
FACT SHEET: EXPLOSIVE DISPERSAL OF RADIOACTIVE MATERIALS

What is a Dirty Bomb or Radioactive Dispersal Device?

A device that explosively spreads radioactive materials is popularly called a dirty bomb. The “dirty” part of the bomb is the radioactive material because it contaminates the area. The radioactive contamination denies access to the area until the contamination is removed. A more technical term is Radioactivity Dispersal Device (RDD), which does not limit the definition to explosives. The immediate effects of an explosion are destruction and possibly death. The radioactive contamination does not cause immediate destruction or death, but it may require destruction in order to clean up the area. A non-explosive RDD may cause little or no initial damage and not be evident for some time. The assumption behind dirty bombs is that terrorists want to maximize immediate deaths, disrupt the cleanup, and cause panic.

What are the effects of a Dirty Bomb?

The larger the explosion the more destruction it causes and, it is believed, the more radioactive material it is capable of spreading. A device that will cause both a large amount of destruction and spread a large amount of radioactive material is difficult to build. If the primary intent of the explosion is immediate death and destruction, then radioactive contamination is secondary. This secondary effect of contamination results in little or no health effects from the radiation. The major injuries will be from the explosion. If the deaths are to be caused by the radiation, then an explosion is a poor delivery device. A large amount of radioactive material will be necessary and consequently a large amount of explosive. The result will still be that the explosion will cause all the injuries.

Isn't the problem that the radiation is spread far beyond the damaged area?

An explosive device is not a good dispersal device. An explosion includes a large amount of dust and debris and a relatively small amount of very fine particles. Only the fine particles will be found much beyond the blast zone.

The farther these fine particles go, the more dilute they become in the air, which greatly reduces the radioactivity at any location. An efficient dispersal bomb will require that the radioactive material be a very fine powder before the explosion and packaged so that it is projected as a dust by the blast front. Such a device is exceedingly difficult to build and even more difficult with a large amount of radioactive material.

Isn't it true that a single radioactive particle can cause cancer?

No. It actually takes a large amount of radiation to cause cancer. Regulatory agencies have taken the position of erring on the side of safety so they assume that any dose can cause cancer.

Why is a bomb with a large amount of radioactive material difficult to build?

A large amount of radioactive material becomes a physical problem for delivery. A highly radioactive device could be nearly impossible to deliver because the terrorist would be killed or too weak from radiation sickness before delivery. A small device that is easily delivered would not have the desired impact. Nevertheless, the public's fear of radiation makes a small device sufficient. Since the terrorist's goal is disruption, the mere report of the blast of a bomb containing radioactive materials may have the desired effect. If sufficient fear is caused, many people will avoid a contaminated area even after it has been cleaned of radioactive material.

Isn't cleanup very expensive? If areas are too hard to clean will we have to abandon them for many years?

There is little reason that cleanup should be expensive and take a long time. The contamination will be all on the surface, which means it can be vacuumed or removed with soap and water. In some cases light abrasion of the surfaces will be necessary. Radioactive rubble can be sprayed with coating materials to prevent dusting and loaded into easily sealed containers.

FOR MORE INFORMATION CONTACT:

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