

# What You Should Know if There is an Attack Involving Radioactive Materials

July 2002

**Fact Sheet 320-068**

Division of Environmental Health  
Office of Radiation Protection



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## THE UNTHINKABLE NOW A POSSIBILITY

There is the possibility that terrorists could plan an attack that causes the dispersal of radioactive material. This could consist of an explosive device packaged with various types of radioactive materials (a “dirty bomb”), an attack on a facility employing radioactive materials, an attack on a nuclear weapon, or even the detonation of a tactical nuclear device.

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## HAZARDS ASSOCIATED WITH EACH TYPE OF THREAT

A “**dirty bomb**” would generally consist of a conventional explosive device that is packaged with some type of radioactive material. There are numerous sources of radioactive materials available from household, industrial, and medical sources. Detonation of the device causes destruction in the immediate vicinity of the weapon commensurate with the yield of the explosives. The public impact comes from the fact that radioactive materials have been expelled and carried by the winds to contaminate people, buildings, vehicles, and even foods in a much larger area. People’s innate fear of radiation is what causes the major impact a terrorist is seeking. A typical ‘dirty bomb’ will not contain enough radioactive material to create an immediate life-threatening hazard. The hazard comes from extended exposure and the inhalation or ingestion of radioactive materials.

An **attack on a facility that employs radioactive material** could possibly release a significant amount of radioactive material. A successful attack on a nuclear power plant could result in the release of large quantities of material. The State and counties surrounding the nuclear plant have procedures in place and tested for responding to emergencies at major nuclear facilities. Sheltering or immediate evacuation would be ordered for a predetermined area surrounding the facility, probably prior to the start of any release. The probability of this type of attack succeeding is quite low considering the security and design of today's power plants. An attack on other facilities that use radioactive materials in much smaller quantities such as certain research, industrial, or medical facilities would result in releases much smaller in scale. Immediate life threatening levels of exposures are not expected from these types of events.

An **attack on a nuclear weapon** is another possible terrorist tactic. This would typically involve the use of conventional explosives or fire on a nuclear weapon in transport. The hazard here comes from the possibility of the propellant or the explosive materials in the weapon exploding, causing the nuclear material in the warhead to be dispersed over a large area. The Plutonium in a nuclear device is both radiologically and chemically toxic. Sheltering indoors is adequate protection from this type of event until directed by local officials to do otherwise.

The **detonation of a tactical nuclear device** poses the greatest hazard. Depending on the size of the device, there could be total destruction to an area of a mile or more from the site of the explosion. 100% fatality could occur in an area more than twice the size of the area of destruction. Severe skin burns could occur as far out as 10 times the radius of destruction. For example: a 10 kiloton device, a large tactical device, could cause 100% destruction out to a distance of about 1000 feet from the site of the explosion. 100% fatality would occur in the next few days to those people exposed out to about 3/4 mile. 50% of the exposed people within about one and one third miles will experience third degree burns from the explosion. (HOTSPOT dose projection program)

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## WHAT YOU CAN DO TO PROTECT YOURSELF

**Stay Inside:** Shelter yourself from airborne radioactive particles, in the form of fallout, by staying inside your home or office, unless instructed to do otherwise. Close the windows, turn off the ventilation system, and stay toward the center of the house or building. If there is a basement, go there. Once the initial blast is over, the existing risk will be from airborne radioactivity.

**Listen to the Radio:** When you learn that a nuclear detonation has occurred, tune a radio to your local emergency-broadcasting network and listen for instructions. Federal, state and local agencies will be doing everything they can to minimize the hazards and keep you safe. You may need to use a battery-powered radio, if electrical power is out in your neighborhood. Paying careful attention to any instructions given will help you minimize any exposure to radiation.

**Follow Instructions:** Your best chance of avoiding exposure is to do what the experts advise. If told to evacuate after the radioactive cloud has passed or gone in another direction do so immediately. Listen for news of the location of the cloud and travel at a right angle away from the cloud. Even if it has already passed, radioactive contamination may have been deposited on the ground.

**Seek Help if Needed:** Seek an assistance center, which will be set up as soon as possible. If that hasn't happened yet, go to a fire station or police station located outside the affected area.

**Look for Symptoms:** If you believe you have been directly in the path of the cloud or in the blast zone itself, watch for symptoms of exposure, like nausea, loss of appetite, reddening of the skin, or diarrhea. Seek immediate medical help if symptoms occur. Blood changes can be measured at even moderate exposures and are among the first detectable symptoms. A doctor can test for those changes.

**Watch What You Eat:** Avoid drinking fresh milk or eating fresh vegetables from the affected area. One of the most common radionuclides found in a nuclear explosion is iodine-131, which is taken up by and can affect the thyroid. The most common pathway for exposure to iodine-131 is through fresh milk and vegetables contaminated with fallout radiation. Wait until the Department of Health announces that produce and dairy products are safe to eat and drink.

**If You Suspect You are Contaminated:** If you may have been exposed to radioactive materials from a terrorist attack, you should change into clean clothes and place the potentially contaminated clothing in a plastic bag. Take a shower to remove any contamination that may be on your skin. The shower should use lukewarm water (cold water will close the pores of your skin trapping contamination inside, hot water will open the pores allowing contamination to enter) and plenty of soap. It is not necessary to scrub hard, you do not want to irritate the skin unnecessarily.

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## Source

Office of Radiation Protection, Washington State Department of Health

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