavy metals pollutants will affect its reproduction rates and life spans.

Therefore, it is important to determine the pollution level and find the sources of pollution in order to recommend the solutions to this problem. The recommend solutions may be useful for river quality in future.

1.3 OBJECTIVES OF THE STUDY

The objectives of the study are as follow:

- To classify the water quality on the Sungai Pekan based on National Water Quality standard (NWQS) and Water Quality Index (WQI) Malaysia.
- To identify the sources of pollution for sustainable management in the Pekan river.

1.4 SCOPE OF STUDY

The scope of study area is Pekan river that is located in south of Kuantan, Pahang. Pekan’s river was chose due to fast development along the river by human kind activities. Pekan’s river has rapidly urban development and there is lot of sources of river pollution such as surface runoff, industrial activities, municipal waste and agricultural. The purpose of this study is to identify the sources of pollution for sustainable management in the Pekan river. Besides, this research also to classify the water quality based on Malaysian National Quality standard and Water Quality Index (WQI). The study parameters are Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Dissolved Oxygen (DO), Ammonia Nitrate, Sulphate ,