



# FACT SHEET

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## FREQUENTLY ASKED QUESTIONS ABOUT A RADIATION EMERGENCY

### **What is Radiation?**

- Radiation is a form of energy that is present all around us.
- Different types of radiation exist, some of which have more energy than others.
- Amounts of radiation released into the environment are measured in units called curies. However, the dose of radiation that a person receives is measured in units called rem.

### **How can exposure occur?**

- People are exposed to small amounts of radiation every day, both from naturally occurring sources (such as elements in soil or cosmic rays from the sun), and man-made sources. Man-made sources include some electronic equipment (such as microwave ovens and television sets), medical sources (such as x-rays, certain diagnostic tests, and treatments), and from nuclear weapons testing.
- The amount of radiation from natural or man-made sources to which people are exposed is usually small; a radiation emergency (such as a nuclear power plant accident or a terrorist event) could expose people to small or large doses of radiation, depending on the situation.
- Scientists estimate that the average person in the United States receives a dose of about one-third of a rem per year. About 80% of human exposure comes from natural sources and the remaining 20% comes from man-made radiation sources – mainly medical x-rays.
- Internal exposure refers to radioactive material that is taken into the body through breathing, eating, or drinking. External exposure is outside the body.

### **What happens when people are exposed to radiation?**

- Radiation can affect the body in a number of ways, and the adverse health effects of exposure may not be apparent for many years.
- Adverse health effects can range from mild effects, such as skin reddening, to serious effects such as cancer and death. Effects depend on the amount of radiation absorbed by the body (the dose), the type of radiation, the route of exposure, and the length of time a person was exposed.
- Exposure to very large doses of radiation may cause death within a few days or months and low doses may lead to an increased risk of developing cancer or other health effects.

### **What types of terrorist events might involve radiation?**

- Possible terrorist events could involve introducing radioactive material into the food or water supply, using explosives to scatter radioactive materials, bombing or destroying a nuclear facility, or exploding a small nuclear device.

- Although introducing radioactive material into the food or water supply most likely would cause great concern or fear, it probably would not cause much contamination or increase the danger of adverse health effects.
- Although a dirty bomb could cause serious injuries from the explosion, it most likely would not have enough radioactive material in a form that would cause serious radiation sickness among large numbers of people.
- A meltdown or explosion at a nuclear facility could cause a large amount of radioactive material to be released. People at the facility would probably be contaminated with radioactive material and possibly be injured if there was an explosion. People in the surrounding area could be exposed or contaminated.
- An exploded nuclear device could result in property damage and people would be killed or injured from the blast. After a nuclear explosion, radioactive fallout would extend over a large region far from the point of impact, potentially increasing people's risk of developing cancer over time.

### **What preparations can I make for a radiation emergency?**

- Develop your own family emergency plan so that every family member knows what to do.
- At home put together an emergency kit that would be appropriate for any emergency. The kit should include some of the following items:

A flashlight with extra batteries  
 A portable radio with extra batteries  
 Bottled water  
 Canned and packaged food  
 A hand operated can opener

A first-aid kit and essential prescription medications  
 Personal items such as paper towels, garbage bags, and toilet paper

### **How can I protect myself during a radiation emergency?**

- After a release of radioactive materials, local authorities will monitor the levels of radiation and determine what protective actions to take. The most appropriate action will depend on the situation so tune into the local radio (WGCH 1490AM), local news networks (Channel 12 and Channel 8) and call the Greenwich Emergency Network Line at 866-245-4260 for information and instructions during any emergency.
- If a radiation emergency involves the release of large amounts of radioactive materials, you may be advised to “shelter in place”, which means to stay in your home or office; or you may be advised to move to another location. *Refer to the Sheltering in Place Fact Sheet for additional information.*
- You may also be advised to take Potassium Iodide (KI) to increase your level of thyroid protection if radioactive iodine is present. *Refer to the Potassium Iodide Fact Sheet for more detailed information.*

### **Dirty Bombs**

Because of recent terrorist events, people have expressed concern about the possibility of a terrorist attack involving radioactive material, possibly through the use of a “dirty bomb”, and the harmful effects of radiation from such an event.

### **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 forms of powder or pellets. The idea behind a dirty bomb is to blast radioactive materials into the area around the explosion and cause buildings as well as people to be exposed to radioactive material.

### **Sources of the radioactive material**

Terrorists could get radioactive material to place in a dirty bomb from nuclear power plants and nuclear weapons sites. However, increased security at these facilities makes obtaining materials from them more difficult. Because obtaining high-level radioactive materials from a nuclear facility is difficult there is a chance that the radioactive materials used in a dirty bomb would come from low-level radioactive sources. Low-level radioactive sources can be found for example at construction sites, and at food irradiation plants.

### **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.

### **What people should do following an explosion**

You cannot see, smell, feel or taste radiation. Therefore, if people are present at the scene of any explosion, they will not know whether radioactive materials were involved at the time of the explosion. If you are not affected by the blast do the following:

- 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. This will reduce exposure to any radioactive material that may be on dust at the scene.
- Remove 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 off. Washing will reduce the amount of radioactive contamination on the body and will effectively reduce total exposure.
- Find out whether or not radiation was involved.

### **If radioactive materials were involved**

Stay tuned to local news networks (Channel 8 and 12) and listen to local radio (WGCH 1490AM). 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 skin can be checked it will not be clear whether radiation was used. 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. Risk assessment will be determined after the exposure levels have been determined.

For more information about radiation check the following web sites:

[www.epa.gov/radiation](http://www.epa.gov/radiation), [www.ornl.gov/reacts/define.htm](http://www.ornl.gov/reacts/define.htm)

For more information about health effects from radiation exposure check the following web sites: [www.epa.gov/radiation](http://www.epa.gov/radiation)

For more information about emergency response check the following web sites:

[www.fema.gov](http://www.fema.gov); [www.redcross.org/services/disaster/beprepared](http://www.redcross.org/services/disaster/beprepared);  
[www.epa.gov/swercepp/](http://www.epa.gov/swercepp/); [www.ojp.usdoj.gov/bja](http://www.ojp.usdoj.gov/bja); [www.ornl.gov/reacts/injury.htm](http://www.ornl.gov/reacts/injury.htm);  
[www.ced.gov/nceh/radiation/basicfacts.htm](http://www.ced.gov/nceh/radiation/basicfacts.htm)