# A SIMPLE TECHNIQUE TO DISTINGUISH BETWEEN U AND TH BEARING MINERALS IN THE ENVIRONMENT

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Radon ($^{222}Rn$) and Thoron ($^{220}Rn$) emanating from minerals bearing Uranium and Thorium, respectively, are useful tracers in exploration of the two minerals. The use of track etch detectors in the detection of radon ($^{222}Rn$, $^{220}Rn$) is well known;[1] but the method suffers from the major disadvantage of being unable to distinguish between the two gases, hence the minerals.

In this project a technique to overcome this problem is developed by utilizing the large difference in the halflives (3.8 days and 55 seconds) and the consequent difference in the diffusion lengths of the two gases. Suitability of water and polythene as diffusion media was investigated using minerals containing different U : Th ratios. The amount of diffusion was assessed by measuring the activity concentration of the diffused gas using CR 39, track etch detectors.

It was observed that a few cm. of water and a few layers of thin polythene can be used effectively to stop thoron completely while allowing radon to pass with very little diminution.

This provides us with a very simple and inexpensive technique to discriminate a thorium bearing mineral against a uranium.

References:

Khan, H.A. and Ahmad, I., (1981) Nucl. Instr. and Meth. 185:401-405.