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Determination of Arsenic in Soil, Vegetables and Hair in Khoa Ron Na - Suangchan subdistrict area, Amphoe Ronpibul Using Neutron Activation Analysis Technique

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About 100 years ago after the discovery that the Khoa Ron Na -Suangchan subdistrict area, Nakhon Si Thammarat enriched with tin mineral in that area. The adverse effect due to tin mining process was the waste Arsenopyrite (FeAsS) which were left over in the tin mine till now. During the rainy season the leachate water that contained with the arsenic compounds in the form of a Arsenopyrite was washed out from the old mine into the surrounding areas. This leachate water can permeate into the canal, underground water, or shallow pond near by the vicinity or villager water resources. So, the poisonous Arsenic will be a part of drinking water or food chain for the Khoa Ron Na -Suangchan subdistrict area people. When the arsenic substance is stored within the human body for a long period of time, this can cause a skin cancer or other health symptom as well. The objective for this project focus on how to measure the small amount of Arsenic that contains in the soil, water, vegetable, and hair samples of people who settled in the Khoa Ron Na - Suangchan subdistrict area by using the Instrumental Neutron Activation Analysis (INAA) technique. This technique can identify both the qualitative and quantity of Arsenic (As) element that contain in the collecting samples by bombarding the sample with thermal neutron via $75As(n, gamma)76As$ nuclear reaction. In order to identify the As in the samples, the gamma rays at energy of 559 keV from As-76 with a half life of 26 hours was measured using Gamma ray spectrometer that equipped with HPGe detector. The quantitative analysis of As element in the samples was also obtained via comparative study between the net photo peak spectrum area of 559 keV for both standard and samples materials. The results show that accumulated arsenic in soil, vegetable and hair samples of people who settled in the Khoa Ron Na - Suangchan subdistrict area are in the range of 27.7-101.3 ppm, 2.5-16.1 ppm,.and untraceable, respectively.

Primary author: Ms MAIJAN, Pattarawadee (Department of Physics, Faculty of Science, Prince of Songkla University, Hatyai Campus, Songkhla 90110, Thailand)

Co-author: Dr CHITTRAKARN, Thawat (Physics department, Faculty of Science, Prince of Songkla University Hat Yai, Songkhla 90112, THAILAND)

Presenter: Ms MAIJAN, Pattarawadee (Department of Physics, Faculty of Science, Prince of Songkla University, Hatyai Campus, Songkhla 90110, Thailand)

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