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Investigation of Initial Alarms from Radiation Detection Instruments

Equipment used for monitoring and assessment of cargo and pedestrians at borders are mainly handheld detector devices. The Radiation Handheld Devices (RHDs) are moved around a material (this can be in a form of cargo or be carried by a person) suspected to be emitting radiation. These detectors then alarm when the emitted radiation exceeds the established natural background radiation level of the detectors. Front Line Offices (FLOs) are the first point of contact with these materials and base on the RHD alarm and its associated data FLOs must decide if the alarm is the result of some innocent material or whether a secondary inspection or other action needs to be taken. This decision is most of the time complicated and frustrating to FLOs. Some RHD alarm profiles are not easily interpreted, especially when concerned with the possible presence of nuclear and other radioactive material, as issues with traffic/pedestrian management, speed with which measurement are done, manipulation of the different phases of some RHDs, weather, possible masking or shielding, etc., all present challenges to FLOs when making their initial assessments. Because the vast majority of alarms are simply the result of naturally occurring radioactive materials (NORMs) moving through commerce, separating alarms possibly caused by nuclear and other radioactive materials from the alarm pool of mostly NORM can be quite difficult. Additionally, fatigue of the operator and the 90% likelihood of the presence of NORMs (because that is usually the case) create a situation where material out of regulatory control could pass through a border crossing without being duly investigated. The above mentioned CRP is aimed at developing a composed tool for frontline officer to aid them in their analyses of cargo containing characters of radioactive materials at border post. Thus all project counterparts including the some staff of the Nuclear Security Department of NRA are required to collect such data for expert analyses and the development of the tool. Data collection was carried out on about a 100 conveyances/containers covering all kind of commodities passing through the two selected borders. These included a seaport and an airport. Commodity and container information were taken during the period. Data collection duration was within an average of 15 minutes on all visible surfaces of the containers with a pager and an identifinder. All data was inputted into an excel data sheet to be transfer onto the IAEA data sheet to aid in the development of the analysis tool. The research work performed supported the development and implementation of the TRACE (Tool for Radiation Alarm and Commodity Evaluation) application and associated algorithms. No separate publication was performed or applicable at this time. Data recorded included dose rate reading from the RHDs, identified radioisotope and accompany x-ray scans for every container. This provided detailed information for various cargo commodities. Cargo selection was according to the arrival of containers at the scanner section. Per the deliverables in the detailed programme, data collection has been carried out on about a 1000 conveyances/containers covering all kind of commodities passing through the two selected borders. These included the Tema Sea port, Kotoka International airport (KIA) as well as Takoradi Sea port at the western region of Ghana. Commodity and Container information were taken during the period.

Gender

Female

State

Ghana

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