

**MEASUREMENT OF GROSS ALPHA, GROSS BETA AND
DETERMINATION OF RADIUM-226 CONTENT IN VARIOUS TYPES OF
WATER SAMPLES**

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Abstract

The commonly determined physical properties of water are colour, residue (solids), odour, temperature, specific conductance, and turbidity. All of these properties either influence or reflect the chemistry of the water. Solids, for example, arise from chemical substances either suspended or dissolved in the water and are classified physically as total, filterable, non filterable, or volatile. This thesis was study about measurement of gross alpha/beta and determination Radium-226 that content in various types of water samples. There are seven water samples was collected which is drinking water, mineral water, home tap water, lab tap water in UiTM, rain water, lake section 7 and ex-mining lake water Kampung Gajah Perak. In my investigation water sample from ex-mining Lake Kampung Gajah Perak was the highest content Radium-226 and gross alpha/beta activity.

CHAPTER 1

INTRODUCTION

1.1 Background of study

Radium is a radioactive element that occurs naturally in very low concentrations (about one part per trillion) in the earth's crust. Radium in its pure form is a silvery-white heavy metal that oxidizes immediately upon exposure to air. Radium has a density about one-half that of lead and exists in nature mainly as Radium-226, although several additional isotopes are present. (Isotopes are different forms of an element that have the same number of protons in the nucleus but a different number of neutrons.) Radium was first discovered in 1898 by Marie and Pierre Curie, and it served as the basis for identifying the activity of various radionuclides. One curie of activity equals the rate of radioactive decay of one gram (g) of Radium-226. Of the 25 known isotopes of radium, only two – Radium-226 and Radium-228 – have half-lives greater than one year.

Radium-226 is a radioactive decay product in the Uranium-238 decay series and is the precursor of Radon-222. Radium-228 is a radioactive decay product in the Thorium-232 decay series. Both isotopes give rise to many additional short-lived radionuclides, resulting in a wide spectrum of alpha, beta and gamma radiations. Lead-210, which has a 22-year half-life, is included in the list of short-lived radionuclides associated with Radium-226 for completeness, as this isotope and its