

**INVESTIGATION OF WATER HARDNESS, HEAVY METALS AND TOTAL
COLIFORM BACTERIAL IN WATER COOLERS AT VARIOUS LOCATION IN
UiTM SHAH ALAM**

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ABSTRACT

INVESTIGATION OF WATER HARDNESS, HEAVY METALS AND TOTAL COLIFORM BACTERIAL IN WATER COOLERS AT VARIOUS LOCATION IN UiTM SHAH ALAM

The aim of this study was to investigate the presence of heavy metals and bacteria (Total Coliform) and also to determine the water hardness in water from water cooler devices at different location in UiTM Shah Alam. The water sample was analyzed in the lab to investigate the water hardness, concentration of heavy metals and the presence of bacteria that contains in the water. ICP-OES was used to determine the concentration of heavy metals, water hardness was obtained using IC and membrane filtration method was used to determine the presence of total coliform in the water sample. Results showed the water was considered soft based on the concentration of CaCO_3 is between 0-60 mg/l. Meanwhile, the presence of heavy metals was not detected and the total coliform is too small. So, it can be concluded that the water was safe to use for drinking.

CHAPTER 1

INTRODUCTION

1.1 Water

Water is a major part of living things in this world. In some organism, water consists up to 90 % of their water body weight. About, 60 % of the human body is water and also about 83 % of our blood is water, which helps to digest food, transport waste and control body temperature. Humans must replace 2.4 liters of water every day through drinking and from foods.

Water is also an essential source for human use in their daily lives. This usage can be divided into two categories. Firstly, it is for domestic uses such as drinking, preparing food, bathing, washing clothes and dishes, watering the plant and any use of water at homes. Secondly, water is also important for industrial uses because water is a unique liquid. Natural water has three forms that are in solid, liquid and gas.

Water is also a universal solvent for biochemical reactions. Therefore, it is an excellent solvent for ionic compounds and covalent compounds. In other words, it can dissolve any contaminants that not exceed the limit, most organisms and chemical that is harmful to all living things. So, water should not contain any chemical or organism that will bring harm to life. Pure water is never found in nature and it is increasingly rare to encounter a source of water that requires no treatment before being used for portable water supply.