

# Challenges of maintaining the security of radioactive sources of categories 1,2 and 3 in case of abnormal conditions

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KAMAL H. LATEEF

Iraqi Radioactive Sources Regulatory Authority  
Baghdad Iraq  
Chairman@irsra.gov.iq

FADHIL H. MIZBAN

Iraqi Radioactive Sources Regulatory Authority  
Baghdad Iraq  
fadhil\_res@irsra.gov.iq

## Abstract

The security of radioactive sources, nuclear materials and the facilities they contain is related to the provision of factors related to the human role, while others are related to the technical aspect in a way that provides the following security elements: deterrence, detection, delay, response and security management.

The human role represents the administrative procedures which consist of monitoring, guards, alarms evaluation and conversion to declaration of detection status followed by disability and delay to provide the necessary time to respond and security management.

An important part of the deterrence concerns the human role. The presence of security elements in the specific location can provide sufficient deterrence. The assessment of alarms is carried out through a human element, up to the announcement of a detection situation. The work of disability and response is carried out by the human role to a large extent. This task cannot be accomplished without the human role.

In the same context, the technical factors require activation to be provided to the main and alternative sources of energy, as the means of deterrence and detection (cameras, sensors of movement, padlock, etc.) all require continuous supply of electrical energy and the loss of energy sources eliminates the full existence of the technical role. The integration of the work of technical and human role is required to be carried out within the framework of a comprehensive security system or community stability in general. The occurrence of abnormal events such as loss of state control and the collapse of the system, the occurrence of severe environmental disaster or the occurrence of wide range military operations that would lead to the loss of the human role or leads to loss of technical role as well. Which is happening in the city of Mosul where the selection of ISIS gangs calling for the medical complex as an area of operations led to the medical complex to the consequences and severe damage to buildings, electrical power supply and infrastructure, which led to the loss of the human and technical role, thus the loss of all elements of security elements (deterrence, detection, delay and impediment, response and security management), Unauthorized access to the therapeutic source (the cobalt-60 unit) had happened and fortunately the unauthorized arrivals were thieves who were looking for any simple material theft so they stealing electrical connections and some operation components of the device, so can be imagine the sabotage scenario if the adversary are terrorists and they have the capability and intention, with presence of attractiveness, and ease to access to the radioactive source, by making a simple threat assessment, according to practical information regarding to the security situation and terrorist capabilities, the conclude is threat assessment rating is very high.

In order to prepare for such situations, the role of the technical factor should be greater and work independently of the human role, such as providing teletherapy treatment rooms or any rooms containing high-level radioactive sources from first or second categories with automatic doors operated by an independent power supply and closed in special cases such as earthquakes, explosions, war operations, hurricanes and floods, or if they are activated by the security official when they feel that a certain danger is imminent. The opening of these doors should be difficult without special codes that are equipped exclusively for those authorized person.

## Gender

Male

**State**

Iraq

**Author:** Dr LATEEF, Kamal (Iraqi)

**Co-author:** Mr MIZBAN, Fadhil (Iraqi)

**Presenter:** Mr MIZBAN, Fadhil (Iraqi)

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