

For more information, please contact:

Radiological Impact Assessment Section
Nuclear Regulations, Licensing and
Safeguards Division
Philippine Nuclear Research Institute
Tel No. 929-60-10 to 19 local 285



Department of Science and Technology
PHILIPPINE NUCLEAR RESEARCH INSTITUTE

Office Address • Commonwealth Avenue, Diliman, Quezon City •
P.O. Box 932 Manila or 213 UP, Quezon City • Tel No. • 929-6010
to 19 • Fax • 920-1646 • Website: <http://www.pnri.dost.gov.ph>

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What to do in case of a Terrorist Attack involving Radioactive Materials



Introduction

The possibility of a terrorist attack using radioactive materials is no longer unthinkable. Since September 11, 2001, news stories have described several possibilities: an attack on a nuclear power plant, setting off a small nuclear weapon, or using a "dirty bomb". The latter is simply a radioactive dispersal device. In any terrorist attack, the primary goal is to create panic.

This brochure provides some basic information on radiation, how it affects your body, and how you can minimize radiation exposure during an attack. It also mentions the steps that a trained emergency-response personnel will do if an attack involving radioactive materials should occur. The measures that will help make public reactions as orderly and effective are briefly described.

What is radiation and how does it interact with materials?

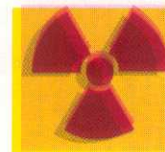
The term "radiation" is very broad, and includes such things as light and radio waves. It is most often used however to mean "ionizing" radiation. Ionizing radiation changes the physical state of atoms which it strikes, causing them to become electrically charged or "ionized". In some circumstances, the presence of such ions can disrupt normal biological processes. Ionizing radiation may therefore present a health hazard to men. There are various types of ionizing radiation, each with different characteristics. Unstable, naturally-occurring and man-made atoms that emit these kinds of radiation are said to be radioactive. Radioactive materials may be in solid, liquid or gaseous form. The radiation emitted by these materials can not be detected by any of our physical senses. However, it can be measured and identified using special devices and instruments.

It is possible that terrorists will use devices that deliver high doses of radiation to a small area. They are more likely to attempt to spread the radioactive material over large areas, hoping that it will induce panic and results in contamination that will be time consuming and expensive to clean up.

How can the public recognize radioactive materials?

Radioactive materials may be recognized through the following ways:

- ✖ A **Radiation Warning Symbol** indicates the presence of radioactive material. It is usually black trefoil on yellow background or magenta (reddish purple) trefoil on yellow background. Terrorist devices may not have this warning sign.



- ✖ In addition to the Radiation Warning Symbol, the following words, abbreviations and illustrations are some **typical markings** found on containers or devices containing radioactive materials:

Cobalt- 60	(Co-60)	Curie (Ci)	Type A/B
Iridium 192	(Ir-192)	Millicurie (mCi)	DOT
Cesium 137	(Cs-137)	Becquerel (Bq)	B(U), B(M)
Radium 226	(Ra-226)		



How do you minimize radiation exposure?

- ① **Remain Calm.** The attack is designed to induce terror. By controlling your emotions, you prevent the primary aim of the attacker. Your goal is to minimize danger to yourself and those around you. It is highly unlikely that radioactive material spread over a wide area will produce a dose large enough to cause radiation sickness or death. Remain calm and avoid actions such as pushing, shoving, darting across highways, running down stairs, or driving aggressively, these actions are more likely to injure or kill you than radiation.
- ② **Shield yourself from radiation.** Glass, concrete, metal, and other materials will help to shield you from radiation. If you are outdoor, move inside. If you are indoor, close the windows and put the ventilation system on recycled air. Do not eat food or drink water which have been exposed outside during the emergency.
- ③ **Watch out for emergency information bulletins.** Switch on the radio or television sets and wait for instructions from emergency response authorities.
- ④ **Wash and change your clothes.** If you have been directly exposed to radioactive materials, you should wash the exposed parts of your skin (taking a shower is preferred) and change your clothes as soon as possible. Package any contaminated clothes or other articles in a sealed plastic trash bag and keep them isolated.
- ⑤ **Minimize inhalation and ingestion of radioactive materials.** If you are outdoor, breathe through a folded handkerchief or other piece of cloth to help filter radioactive particles.

- ⑥ **Increase the distance between you and the source of radiation.** If you are in the immediate area of a radiological attack (100s of feet), move away from the source of radiation. Radiation dose drops off quickly with distance.

However, at the beginning of a radiological attack, most people will **not** know exactly where the source of the radioactive material is located. Immediately stay away from scene. Find a shelter you will be safe from exposure. Leave the roadways clear for the emergency response.

What will an emergency response personnel do in case of a radiological attack using radioactive materials?

Tn case of a radiological attack, emergency response personnel is expected to do the following:

- ☒ Identify the nature of the problem.
- ☒ Determine the severity of the problem.
- ☒ Map the boundaries of the affected areas and set up barriers to show where the contamination is.
- ☒ Move people out of the area, starting with those in the most-contaminated zones.
- ☒ Survey and decontaminate people as necessary.
- ☒ Start to clean up the contamination, with the assistance of government agencies.

What can you do to help make the public response to such an attack as orderly and as effective as possible?

- ① The most important thing to remember is to avoid **PANIC**. An act of radiological terrorism is a serious matter that can lead to great disruption and inconvenience, but is not likely to be life threatening. The single best thing you can do is to act in a calm and orderly manner.
- ② Review and follow the guidelines in this document. Listen to, and comply with, the instructions given to you by emergency response personnel who have been trained in dealing with radiological emergencies.
- ③ A terrorist attack is a public disaster situation. Great demands will be placed on public resources which will be utilized where they are most needed. Normal life may be disrupted for some time. Be prepared to cope with this disruption. Many areas advise the stockpiling of water, food, blankets, flashlights, and other supplies.
- ④ Avoid or minimize using telephones or cellular phones to lessen the load in the communication lines.

What should the public do in case of an attack?

In case of an attack the public should remember the following:

- ① Do not **PANIC**. Remain calm.
- ② Protect yourself from radiation exposure. Make effective use of the principles of **time, distance and shielding**.

- Time** • The radiation dose is reduced if exposure time to the radioactive material is kept to a minimum.
- Distance** • Exposure dose is decreased, the farther you are from the substance.
- Shielding** • Thick, heavy and dense materials such as concrete, lead, earth or steel reduces the radiation intensity.
- ③ Stay indoors or move in a safe area inside a building.
 - ④ Watch out for emergency information from radios and television.

The devices shown below may contain radioactive material. If you see such devices in unsecured places, notice radiation warning markings on a piece of scrap, or if you suspect that an item may hold a radioactive substance, keep time spent near the device to a minimum and immediately contact the Philippine Nuclear Research Institute (PNRI).



Radiography camera



Radioactive source containers

If you suspect that an area may have radioactive substances:

- ⊗ Keep time spent near the device to a minimum.
- ⊗ Stay as far away as possible from the material and warn other people. Ask help of police authorities to keep people away and to secure the area.
- ⊗ Immediately contact the PNRI.