

Readying the Corporation for a ‘ Dirty Bomb’ Scenario

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This article attempts a look at the ‘ dirty bomb’ scenario through its definition and possible impact and suggests some best practices for preparation.

The Business Continuity and Disaster Recovery Industry has suggested three basic and generic scenarios:

- **Scenario 1: Denial of Physical access.**

There is no physical damage to the computing environment. Users may remotely access the production computing environment.

- **Scenario 2: Full Loss of Physical Assets.**

There may be complete or Partial Loss of Building or Data Center Assets.

- **Loss of Computing Facilities due to Fire, Water Damage.**

There is direct physical damage to the Company’ s computing facility.

- **Loss of Computing Facilities due to Malicious intent**

There is direct physical damage to the Company’ s computing facility.

- **Complete loss or Damage to the physical building.**

There is direct physical damage to the Company’ s computing facility and the physical building.

- **Scenario 3: Shelter-in-Place.**

Evacuation is not an option. Staff must stay inside until otherwise directed by city and/or state.

In Scenarios 1 and 2, evacuation is the first process to be invoked. However, during the blackout of 2003, many people did not evacuate or chose to return to the building once they realized that there was no physical damage to the buildings or direct loss of life. Many building managers permitted those who had security access to their buildings to stay but made it clear that this was the choice of the individual.

A dirty bomb scenario requires a mix of Scenarios 2 and 3. It may be safer for those who are in a building that is hit with an explosive to leave immediately to avoid further injury. However, since the knowledge of whether the bomb was ‘ dirty’ may not be immediate and Staff may evacuate without Crisis Management direction, the evacuation process could impact Staff safety. In this case the process requires: 1) additional tools to avoid direct contact (ingestion/touching/inhalation) with radiation particles; 2) an enclosed place for staff to avoid dispersed and airborne material; 3) a ‘ dirty bomb’ educational program.

Dirty Bomb Defined

A dirty bomb, a Radiological Dispersal Device (RDD), combines a conventional explosive with radioactive material. It does not generate a nuclear explosion because of the absence of nuclear fission reaction. Upon detonation, the bomb acts as a dispersal agent for the enclosed nuclear material. Anyone in the area of a ‘ dirty bomb’ is potentially at risk for some level of nuclear related illness

depending on wind conditions, how close they are to the bomb, how equipped they are to secure their physical self during evacuation and how quickly they can find a safely enclosed area.

A ‘dirty bomb’ requires: 1) availability of radioactive material; 2) financial resources; and 3) tools to create the bomb and tools to ensure no one dies from exposure while making the bomb. Regarding availability, there have been several disclosures of missing warheads, missing devices and black market activities originating from Pakistan:

- The United States can account for only 660 of 1,500 stolen, lost or abandoned radioactive devices.
- The recent confession of A.Q. Khan, chief scientist in Pakistan, along with claims of relatives that the Pakistan government supported the selling of radiation.
- Recent disclosures from Russia regarding missing nuclear warheads.

Of the various sources of radiation the kind used in military industrial or medical applications would be most likely used in a ‘dirty bomb’, e.g. *Cesium-137* and *strontium-90*. Weapons-grade plutonium or uranium and freshly spent nuclear fuel would be the most deadly but are the hardest to obtain and handle. Regarding required tools: some feel in order to ensure no injuries during the bomb-making process there would be a need for high density shielding material requiring skill and money and resulting in a bomb that is too big to hide. Others feel that radiation accessed and used in a ‘dirty bomb’ (a mixture of uranium and plutonium oxide) emit heavy particles, stoppable by a sheet of paper. The builder needs only to use a respirator, wash before eating and discard contaminated clothing.

Impact Resulting from a Dirty Bomb.

The impact of a dirty bomb depends on:

- Explosion size;
- Amount and type of radioactive material;
- Weather and wind conditions on the moment of detonation;
- How quickly the area evacuates;
- Prompt detection ability of the kind of radioactive material employed.

The greatest impact would be psycho-social and possibly economic as the affected site would be closed for a period of time for cleanup and decontamination. Long-term health hazards are not clear. More immediate hazards would result from disorientation and fear.

Actions to Take in Case of a “ Dirty Bomb” Scenario

Re-educating staff to the ‘dirty bomb’ scenario and its manifestation in their revised Disaster Recovery processes and procedures is crucial. Staff need to know what actions to take whether inside or outside during an explosion. Current evacuation process suggests that leaving an injured building and area is crucial. The difference with ‘dirty bombs’ is that evacuation requires additional precautions to maintain safety in the face of radioactive materials. Staff may feel the immediate need to leave an uninjured building for fear of further attack or damage from the impacted building. They may need to learn how to assess their safest option. The Firm may need to enhance desk kits and emergency stores. Staff should also know how to care for themselves if contaminated and how and where to seek City/State Agency care centers and medical help.

The Firm must become part of the Building’s Disaster Recovery notification process to better instruct staff regarding their decision to evacuate or perform “ Shelter-in-Place.”

Everyone needs to understand that a ‘ dirty bomb’ is a Weapon of Mass Disruption. The primary goal is to psychologically and economically disable a Community. It is an act of terrorism at its height. A cool head and a focus on personal safety can insure that terrorists do not meet their goal.

Table I: Actions to Take in Case of a ‘ Dirty Bomb’ Scenario

If Outside During the Blast	If Inside During the Blast
1. Do not panic.	1. Do not panic.
2. Cover mouth and nose with either a facemask or an alternative material for the initial period of fallout, leave the immediate area and go inside the nearest building.	2. Cover mouth and nose with either a facemask or an alternative material for the initial period of fallout.
3. Do not take public or private transportation.	3. Prevent entry of radioactive dust by shutting off ventilation systems and sealing doors or windows. Maintain some filtered airflow for breathing.
	4. Stay inside until authorities say otherwise. If you must leave, follow the evacuation process.
	5. Use stored food and drinking water.
	6. Do not eat local fresh food or drink water from open water supplies.
In All Cases	
1. If possible, remove clothes, place them in a plastic bag and seal it. Give the bag to the Police. Take a shower using soap and shampoo.	
2. Seek local news for advisories from emergency response and health authorities.	
3. Treat (clean and cover) open wounds until medical help is available.	
4. Seek medical help if radioactive material was released.	
5. Only take stable iodine (e.g. potassium iodide) tablets when so directed and only take direction from competent authorities.	

A summary of those actions recommended by the United States Nuclear Regulatory Commission, the World Health Organization and the Center for Disease

Table 2: Preparatory Steps to Accommodate the ‘ dirty bomb’ scenario:

1. Integrate with City/State Agency and Building Management Alerts and Notifications Process:

Expand the Firm’ s communication reach and integrate with city, state agencies and building management communications, processes and procedures.

2. Create various methods for Staff to Communicate Accountability:

Create a firm-specific domain name for use in receiving email and as a web site. This tool will resolve several very important concerns regarding staff accountability, one of the most difficult processes in severe disasters. Accounting for staff can save lives (injured staff, police and firemen), permits the business to recover with less risk in a more timely manner and permits people to communicate when they would otherwise not be able to:

- Many people would prefer not to go to the Assembly point. This is legally their choice. Providing various way to communicate with the Firm resolves this issue.
- If cellular or telephone voice service is not available, text messaging (cellular) or email (pda) service may still be available
- The Corporate email environment or intranet may not be available. The Internet may be the only way to communicate.
- The Firm can list those staff that have been accounted for on the web site.
- Family, friends may be able to access the site on a regular basis keeping the Firm’ s primary voice lines open and less taxed.

Firm-specific emergency public email address for text messages or email.

Firm emergency number with voice mail.

Firm-related external web site for listing accountable staff and other communications (password-enabled)

Recommend that Staff keep a business card in their wallet to hand-off while passing through the Assembly point.

3. Make changes to the Evacuation Process:

Add the process point when staff should put on mask and goggles.

Create or change the second Assembly point to an internal one including City-related reception-care centers.

4. Recommend or provide enhancements to the desk emergency kit:

- (N-94) mask
- Goggles
- Vinyl gloves
- Hazardous Materials bag or plastic bag

- Transportable First-Aid Kits
- Light Stick and Flashlight
- Water Source
- Food source
- Personal medication requirements

5. Educate staff to:

The changes in the evacuation process that include accommodating a ‘ dirty bomb’

- Enhancing their evacuation kit
- Putting on mask and goggles
- The internal Assembly Point and City reception-care centers

Actions to take after evacuation should there be concerns regarding radiation:

- Shower
- Change Clothes
- Seek information from City and State Agencies
- Seek Medical Help

The Shelter-in-Place Process:

- Making their decision – legal and safety implications
- Staff Accountability
- Building Management Processes and Procedures
- Keeping Informed
- Personal Safety processes and procedures: First Aid
- Communicating with City and State Agencies
- How to know when it is safe to leave
- Following the Evacuation Process
- Seeking Medical Attention

6. To support Shelter in-Place, Enhance Corporate Stores:

- Tee shirts, sweat-pants and socks
- Hazardous Material Cleanup Kits
- Geiger counter/radiation-detector
- Hazardous Material bags
- Soap, Shampoo and water for washing

- Drinking water
- Antacids
- Blankets, pillows, sleeping bags
- Large First-aid kits
- Radios: Battery-operated and wind-up
- Flashlights, light sticks and large light sources
- Batteries

7. Building Management:

Meet with Building Management to understand what processes they will invoke in case of a 'dirty bomb' :

- Would City Agencies notify them if there were a concern of a 'dirty bomb'? Will building management announce this to tenants? If so, how?
- If the building is damaged, what is their evacuation process for tenants?
- What kind of emergency tools does the Building maintain? Geiger counters?
- Does the building provide first aid or emergency supplies for tenants? Staff? What are they?
- Will the building advise that staff remain in the building? Or ask staff to leave even with the possibility of radiation?
- Does the building have other sites that tenants can go to for initial staff assessment?

Summary

This new age of terrorism has affected the way a business continuity planner and disaster recovery specialist must approach the difficult task of business resiliency. No longer can we be content with the standard routine of evacuation, congregation, relocation and recovery. We need to be more aware and be prepared for difficult decisions.

- To evacuate or not: gather all the information before making a decision.
- If evacuate, know where the employees are being sent. Do not send employees into a contaminated area.
- Include table-top testing as part of the training program. Use scenarios that include dirty bomb conditions and create appropriate responses
 - Work with City, State and Building Management
 - Enhance emergency kits and Corporate stores

