

## **SCENARIO 3: Radiological Dirty Bomb**

### **Introduction**

In this scenario, a terrorist group obtains an undetermined amount of cesium-137 and places it, unshielded, in a bus, packed with 2,000 pounds of explosives. Along with many other tour buses, this bus is parked 1,500 yards from the United States Capitol. At lunchtime, the explosive is detonated.

Cesium (chemical symbol Cs) is a soft, malleable, silvery white metal that may be stable (nonradioactive) or unstable (radioactive). The most common radioactive form of cesium is cesium-137.

Cesium is one of only three metals that are liquid near room temperature (83° F). The half-life of cesium-137 is 30 years. It decays by emission of a beta particle and gamma rays to barium-137m.

Since Cesium-137 is one of the most common radioisotopes used in industry, it would not be difficult for terrorists to acquire.

As with all radionuclides, exposure to radiation from cesium-137 results in increased risk of cancer. Great Britain's National Radiological Protection Board predicts that over the next 70 years there will be up to 1,000 additional cancers among the population of Western Europe exposed to fallout from the nuclear accident at Chernobyl, in part due to cesium-137.

People may ingest cesium-137 with food and water, or they may inhale it as dust. Exposure to cesium-137 may also be external (that is, exposure to its gamma radiation from outside the body). If cesium-137 enters the body, it is distributed fairly uniformly throughout the body's soft tissues. Compared to some other radionuclides, cesium-137 remains in the body for a relatively short time. It is eliminated through the urine.

Even though there are several medical tests used to determine exposure to cesium-137, they are not routinely available because they require special laboratory equipment. This could impede accurate and rapid diagnosis, thus delaying necessary treatment.

### **Step 1. Verify situation**

Washington, DC—Wednesday, July 17. At 12:00 noon, a loud explosion is heard near the Air and Space Museum. The front of the building is essentially destroyed. A minute later, 911 emergency operators receive calls from the area and are informed that a huge explosion—scattering dust and debris—has occurred over the downtown area. Federal Aviation Administration (FAA) airport tower operators at Reagan National Airport witness the explosion and report the blast to 911 and to the FAA regional operations center. The 911 operator requests that further reports from the tower be made directly to the Washington, DC, local Emergency Operations Center (EOC).

The Fire and Police Departments are notified and called to the scene. Within minutes, firefighters, police officers, and other emergency rescue teams arrive. Upon arrival, the police evacuate the survivors and close the access roads to the area. The initial Incident Commander (IC) calls a second and third alarm due to the magnitude of the damage. Teams report that glass windows and partitions in all buildings within a one-block radius are shattered, inflicting additional damage and injury from glass shards.

At 12:10 p.m., radiation detectors at the Department of Energy sound an alarm, indicating an increase in beta particles and gamma radiation over background levels.

By 12:20 p.m., emergency management team notifications are initiated and Washington, DC's EOC is activated. The National Response Center (NRC) is notified of the explosion and the possibility of radioactive fallout.

At 12:25 p.m., a major cable news network interrupts its broadcasts to report "a bombing that makes Washington, DC, look like a war zone."

At 1:00 p.m., the mayor's office receives a call from the editor of *The Washington Post*. An unidentified individual has called the paper and claimed to be with a terrorist organization responsible for setting off a nuclear device in Washington, DC. The caller stated that additional "bombs" should be expected.

At 1:30 p.m., WTOP Radio, a local talk radio station, airs a report about the explosion and announces that a terrorist group has claimed responsibility for the explosion. The announcer notes that the police and FBI do not confirm this report and that they will make further announcements as information becomes available to them. All of the major television networks follow with immediate bulletins "confirming that a terrorist organization has detonated an atomic bomb in the heart of Washington, DC."

As news of the explosion and the possibility of fallout release become widely known, people throughout the city panic and flee.

By 2:30 p.m., the HAZMAT teams assess the extent of the radioactive contamination in the area and identify cesium-137 as the source of the radiation. An immediate evacuation of the affected area is ordered. Since Mayor Anthony Williams will be in direct communication with the President, he wants an update on evacuation, monitoring, and containment efforts as soon as possible.

Based on the information received, the FBI believes that the device was a 1,500 to 2,500 pound conventional explosive laced with cesium-137. The FBI notifies the city EOC that they will take the lead in managing the crisis. It requests information about contamination levels around the city as soon as it is available to determine when FBI staff can access the site of the incident. The FBI indicates that it would like to meet with representatives from the Police Department immediately in order to coordinate efforts in conducting the investigation.

## **Step 2. Conduct notifications**

By 3:00 p.m., the mayor has declared a local emergency and asked the surrounding governors for assistance. Mayor Williams holds a news conference and indicates that he has declared a State of Emergency, and that an assessment and evacuation is in progress. Area residents who are not evacuated are asked to remain indoors. It is estimated that 150,000 people are affected by the evacuation. The mayor has requested a Presidential Stafford Act [\[\[Hotlink to Stafford Act\]\]](#) declaration of a Federal Disaster. Community health coordinators report that approximately half of the initial emergency responders have been exposed to radiation.

At 4:00 p.m., the President issues a disaster declaration, promising Federal resources for emergency response and for bringing the responsible terrorists to justice. The FRP and FRERP are activated. FEMA and other Federal agencies are formally requested to provide assistance to the response and recovery process. FEMA activates the Emergency Response Team (ERT) and deploys the ERT-A and FAST to the scene. Potential sites for the Disaster Field Office (DFO) are investigated

## **Step 3. Assess level of crisis**

Area hospitals report that more than 2,500 people have requested medical treatment because they believe they have been exposed to radiation. The few hospitals that are not under evacuation notices are overwhelmed with thousands claiming to suffer from radiation sickness or requesting radiation exposure testing. Hospitals do not have the resources to conduct required tests or provide treatment, nor are they able to accurately monitor people coming to the hospital. The rush of agencies descending on the scene causes great confusion in command, control, and reporting. Confusion also exists in prioritizing response actions versus investigatory actions, leaving many responders upset.

It is 8:00 p.m. The sun is beginning to set. It is raining. The rain and darkness complicate the response efforts.

By 8:30 p.m., members of the Maryland and Virginia National Guard arrive and take up positions in and around downtown to assist the police with their duties and with the decontamination and containment efforts. The Red Cross has offered assistance in transporting food, water, medications, and other resources to shelter locations and wherever else they are needed. Officials from the EPA have contacted the District of Columbia Public Works Department and the Department of Safety in order to coordinate efforts for monitoring radiological contamination that may have migrated into public drinking water reservoirs, surrounding lakes and rivers, and soil.

## **Step 4. Organize and give assignments**

DoD, DOE, and EPA officials are concerned about the possibility that a large number of people were not monitored for contamination before leaving the area and that many contaminated vehicles have traveled to other jurisdictions. These officials are also extremely concerned about the spread of contamination throughout the area watershed.

By 10:30 p.m., the DFO is situated, staffed, and in full operation. The JIC, handling media inquiries, is inundated with questions on the adequacy of the response effort and the lack of information provided to them and the public by State and local authorities.

#### **Step 5. Prepare information and obtain approvals**

Numerous public interest and environmental groups, such as Greenpeace and the Sierra Club, call the EOC and other local government officials. They also release statements to the media expressing concern about the long-term effect this event will have on the environment, the health of the community, and the drinking water supply.

#### **Step 6. Release information to the public**

Several hospitals request assistance with transporting patients to other hospitals due to inadequate resources. They also request immediate assistance with monitoring incoming patients and decontamination procedures or they will be forced to turn additional patients away. Proper disposal of contaminated equipment and other material accumulating at the hospitals becomes a concern. The District's Department of Health spokesperson provides information to the public via a news conference regarding the effects of radiation under the current situation and encourages people to stay indoors. This conference was not coordinated with the JIC.

By 10:00 p.m., updated reports of casualties filter in from area hospitals, shelters, and residences. It is reported that up to 12,500 people may have been exposed and still require decontamination, but these numbers are not confirmed.

Additional updates have been received from the assessment teams scattered throughout the city.

During a late-night interview, the President makes a surprise announcement that he will tour the area tomorrow to personally assess the destruction.