Contribution ID: **136**   Type: **Poster**

Estimation of the internal exposure from indoor radon, thoron and their progeny in residence around high background radiation area, Phang Nga Province

A passive integrating discriminative radon-thoron monitor (Raduet) and radon-thoron progeny monitor (RnP-TnP monitor) with a solid state nuclear track detector (SSNTD) were used for estimating indoor radon, thoron and their progeny concentrations in residential areas around the old mines of the southern Thailand. The exposure to high background radiation level from Uranium-238 and Thorium-232 in the tin mine areas may cause the risk of cancers in respiratory system when consider to health effects of inhabitants surrounding. Radon are mentioned to be the second cause of lung cancers after smoking by the World Health Organization (WHO). In addition, a short-lived decay product of thoron (212Po) with its high energy about 8.8 MeV is considered to be one of important radionuclides that can interact biological tissue in the lung leading to cancer from breathing air containing thoron and its progeny. Radon and thoron gases can be released from soils, rocks and the earth crust through air gaps into the air. Some building materials that contained uranium and thorium can produce radon and thoron into the environment as well. Therefore, determination of radon, thoron and their progeny concentrations in places where residents live around the old mines is necessary to assess the dose due to inhalation in dwellings and workplaces for radiation protection.

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Track Classification: Environmental Physics, Atmospheric Physics, Geophysics and Renewable Energy