

**NATURAL RADIONUCLIDE ASSESSMENT OF SOIL FROM TASIK
PAYA BUNGOR, GAMBANG.**

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**Final Year Project Report Submitted in
Partial Fulfillment of the Requirements for the
Degree of Bachelor of Science (Hons.) Physics
in the Faculty of Applied Sciences
Universiti Teknologi MARA**

JULY 2018

ABSTRACT

Natural Radionuclide Assessment of Soil from Tasik Paya Bungor, Gambang.

The environment is definitely exposed to radiation. There are many sources that contribute to the natural background; one of them is natural radionuclides. Radionuclides are including Uranium-238 (^{238}U), Thorium-232 (^{232}Th) and Potassium-40 (^{40}K) with an unstable nucleus. The concentration of naturally occurring radionuclides materials (NORM) in the surrounding may cause by human activities such as agricultures activities, fertilizers and fossil fuels combustion. The unexpected exposure to radionuclides usually will affect the living organisms including human health in long term effect. The study was done to know the concentration of naturally occurring radioactive material (NORM) in the soil aside from to find the radiological risk in Tasik Paya Bungor, Gambang. The sample was collected by using hand auger and then survey meter is used to obtain the absorbed dose rate of that place. The concentration of ^{238}U , ^{232}Th , ^{40}K were obtained by using EDXRF are 67.80 ± 11.87 Bq / kg, 149.74 ± 15.76 Bq / kg and 543.10 ± 16.34 Bq / kg respectively. The results obtained are higher than the concentrations of world limit for ^{238}U , ^{232}Th and ^{40}K which are 33 Bq kg^{-1} , 40 Bq kg^{-1} and 420 Bq kg^{-1} , respectively. For the radiological risk studied in Tasik Paya Bungor, Gambang area are based on the radium equivalent activity, absorbed dose rate, annual effective dose and external hazard index. The mean averages of the radiological risks are 323.76 Bq kg^{-1} , 151.44 nGy / yr, 0.186 mSv / yr and 0.874 H_{ex} respectively. The results obtained are averagely lower compared to the world limit for the radium equivalent activity, absorbed dose rate, annual effective dose and external hazard index which are 370 Bq kg^{-1} , 58 nGy / yr, 0.3 mSv / yr and 1 H_{ex} respectively. Finally, the isodose map was generated by using Surfer 15 software.

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