

OVERVIEW: AN IMPROVISED NUCLEAR DEVICE (IND)

National planning is based on the detonation of a 10 kiloton nuclear bomb, which is about three quarters the size of the Hiroshima bomb.

An IND may be constructed by terrorists from components of a stolen state-built nuclear weapon, or built from scratch using nuclear material that can produce a nuclear explosion.

An IND is very different from a radiological dispersal device (RDD) (a “dirty bomb”), which simply disperses radioactive material. An IND creates new radioactive particles from non radioactive material that is pulverized into fallout.

This new radioactive material that is created has levels that are extremely dangerous immediately after detonation. These levels decrease very rapidly in just hours, then less rapidly over a few days to 2 weeks, and then gradually over decades.

During the time with the highest radiation levels it is safest to stay inside, sheltered away from the radioactive material outside.

You could be exposed to radioactive materials in three ways.

1. Radioactive material in the air and on the ground. You can prevent exposure by taking shelter in a basement or other place with no exposure from radioactive material.
2. Radioactive material on hair, skin and clothing. Exposure will stop if you wash off the radioactive material.
3. Breathing or swallowing radioactive material. Exposure will stop when your body eliminates it or when the material stops giving off radiation (NCDCCPS, 2011).

Some Health Effects of Radiation Exposure

Radiation affects people by depositing energy in body tissue. When an incident occurs, scientists can predict how much radiation energy a person might absorb. There is a direct relationship between how much radiation energy a person absorbs (dose) and potential health effects.

The severity of the effects depends on the amount of radiation absorbed by the body, the type of radiation, how the radiation is taken into the body (breathed in, eaten, or absorbed through cuts in the skin), the length of time a person is exposed, and how fast the person is exposed (NYCDHMH, 2011).

It can also increase the risk of developing cancer much later in life. Exposure to very large doses of radiation can lead to radiation sickness, with symptoms such as loss of appetite, hair loss, diarrhea, or even death.

It is difficult to determine whether certain populations are more vulnerable to the effects of radiation than others. However, **pregnant women, infants, and young children are assumed to be more susceptible to the health effects of radiation exposure.**

Potassium iodide (KI): only take this if local officials tell you to do so. KI only protects the thyroid gland and does not protect against any other radiation exposure. It should only be taken in an emergency that involves the release of radioactive iodine, as would happen after the explosion of a nuclear bomb. (CDPH, 2011).

A “dirty bomb” most likely would not contain radioactive iodine (CDPH, 2011).

How far will the radioactive material travel?

People in the path of the radioactive material – downwind from the detonation – may be asked to take protective measures from airborne radioactive material.

The farther away you are from the point of the explosion, the less airborne radioactive material will reach your area.

The radioactive material will move a considerable distance in the atmosphere.

As it moves within the atmosphere’s air flow, radioactive material will be deposited on the ground. This is referred to as fallout.

The larger particles, containing greater amounts of radioactive material, fall to the ground in the area closest to the explosion.

The “Dangerous Fallout Zone” will extend 15-20 miles from a 10 kiloton blast. This is a temporarily lethal zone. Radiation levels within this zone can be one million times natural background levels. Radiation levels gradually level off downwind of this zone for over 100 miles, depending on the size of the bomb and how wind shapes the fallout plume (NSSOSTP, 2010).

Any type of precipitation, such as rain or snow, will take the radioactive material that was raised into the atmosphere from the blast and deposit it on the ground, creating “hot spots”.

Also, when it rains, the fallout that is rinsed off roofs and the ground will accumulate, and increase radioactive levels, by downspouts, and in storm drains and surface water.

What Preparations Can I Make for a Radiation Emergency?

Your community should have a plan in place in case of a radiation emergency. Check with community leaders to learn more about the plan and possible evacuation routes (NJDHSSb, 2011).

Check with your child's school, the nursing home of a family member, and your employer to see what their plans are for dealing with a radiation emergency (NJDHSSb, 2011).

Determine which buildings give the best fallout protection near and en route to where you live, work, or attend school (CBUPMC, 2011).

Buy a hand-crank or battery-powered radio (CBUPMC, 2011).

Develop your own family emergency plan and disaster kit so that every family member knows what to do (NJDHSSb, 2011). Know what steps your loved ones plan to take after a nuclear detonation and how you will find one another later (CBUPMC, 2011). This will increase the likelihood that you will all stay inside buildings rather than exposing yourselves to radiation while trying to find one another (CBUPMC, 2011).

Unnecessary radiation exposure should be avoided. After an IND detonation, it is most important to follow instructions from your state and local officials and first responders.