

## Design an Effective Physical Security System to Prevent Breaches in the Security of Radioactive Material at Al-Tuwaitha Nuclear Site

**Abstract:**

The prevention of breaches in the security of radioactive material is the most important element in combating illicit trafficking in those materials. It outlines the main requirements for ensuring that the three most important elements in (1) preventing uncontrolled movement of radioactive materials, (2) accounting and control of radioactive material, and (3) the physical protection system, are in good order.

Physical security at nuclear facilities means detection, prevention and response to threat, theft, sabotage, unauthorized access and illegal transfer involving radioactive or nuclear material.

This paper proposes a physical security system designing concepts to reduce the risks that threaten the security of radioactive material at Al-Tuwaitha nuclear site.

The present paper aims to design an effective physical security system to enhance nuclear security measures on-site, to prevent a nuclear security threat from completing criminal or intentional unauthorized acts involving or directed at radioactive material or associated activities and to detect or respond to nuclear security events.

Moreover, the study involves assessing potential threats (both internal and external threats) against the site, upgrading the on-site physical security system by installing number of modern physical protection equipment at selected sensitive strategic locations, and finally testing the ultimate site's security system design after the upgrade to prove its worth and effectiveness by conducting some of hypothetical scenarios.

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