

Dirty Bombs

Because of recent terrorist events, some 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. This fact sheet is to help you understand what a dirty bomb is and how it may affect your health.

What is a “dirty bomb”?

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. The Nuclear Regulatory Commission states that in general these devices would be unlikely to cause serious health effects beyond those caused by the detonation of the conventional explosives.

What is the difference between a dirty bomb and the bombs dropped on 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.

What are the sources of the radioactive material used in dirty bombs?

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.

What are the 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.

What should people 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, including hair and under fingernails. 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.

Will taking potassium iodide after a dirty bomb explosion help?

Potassium iodide, also called KI, only protects a person's thyroid gland from exposure to one form of radiation - 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 are told by emergency officials that a radioactive plume is approaching) 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. Children under 14 are most at risk from the effects of radioactive iodines of the thyroid gland. KI is NOT a substitute for evacuation. Evacuation is the most effective protective action in the event of a radiological emergency. Also, although KI is generally safe, it can cause health risks in persons with existing thyroid conditions and those allergic to iodine or shellfish. Taking KI is not recommended unless there is a risk of exposure to radioactive iodine.

What should I do 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.

Questions and comments are welcomed and may be addressed to the Bureau of Emergency Preparedness and Response by calling 603-271-4496 or 800-852-3345 x4496. For further information, refer to the Centers for Disease Control and Prevention website at www.bt.cdc.gov or at the New Hampshire Department of Health and Human Services website at www.dhhs.state.nh.us.