

## **2.2-O3. Noble gas background and response of the CTBT radionuclide monitoring system to nuclear accidents.**

Nuclear reactors and radiopharmaceutical facilities are responsible for large portions of nuclear signatures. The emissions being substantially dependent on type of production facility is a challenge to CTBT but can be minimized by measuring emissions directly at the facility and problem of source location addressed. Although radionuclide stations detect radionuclides, composition/activity levels may be typical to the stations and demonstrates the importance of understanding the global radiological background. The response to nuclear test/accident by CTBT demonstrates high technical standard. E.g. CTBTO's radionuclide network made a significant detection of radioactive noble gases attributed to DPRK on 12-February-2013. The detection was made in Takasaki, Japan, 1,000km from the DPRK test site. Lower levels were also detected in Ussuriysk, Russia. Xenon-131m, xenon-133 identified, provided reliable information on the nuclear nature of the source. During the Fukushima power plant accident on 11-March-2011, 35 radionuclide stations provided information on the spread of radioactive particles and noble gases from the plant. The CTBT data/tools were useful to predict the global dispersion of radioactive materials. The sharing of CTBT data with international organizations such as UNSCEAR, WHO and IAEA has been beneficial because reported radionuclide ratios were used as an input to assess public exposures.

**Primary author:** GAMPSON, Enoch Kofi (Ghana Atomic Energy Commission)

**Presenter:** GAMPSON, Enoch Kofi (Ghana Atomic Energy Commission)

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