



Contribution ID: 13

Type: Oral Presentation

#6-13 Assessment of radiological dispersal devices in densely populated areas: simulation and emergency response planning

Wednesday, June 11, 2025 10:20 AM (20 minutes)

The increasing threat of terrorism involving Radiological Dispersal Devices (RDDs) necessitates comprehensive evaluation and preparedness strategies, especially in densely populated public areas. This study aims to assess the potential consequences of an RDD detonation, focusing on the effective doses received by individuals and the ground deposition of radioactive materials in a hypothetical urban environment. Utilizing the HotSpot code, simulations were performed to model the dispersion patterns of cesium-137 (Cs-137) and americium-241 (Am-241) under varying meteorological conditions, mirroring the complexities of real-world scenarios as outlined in recent literature. The motivation behind this research stems from the ongoing concerns regarding public safety in major urban centers. The objectives of this study include (1) developing realistic hypothetical scenarios involving an RDD explosion in a crowded area, (2) simulating the dispersion of radioactive materials to predict the health impacts on the population, and (3) providing actionable insights for emergency response planning. The analysis will focus on key parameters such as effective dose calculations and the extent of ground contamination, aiming to enhance preparedness protocols for first responders and public health officials.

Primary authors: Mr EL KHADIRI, Yassine (Materials Physics and Subatomics Laboratory, Physics Department, University Ibn Tofail, Kenitra, Moroc); Dr KABACH, Ouadie (Materials Physics and Subatomics Laboratory, Physics Department, University Ibn Tofail, Kenitra, Moroc); CHAKIR, El Mahjoub (Materials Physics and Subatomics Laboratory, Physics Department, University Ibn Tofail, Kenitra, Moroc); Prof. GOUIGHRI, Mohamed (Materials Physics and Subatomics Laboratory, Physics Department, University Ibn Tofail, Kenitra, Moroc)

Presenters: Mr EL KHADIRI, Yassine (Materials Physics and Subatomics Laboratory, Physics Department, University Ibn Tofail, Kenitra, Moroc); Dr KABACH, Ouadie (Materials Physics and Subatomics Laboratory, Physics Department, University Ibn Tofail, Kenitra, Moroc); CHAKIR, El Mahjoub (Materials Physics and Subatomics Laboratory, Physics Department, University Ibn Tofail, Kenitra, Moroc)

Session Classification: #06 - Nuclear Safeguards, Homeland Security and CBRN

Track Classification: 06 Nuclear Safeguards, Homeland Security and CBRN