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RISK INFORMED APPROACH TO THE SECURITY OF RADIOACTIVE SOURCES IN USE AND IN STORAGE IN PAKISTAN

Radioactive Material (RM) is used in various areas like research, medicine, industry, agriculture and education for wide range of applications in Pakistan. All necessary security measures are taken to prevent acquisition of radioactive sources in use and in storage against any malicious act causing any radiological hazard which may harm public, property, society and environment. By applying risk informed approach, Security of radioactive sources is ensured according to IAEA Recommendations "Nuclear Security Recommendations on Radioactive material and Associated Facilities (NSS-14)"and IAEA Nuclear Security Implementing Guide "Security of Radioactive Sources (NSS-11)". In this paper, risk informed approach for secure management of radioactive sources will be discussed.

In the risk informed approach, we identify and assess threats and risks and develop, evaluate and implement alternatives to monitor and manages resulting actions for system effectiveness. A risk informed approach is necessary for prioritizing and designing nuclear security systems and measures. On the basis of threat and risk assessments, security of radioactive material is effectively and efficiently ensured.

Structured risk management approach is used at national level for reducing risks of any malicious acts at an acceptable level. At national level, all potential threats, related potential consequences and likelihood of malicious acts are assessed. In this perspective, a legislative and regulatory framework is in place for efficient and effective security of radioactive sources in use and in storage to address the threat. National regulator developed national regulations for security of radioactive sources which are in place.

In Pakistan, risk informed approach is applied on the basis of assessment of threat and risk, national regulator determines security requirements for radioactive sources. National regulator periodically evaluates the security level of radioactive sources according to present threat level. In this view, on the basis of national regulations and IAEA recommendations, physical protection systems and measures are developed and implemented for prevention of, detection of, and response to criminal or intentional unauthorized acts directed at radioactive sources. Security of radioactive sources is ensured throughout its complete life cycle. Any movement of radioactive sources through the country is done with prior approval of the national regulator. According to national regulations, all efforts are made to protect radioactive sources against assessed threat by ensuring provision of necessary resources to all stakeholders.

Threat is identified by identification of material, identification of adversaries, identification of targets and identification of consequences. After threat and risk assessment, we design physical protection systems and measures and implementation of these security measures. We are managing risk based nuclear security systems and measures by updated threat assessment, evaluation of the effectiveness of implemented nuclear security systems and measures. Potential systems and measures are identified which are deployed to reduce risk from any unauthorized act with implications of security systems. These systems include various access control systems, intrusion detection sensors and dedicated response force. These systems and measures are evaluated individually as well as in combination to identify risk reduction. Threat assessment is updated with new information about different adversary and their capabilities. Risk assessment is also updated with threat assessment is updated. In this view, we achieve effectiveness of risk informed approach for security of radioactive sources in use and in storage.

Key Words: *Risk Assessment, Threat Assessment, Radioactive sources*

Gender

Male

State

Pakistan

Author: Dr CHAUDHARY, MUHAMMAD TAHIR (Pakistan Atomic Energy Commission (PAEC))

Co-author: Mr LIAQUAT, MUHAMMAD RIZWAN (Pakistan Atomic Energy Commission (PAEC))

Presenter: Dr CHAUDHARY, MUHAMMAD TAHIR (Pakistan Atomic Energy Commission (PAEC))

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