DIRTY BOMB CONTAINMENT SYSTEM

Offered by
PRECISION TECHNIK, INC.
Atlanta, Georgia
What Is A “Dirty Bomb”

Radioactive Material + Conventional Explosive = Radioactive Material
Radioactive Source Material

- **Cesium-137 (gamma emitter)**
  - Half-life = 30 years

- **Cobalt-60 (gamma emitter)**
  - Half-life = 5.2 years

- **Americium-243 (alpha emitter)**
  - Half-life = 7,300 years

**Conventional Applications**

- Medical gauges and instrumentation
- Oil field/geologic testing and gauge equipment
- Food irradiation
- Biological sterilization

2,100 Curie Gamma Kolos Canisters
Dispersal Scenario #1 - Cesium

Inner Ring: One cancer death per 100 people due to remaining radiation

Middle Ring: One cancer death per 1,000 people due to remaining radiation

Outer Ring: One cancer death per 10,000 people due to remaining radiation

EPA recommends decontamination or destruction

Source: One medical gauge
Dispersal Scenario # 2 - Cobalt

**Source:** One 1” x 12” rod

- **Inner Ring:** One cancer death per 100 people due to remaining radiation
- **Middle Ring:** One cancer death per 1,000 people due to remaining radiation
- **Outer Ring:** One cancer death per 10,000 people due to remaining radiation

EPA recommends decontamination or destruction.
Dispersal Scenario # 3a - Americium

Inner Ring: All people must receive medical supervision
Middle Ring: Maximum annual dose for radiation workers exceeded
Outer Ring: Area should be evacuated before radiation cloud passes

Source: One oil well test device

Immediate health effects

Inner Ring: All people must receive medical supervision
Middle Ring: Maximum annual dose for radiation workers exceeded
Outer Ring: Area should be evacuated before radiation cloud passes
Dispersal Scenario # 3b - Americium

Inner Ring: One cancer death per 100 people due to remaining radiation

Middle Ring: One cancer death per 1,000 people due to remaining radiation

Outer Ring: One cancer death per 10,000 people due to remaining radiation

EPA recommends decontamination or destruction

Source: One oil well test device
Current Mitigation Measures

- **Inventory Control**
  - Controlled access to radioactive sources
  - Consolidation of loosely controlled sources
  - Strict accountability of existing sources

- **Early Detection and Monitoring**
  - Detectors at key transportation nodes and borders

- **Coordinated Emergency Response**
  - First-responder evacuation training
  - Health care personnel response training
Radiation Containment System (RCS)

- **General Design Criteria**
  - Contain blast from conventional explosives up to 15 lbs.
  - Suppress gamma radiation to < 100 roentgens one foot from shield surface
  - Highly mobile using conventional vehicles
  - Remote control of handling operations
  - Easy and rapid retro-fit of shield to existing Nabco containment vessels
RCS 250 Exposure Calculations

Exposure Levels (R/hr) as a Function of Distance from Shield (assumes 250 Ci Point Source)

Exposure Levels (R/hr) as a Factor of Distance from a 250 Ci Point Source

- No Shielding
- With Shielding

Distance from Source (cm [in])

- 30 [11.8]
- 55 [21.7]
- 70 [27.5]
- 95 [37.4]
RCS 250 Mobilization

Suspended Position

Radiation Shield In Place
Transport Vehicle Interface

Base Channel

Channel/Shield Interface/Lock
RCS 250 Loading Dirty Bomb
RCS 250 Containment Structure
RCS 250 Filtration System
RCS 250 Contaminant Fixation
### RCS Family of Containment Systems

<table>
<thead>
<tr>
<th>Model</th>
<th>Weight</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>RCS-250</td>
<td>6,000</td>
<td>Attenuates up to 250 curies. Provides lightweight containment fitted on existing blast suppression platform.</td>
</tr>
<tr>
<td>RCS-500</td>
<td>11,000</td>
<td>Attenuates up to 500 curies. Similar to the RCS - 250 but configured to contain larger radioactive source. Requires specialized transport trailer/platform.</td>
</tr>
<tr>
<td>RCS-1000</td>
<td>26,000</td>
<td>Attenuates up to 1000 curies. Holds an entire passenger vehicle. Eliminates need to transfer bomb into secondary containment.</td>
</tr>
<tr>
<td>RCS-AB</td>
<td>3,000</td>
<td>Attenuates up to 100 curies. Enables removal of radiological/explosive package from high-rise buildings. Delivered to target location using helicopter.</td>
</tr>
</tbody>
</table>