

# Radon, Thoron Gas Concentration and Level Living in Ban Gie Monazite Mineral Sand Mine Area, Quy Hop District, Nghe An Province, Vietnam

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- Nguyen Van Dung (1) Email author (nguyenvandung@humg.edu.vn)
- Vu Thi Lan Anh (1)

1. Faculty of Environmental, Hanoi University of Mining and Geology, , Hanoi, Vietnam

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## Abstract

Radon and thoron are inert gases which do not participate in any chemical complexes. The radioactive danger of radon-222 ( $^{222}\text{Rn}$ ) is very high, compared to thoron ( $^{222}\text{Rn}$ ) and radon-219 ( $^{219}\text{Rn}$ ), due to the long half-life of 3.8 days as compared to 55 and 4 s, respectively. As a gas, radon can easily escape from the surfaces of ore minerals, rocks and soils can be dissolved in underground water, and can be transported in long distance from the location of formation. All of these radioactive isotopes emit alpha radiation, but  $^{222}\text{Rn}$  is the most important one since it is the major cause of internal dose by respiration with threats to the human health and environment. In this paper, the authors employed the trace detector technique in investigating the indoor in households surrounding the Ban Gie monazite mine, Quy Hop district, Nghe An province.

Level of indoor concentration of in households 25 to 200  $\text{Bqm}^{-3}$ , with some outliers higher than 600  $\text{Bqm}^{-3}$ , which is much higher radon proposed (EPA).

The results of calculating the annual effective dose caused by radon and thoron show that people in the survey area show that people can be exposed to an average dose of 4.4  $\text{mSvyear}^{-1}$ , nearly 3.5 times higher with an average of the world is 1.25  $\text{mSvyear}^{-1}$ .

## Keywords

Radon Thoron Trace detector Monazite mine Effective dose

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