



FINAL YEAR PROJECT REPORT

**TITLE: STUDY ON TREATMENT OF
CONTAMINATED WATER USING BAMBOO
CHARCOAL AND KELOR TREE SEEDS**

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CHAPTER 1: INTRODUCTION

1.1 Introduction

In human life, water can be used for various activities and the most important is for eating and drinking purposes. When water is used for eating and drinking purposes, one of the most important aspects disease. Polluted and dirty water is the biggest health risk facing human beings in the world. Water supports all human, plant and animal life. We use it to produce food, manufacture goods and sustain health. Every living cell contains water: 65 per cent of your body is water and up to 90 per cent of plant tissue is water. Even seeds are 3 to 5 per cent water. Contaminated water and poor sanitation are linked to transmission of diseases such as cholera, diarrhoea, dysentery, hepatitis A, typhoid, and polio. Absent, inadequate, or inappropriately managed water and sanitation services expose individuals to preventable health risks. Other than that, poor water quality has its most direct impact on aquatic wildlife, particularly fish, bugs, and plants. Excess nutrients, sediment, road salt, and other contaminants can reduce the variety and hardiness of organisms living in the state's waters.



1.2 Problem Statement

- **SOIL EROSION THAT CAUSES RIVER WATER TO BE POLLUTED**

When soil erosion occurs, soil falling into the river will affect the river water and affect water quality. The effects of soil erosion go beyond the loss of fertile land. It has led to increased pollution and sedimentation in streams and rivers, clogging these waterways and causing declines in fish and other species. And degraded lands are also often less able to hold onto water, which can worsen flooding. For example, recently there have been major floods and landslides in Selangor. This has caused turbid river water and a very noticeable discoloration of the river water.



- **FACTORY WASTE CAUSES WATER POLLUTION BY MICROORGANISMS**

Waste that is not disposed of causes water to be contaminated by microorganisms such as bacteria, viruses, fungi, protozoa and parasites that can carry various diseases. In addition, this causes the river water to smell. So, by using bamboo charcoal, it can overcome the smelly river water.



- **RATE OF USE OF EXCESSIVE CHEMICALS IN THE WATER TREATMENT PROCESS AND ACHIEVING A CONCENTRATED PH**

The rate of consumption of many chemicals in the water treatment process will be dangerous to human life. In addition, chemicals from factories or from agricultural areas that flow into the river are also very bad to river life and ecosystems. So, by using moringa seeds and bamboo charcoal, we are able to overcome the problem of contaminated water with low cost and safe method.



1.3 Objectives of The Study

- To produce material for water treatment (turbidity)
- To study parameter water which is pH and turbidity test on river water using moringa seeds and bamboo charcoal.
- To study the effectiveness of moringa seeds and bamboo charcoal in water treatment.

1.4 Scope of The Study

This project was carried out in Sungai Klang, Sungai Rantau Panjang and Sungai Kuala Selangor. The samples will be tested at Politeknik Sultan Salahuddin Abdul Aziz Shah. The scope of the study will involve the water treatment process using bamboo charcoal and moringa seeds.

Parameters were tested based on data obtained from three polluted rivers. In addition, each material is tested through three water samples to analyze the clearness of the river water.

Next, conducting river water turbidity test can test the maximum level of water parameter specification and pH test can test the level of acidity and alkalinity of the river water where the pH is less than 7 acidic while the solution with pH more than 7 is alkaline. In addition, the main material of this project is to use bamboo charcoal, moringa seeds to purify water.

1.5 Importance of The Study

1. PERCENTAGE REDUCTION OF CHEMICAL CONSUMPTION

Use of bamboo charcoal in the process of cleaning and distribution of drinking water. Bamboo charcoal is a natural antibacterial and anticulating agent recommended ratio of consumption of bamboo charcoal and water is 1: 1. This water cleaning and distillation process only takes 4-5 hours before it can be used. Bamboo charcoal will release natural minerals into the water. Since many chemicals are used, so the use of bamboo charcoal and moringa seeds is safer. In fact, excessive use of chemicals will have a negative impact on consumers.

2. COLOR FADING AND ORGANIC POLLUTION

Materials such as bamboo charcoal can clean water in filtration systems for drinking water. It is not only as a water purifying material but also as an odor absorbing material but its role is more than that. There are some facts where charcoal is nutritional for the purpose of being a health product. Some research by some experts from Taiwan and Korea has been successful and able to explain that charcoal is able to release ultra infrared (ultra infrared ray).

1.6 Definition Of Terms/Definition of Operations

TREATMENT WATER

Water cleaning refers to some processes carried out to make water acceptable for certain end uses. This includes uses such as drinking water, industrial processes, medicine and many other uses. The goal of all water purification processes is to remove any contaminants contained in the water or reduce its level to make the water suitable for final use.



THE CONCEPT OF MORINGA SEEDS

Moringa seeds treat water has two stages, which act as both coagulant and antimicrobial agent (agent that kills or stop the organism). It is generally accepted that moringa seeds function as a coagulant because the substances are soluble in water which are positively charged, and bind negatively charged particles (silt, clay, bacteria, toxins, etc.) Which are displayed. These findings support recombined proteins that eliminate microorganisms through freezing and act directly as a Growth Inhibitors of Microorganisms. Although there is a lot of continuous research being carried out on the properties and characteristics of these moringa seeds, it is accepted that treatment with moringa solution will remove 90-99.9% of impurities in water.



BAMBOO CHARCOAL CONCEPT

Charcoal is a black residue consisting of impure carbon resulting from the removal of water and other volatile materials from animal and plant materials. This is because charcoal has a lot of carbon. When there are hydrogen atoms in the air, that is, the odor, carbon-hydrogen bond will be formed. Charcoal also has small pore that can catch small odor particles. The filtered water will definitely taste good and the fishy smell of the water will disappear.



1.7 Chapter Summary

Currently, the issue of factory waste disposal containing chemicals, is increasing to be a cause of river pollution. Overall in this chapter, such as the background of the study, statement of problem, objectives of the study, scope of the study and the significance of the study have been discussed to overcome the issue of river pollution through how to treat contaminated river water by using moringa seeds and bamboo charcoal.