



Radiation Emergencies

Although rare, radiation emergencies are possible. Because of the widespread fear and panic these types of disasters can cause, it is important for the public to know about the potential for them ahead of time. There are steps you can take to protect yourself during an emergency involving radiation. The Maryland Department of Health and Mental Hygiene's Office of Preparedness and Response offers this information about different types of radiation emergencies so Marylanders can be prepared.

Dirty Bomb or Radiological Dispersal Device (RDD)

A radiological dispersal device (RDD) is a device or mechanism that spreads radioactive contamination. When explosives are used to spread radioactive powder or pellets, it is known as a dirty bomb. A dirty bomb is not the same thing as a nuclear weapon — it does not produce the tremendous force and destruction of a nuclear blast. The main danger from a dirty bomb is from the explosion, which may cause serious injuries and property damage. It is **very unlikely** that radioactive materials used in a dirty bomb or RDD would cause immediate serious illness related to radiation exposure unless people are extremely close to the blast. However, victims who are contaminated by or inhale or ingest radioactive dust may be at an increased risk of illness.

Improvised Nuclear Device (IND) or Nuclear Weapon

An improvised nuclear device (IND) is an explosive nuclear weapon. Although not as powerful as Cold War-era nuclear weapons, INDs can cause significant destruction. A nuclear explosion involves a large blast that produces an intense wave of heat, light, air and radiation. Anything immediately near the explosion, including buildings, roads and cars, will be destroyed. The resulting radioactive dust and debris cloud, known as fallout, can be carried long distances before falling to the ground, thus exposing individuals to high levels of radiation.

Industrial Accident

Industrial incidents involving radiological materials may be accidental or intentional. They can result in the release of radioactive material used for commercial, industrial or medical purposes from its protective container. The radiation risk to individuals who are not immediately close to the accident is low.

Nuclear Power Plant Accident or Incident

Nuclear power plants have protections in place to prevent the release of radiation. However, a serious incident could allow some radiation to escape, most likely as a plume of steam carried by the wind. The risk to residents would depend on plume size, direction and wind speed. Parts of Maryland lie within a 10-mile radius of two nuclear power plants: the Calvert Cliffs Nuclear Power Plant in Calvert County and the Peach Bottom Atomic Power Station in southern Pennsylvania. These areas are known as plume exposure zones and could be affected if a plume of radiation were released during an accident or attack. Additionally, parts of the state are less than 50 miles from four other plants in Pennsylvania, New Jersey and Virginia. These areas, known as ingestion pathway zones, could be affected by contaminated food or water in a radiation emergency.

Radiological Exposure Device (RED)

An RED, also called a "hidden sealed source," is a terrorist threat intended to expose people to significant doses of radiation without their knowledge. Constructed from an unprotected radioactive material, an RED could be hidden from sight in a public place, exposing those who sit or pass close by to potentially harmful levels of radiation. If the radioactive contents are released from the container, the device could be capable of causing radiological contamination.

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What are the health effects of radiation?

The direct health effects following radiation exposure are dependent upon the type of radiation, length of exposure time and protection provided by surrounding materials. Short-term effects usually result from exposure to high radiation levels. The brain, skin, intestines and blood system may be affected. Long-term health effects of radiation include an increased risk of cancer. Any emergency, including those involving radiation, can cause emotional and psychological distress. Many more people will experience the mental health effects than the physical effects during a radiation emergency.

What actions should I take to protect myself, family, friends and pets if we are in the vicinity of a radiological event?

Because people cannot see, smell, feel or taste radiation, you should take immediate steps to protect yourself and your loved ones. The most important steps you can take are:

- **Follow the directions, advice and recommendations of local and state authorities.**
- **Stay together and notify authorities of your location, name, and accompanying family members and friends. In addition, notify authorities of any serious injuries or medical problems.**
- **Reduce the amount of time you are exposed to or contaminated by radioactive dust or material as quickly as possible.**
- **Seek immediate safe shelter to protect and shield yourself from radiation exposure.**
 - If you are in a building, stay there as long as it is not damaged.
 - If you are outside, seek a safe building for shelter. Avoid damaged buildings.
 - Shelter in the interior of a building as far underground as possible.
 - In the case of an IND, you may have to stay sheltered for 12-18 hours.
 - Close all windows and doors.
 - Turn off fan systems, such as heating and air conditioning, which may bring radioactive dust into the building.
 - *Do not leave safe shelter until advised by first responders and authorities.*
 - If you live in the 10-mile radius of a power plant and hear an emergency siren, turn on the radio or TV for instructions on what you should do. Officials may recommend that you shelter in place (stay inside) or evacuate, depending on the situation.
- **Reduce radioactive contamination.**
 - Avoid inhaling radioactive dust by covering your mouth and nose with a cloth until you are in a safe location away from radioactive dust and have discarded contaminated clothes.
 - Discard any outer clothing that may be contaminated with radioactive material and place the clothes into a plastic bag, if available. Store the contaminated clothes away from people.
 - After discarding outer clothing, go to a safe internal area in the building below ground.
 - At the first opportunity, wash exposed skin or shower to reduce external contamination on your body.
 - Avoid eating and drinking any food or fluids that could be contaminated by radioactive dust. Eating or drinking food and water in sealed containers is permitted once the outer surfaces have been cleaned of contamination.

Should I take potassium iodide?

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 types of radioactive materials or protect other parts of the body. People should not take KI unless told to by authorities. Taking KI may have no benefit, depending upon the radiation emergency. KI can also be dangerous for some people to take.

For more information on public health and emergency preparedness, visit the Office of Preparedness and Response online at <http://preparedness.dhmm.maryland.gov>, www.twitter.com/MarylandOPR and www.facebook.com/MarylandOPR.