



Radiological Dispersal Devices

Impacts of a Dirty Bomb





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- Radiological Dispersal Device (RDD) Overview
- Explosive RDD Hazards
- Hospital PPE and Planning



Radiologic Dispersal Device (RDD)

Any device that intentionally spreads radioactive material across an area with the intent to cause harm.

Can be explosive or non-explosive ...

- Non-explosive – spread of material using common items such as fans, building ventilation system or spreading by hand
- Explosive – will not result in a nuclear detonation. AKA Dirty Bomb

Explosive RDD AKA Dirty Bomb

A dirty bomb is a “normal” bomb that contains radioactive material as well as explosives.

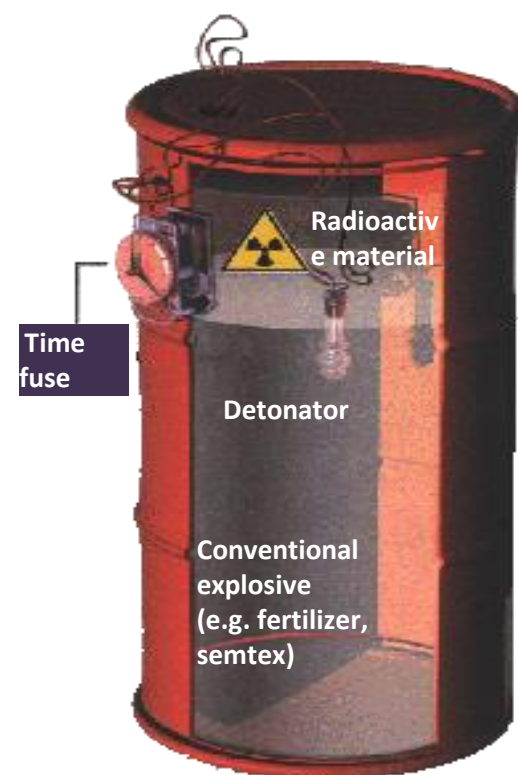
After the initial blast of the explosives radioactive material is dispersed, spreading out radiation and contamination (that’s where the word “dirty” comes from)

Radioactive Material



Explosive RDD AKA Dirty Bomb (cont.)

- Primary casualties would come from the explosion itself, not the radiation source.
- Greater dispersal of radioactivity
- Associated traumatic injuries
- Presence of radiation will substantially complicate initial triage and treatment
- Major health hazard could exist for a few city blocks
- Monitoring and area control important



Explosive RDD AKA Dirty Bomb (cont.)

The radioactive material released in the blast may deposit on (contaminate) people, their clothing, and the ground surface.

***Do NOT delay medical treatment
for victims with life or
limb-threatening injuries to
conduct decontamination!***





Contaminated Victims

- Contamination on victims is not immediately life threatening to hospital personnel (except imbedded radioactive shrapnel)
- Removing a patient's clothes, removes 80% to 90% of the contamination

Do NOT delay medical treatment for victims with life or limb-threatening injuries to conduct decontamination!



COVID-19 Personal Protective Equipment (PPE) for Healthcare Personnel

ORISE.ORAU.GOV

Preferred PPE – Use N95 or Higher Respirator



cdc.gov/COVID19

Goiania Brazil Accident

- Physicians abandon cancer clinic in 1985
- Also abandoned is an old (1950's) teletherapy unit containing about 1400 curies of Cesium-137
- September 13, 1987; two scavengers removed the lead cylinder from the device



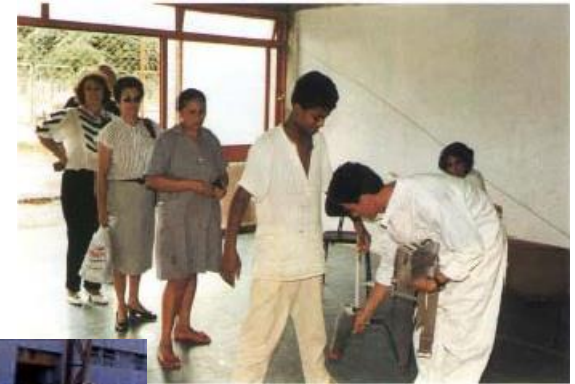
Goiania Brazil Accident

- Cylinder sold to junkyard dealer; canister opened containing luminescent blue stones.
- Junkyard dealer exposed source and invited his family and friends to see.
- Cesium-137 powder from abandoned radiotherapy source – Approximately 1400 Ci.



Goiania Brazil Accident

- 112,000 people screened
- 249 people contaminated
- 28 people w/serious radiation injuries
- 4 deaths – including a 6 year old child



Do You Have a Plan?

- Training
- Performing a radiological survey on people. (i.e. Partial or Full)
- Survey Instruments (i.e. Nuc Med)
- PPE – Universal Precautions
- Triage of worried well





Additional Resources

- [Radiation Emergency Assistance Center/Training Site](#)
 - 24/7 response capability for advice and consultation on radiological emergencies
 - General information - 865-576-3131, General email - reacts@orau.org
 - *After-hours number* - 865-576-1005 (Ask for REAC/TS)
- [U.S Department of Health & Human Services Radiation Emergency Medical Management](#)
 - Guidance for health care providers, about clinical diagnosis and treatment of radiation injury during radiological and nuclear emergencies.



Questions?

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