

## **Arsenic and Mercury Levels in Scalp Hair of School Children of Three Villages in Kandal Province, Cambodia**

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**Abstract :** The residents of villages in Kandal province of Cambodia, because of dietary habits, lifestyle and ecological conditions, are exposed to toxic elements like arsenic (As) and mercury (Hg). For comparison purpose, scalp hair samples of 12-17 school children from three villages of Anglong Romiot (AR), Svay Romiot (SR) and Kampong Kong (KK) in Kandal province of Cambodia were considered using k<sub>0</sub>- instrumental neutron activation method (k<sub>0</sub>-INAA). The samples irradiated 6 hours with 750 kW power in Malaysian nuclear agency (MNA) research reactor and subsequently found gamma peaks of radionuclides in samples using HPGe detector. The average values of arsenic and mercury were 0.0 and 3.52 (mg/kg) in AR; 1.88 and 4.26 (mg/kg) in SR; 2.81 and 3.37 (mg/kg) in KK, respectively. The results indicate KK, SR, and AR villages were in high, medium and control level of arsenic pollution, respectively. However, Hg concentration were highest in SR, then KK and AR villages, respectively. The accuracy of the method was assessed by analyzing ERM-DB001-human hair as certified reference materials (CRMs), which experimental result of ERM-DB001 was consistent with certified values. In addition, correlation between As and Hg levels was found by Pearson's correlation test.

**Keywords :** Kandal province of Cambodia, k<sub>0</sub>- instrumental neutron activation method., scalp human hair, arsenic and mercury

**Conference Title :** ICNAATNSIS 2023 : International Conference on Neutron Activation Analysis Techniques, Neutron Sources and Isotope Sources

**Conference Location :** Ottawa, Canada

**Conference Dates :** July 03-04, 2023