Malicious Acts Involving Radioactive Sources: Prevention and Preparedness for Response

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Abstract

The increasing concern over the malevolent use of radioactive sources and radiological terrorism demands strengthening the preparedness for response to radiological emergencies. Inspite of various security measures adopted internationally, availability of orphan sources cannot be completely ruled out. The trends in terrorism also indicates the possibility of various means which may be adopted by terrorists especially if they are aware of the challenges of radioactive contamination in public domain and the capability of 'denial of area' and the fear factor which can be injected during such radiological emergencies. It is to be well understood that whatever measures are taken by some countries in preventing the sources from getting stolen or smuggled in/out of their country are not adequate to eliminate radiological terrorism in a global level unless all nations collectively address and ensure the security of radioactive sources, hence preventing the generation of any orphan sources.

While preparedness for response to various radiological emergency scenario have many common factors, the challenges involved in responding to radiological terrorism involves understanding the fear factor due to the presence of radioactive contamination after the blast and thermal effects on the victims and issues like handling of contaminated and seriously injured persons, restriction on the movement of responders and forensic teams in a contaminated field etc. Hence an understanding and anticipation of all possible means of radiological terrorism is very essential to prevent and to reduce the consequences.

There are many deterrents, which are to be developed and maintained by all nations collectively which should include intelligence, wide usage of radiation monitors by customs, police and other security agencies, installation of state of the art high sensitive radiation monitors and systems etc to prevent and deter stealing and illicit trafficking of radioactive sources. Periodic mobile radiological monitoring of cities covering all areas including scrap yards, aerial gamma surveys using 'Aerial Gamma Spectrometry System(AGSS)' which have better coverage and sensitiveness to detect potential RDD sources - even if kept inside buildings - also are to be used for combing operation when suggested by intelligence information. Preparedness for response necessitates development of monitoring and assessment teams, first responders and medical teams who should be able to reach the affected area to carry out the rescue operations and prevent spread of contamination.

This paper discusses the methodology and monitoring systems to be developed to prevent the usage of radioactive sources for malicious purposes, state of the art systems and methodology for the detection and assessment of radioactive contamination as well as requirement of training of emergency response teams for response to radiological emergencies.

KEYWORDS: Radiological emergency, radiological terrorism, preparedness for response, aerial gamma survey, orphan sources

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