



FACT SHEET

Dirty Bombs

Because of recent terrorist events, people have expressed concern about the possibility of a terrorist attack involving radioactive materials, possibly through the use of a “dirty bomb,” and the harmful effects of radiation from such an event. The Centers for Disease Control and Prevention has prepared this fact sheet to help people understand what a dirty bomb is and how it may affect their health.

What a “dirty bomb” is

A dirty bomb, or radiological dispersion device, is a bomb that combines conventional explosives, such as dynamite, with radioactive materials in the form of powder or pellets. The idea behind a dirty bomb is to blast radioactive material into the area around the explosion. This could possibly cause buildings and people to be exposed to radioactive material. The main purpose of a dirty bomb is to frighten people and make buildings or land unusable for a long period of time.

Dirty bomb versus atomic bombs in Hiroshima and Nagasaki

The atomic explosions that occurred in Hiroshima and Nagasaki were conventional nuclear weapons involving a fission reaction. A dirty bomb is designed to spread radioactive material and contaminate a small area. It does not include the fission products necessary to create a large blast like those seen in Hiroshima and Nagasaki.

Sources of the radioactive material

There has been a lot of speculation about where terrorists could get radioactive material to place in a dirty bomb. The most harmful radioactive materials are found in nuclear power plants and nuclear weapons sites. However, increased security at these facilities makes obtaining materials from them more difficult.

Because of the dangerous and difficult aspects of obtaining high-level radioactive materials from a nuclear facility, there is a greater chance that the radioactive materials used in a dirty bomb would come from low-level radioactive sources. Low-level radioactive sources are found in hospitals, on construction sites, and at food irradiation plants. The sources in these areas are used to diagnose and treat illnesses, sterilize equipment, inspect welding seams, and irradiate food to kill harmful microbes.

Dangers of a dirty bomb

If low-level radioactive sources were to be used, the primary danger from a dirty bomb would be the blast itself. Gauging how much radiation might be present is difficult when the source of the radiation is unknown. However, *at the levels created by most probable sources, not enough radiation would be present in a dirty bomb to cause severe illness from exposure to radiation.*

Past use of dirty bombs

According to a United Nations report, Iraq tested a dirty bomb device in 1987 but found that the radiation levels were too low to cause significant damage. Thus, Iraq abandoned any further use of the device.

Dirty Bombs

(continued from previous page)

What people should do following an explosion

Radiation cannot be seen, smelled, felt, or tasted by humans. Therefore, if people are present at the scene of an explosion, they will not know whether radioactive materials were involved at the time of the explosion. If people are not too severely injured by the initial blast, they should:

- Leave the immediate area on foot. Do not panic. Do not take public or private transportation such as buses, subways, or cars because if radioactive materials were involved, they may contaminate cars or the public transportation system.
- Go inside the nearest building. Staying inside will reduce people's exposure to any radioactive material that may be on dust at the scene.
- Remove their clothes as soon as possible, place them in a plastic bag, and seal it. Removing clothing will remove most of the contamination caused by external exposure to radioactive materials. Saving the contaminated clothing would allow testing for exposure without invasive sampling.
- Take a shower or wash themselves as best they can. Washing will reduce the amount of radioactive contamination on the body and will effectively reduce total exposure.
- Be on the lookout for information. Once emergency personnel can assess the scene and the damage, they will be able to tell people whether radiation was involved.

Even if people do not know whether radioactive materials were present, following these simple steps can help reduce their injury from other chemicals that might have been present in the blast.

Taking potassium iodide (KI)

Potassium iodide, also called KI, only protects a person's thyroid gland from exposure to radioactive iodine. KI will not protect a person from other radioactive materials or protect other parts of the body from exposure to radiation. It must be taken prior to exposure (for example, if people hear that a radioactive cloud is coming their way) or immediately after exposure to be effective. Since there is no way to know at the time of an incident whether radioactive iodine was used in the explosive device, taking KI would probably not be beneficial. Also, KI can be dangerous to some people. Taking KI is not recommended unless there is a risk of exposure to radioactive iodine.

If radioactive materials were involved

Keep televisions or radios tuned to local news networks. If a radioactive material was released, people will be told where to report for radiation monitoring and blood tests to determine whether they were exposed to the radiation as well as what steps to take to protect their health.

Risk of cancer from a dirty bomb

Some cancers can be caused by exposure to radiation. Being at the site where a dirty bomb exploded does not guarantee that people were exposed to the radioactive material. Until doctors are able to check people's skin with sensitive radiation detection devices, it will not be clear whether they were exposed. Just because people are near a radioactive source for a short time or get a small amount of radioactive material on them does not mean that they will get cancer. Doctors will be able to assess risks after the exposure level has been determined.

Dirty Bombs

(continued from previous page)

More information:

For more information about medical response to detonation of a dirty bomb, see the following:

- **Medical Treatment of Radiological Casualties**
http://www.va.gov/emshg/docs/Radiologic_Medical_Countermeasures_051403.pdf
PDF (363 KB/78 pages)
Dept of Homeland Security Working Group on Radiological Dispersal Device Preparedness.

For more information about radiation and emergency response, see the Centers for Disease Control and Prevention's website at <http://www.bt.cdc.gov> or contact the following organizations:

- **The CDC Public Response Source** at 1-888-246-2675
- **The Conference of Radiation Control Program Directors** [<http://www.crcpd.org/>]
at (502) 227-4543
- **The Environmental Protection Agency** [<http://www.epa.gov/radiation/rert/>]
- **The Nuclear Regulatory Commission** [<http://www.nrc.gov/>] at (301) 415-8200
- **The Federal Emergency Management Agency (FEMA)** [<http://www.fema.gov/>]
at (202) 646-4600
- **The Radiation Emergency Assistance Center/Training Site** [<http://www.orau.gov/reacts/>]
at (865)-576-3131
- **The U.S. National Response Team** [<http://www.nrt.org/production/nrt/home.nsf>]
- **The U.S. Department of Energy (DOE)** [<http://www.energy.gov/>] at 1-800-dial-DOE

For information on other radiation emergency topics,
visit www.bt.cdc.gov/radiation, or call the CDC public response hotline
at (888) 246-2675 (English), (888) 246-2857 (Español), or (866) 874-2646 (TTY)