

**UNIVERSITI TEKNOLOGI MARA**

**MANGANESE CONCENTRATION LEVEL IN  
MERLIMAU WATER TREATMENT PLANT,  
JASIN MELAKA**

**NOOR HABIBAH MADI**

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## ABSTRACT

### MANGANESE CONCENTRATION LEVEL IN MERLIMAU WATER TREATMENT PLANT, JASIN MALACCA

NOOR HABIBAH MADI

The high complain on dirty water is high at Jasin District at Malacca, and from the previous data, the Manganese concentration level in raw water sources is abundant for water sources treated at Merlimau water treatment plant. Kesang River has low pH, so it contains high amount of heavy metal. The rapid development and increasing on the housing sectors, agriculture, recreational and industrial sectors contributes to contamination of Kesang River as water source for Jasin District residential. Manganese if consumes overload can contributes to health effect such as neurological effect, tremor, lethargy, mental disturbance, increase muscle tone and ailment. This study was carried out to measure the manganese concentration level at Merlimau Water Treatment Plant and also analyzed the other selected parameter (chlorine residual, pH, turbidity, and ferum) in raw and treated water. The sampling location is at inlet and outlet of Merlimau Water Treatment Plant, which is the sampling size is 120, 60 of raw water and 60 of treated water. The samples was taken every day while dry weather for 60 days. The in situ and off situ analyzed was carried out to analyses the physical and chemical parameters by using HACH model equipment. From the result it shows that the there are violation on the manganese concentration in treated and raw water, with seven and 33 violation respectively, the sources of manganese at raw water sources come from the agriculture, industrial, housing and recreational sector at Jasin District. There are significance differences between manganese in treated and raw water with p value 0.00. The correlation exists between manganese concentration and selected parameter (pH, turbidity, ferum, and chlorine residue), means the manganese concentration was affluence by the other selected parameter in water, and there are no associations between the manganese concentrations and health effects and the hazard index shows value less than 1, so it means the potential chronic effects do not occur.

# CHAPTER 1

## 1.1 INTRODUCTION

According to the A. S. KOVO, 2007, water described as the world's most important natural resources and without it life cannot exist and all the industry can be paralyzed. Unlike many other resources, it has no substitute in many of its uses. Water plays an essential role in community development since a reliable supply is prerequisite to establishing a permanent settlement. There is a vast amount of water present in the earth and its surrounding atmosphere. About 7% of the earth's mass is made up of water. 97% of it is found as saline water in the ocean, about 2.3% in the polar caps and only 0.7% exist in fresh water lakes, rivers, aquifers and its atmosphere.

The quality of water depends on its physical, chemical, and biological characteristics. Water that has been used as drinking water should be chemically and bacteriologically safe for human consumption, other than that, drinking water should be able to be accepted from aesthetic criteria, free from obviously cloudy, taste, and unpleasant odour. As we know, by the rapid development of industrial medium in Malaysia and also other developing countries, this medium was really related with the sources for river contamination. The industrial operation will discharge their wastewater from their operation activity to the nearest river. This situation will finally affect the aquatic system and at the same time it will deteriorate the quality of river water (Haliza, 2007).

Water treatment plant is an important part in managing the water supply for consumers. The operation of water treatment must be carried out properly in a way to ensure that only safe and clean treated water will be supplied to the communities. The management of water that is supplied to communities is not only concerning the quantity of water demand, but also the quality of water provided free from any unhealthy substance that can cause human health problems. The capabilities of every water treatment plant in treat