

# What to do in the First 24 Hours of a Nuclear Detonation

## Blast

A 10 kiloton (KT) detonation will have a dangerous blast radius of up to 3 to 4 miles from ground zero. The blast, common to any explosion, is caused by the rapidly expanding fireball. The rapid expansion increases the air pressure above normal air pressure; this effect is called overpressure. Solid objects, like buildings and structures, handle overpressure very poorly. Overpressure (measured in PSI) destroys buildings and structures. The blast and the overpressure itself generate high winds which can reach speeds of hundreds of miles per hour. Humans are relatively resilient to overpressure. However, the collapse of buildings and structures coupled with flying debris from high speed wind are extremely dangerous and potentially fatal. Close to the blast, within half a mile, overpressure will cause total destruction of buildings and structures (and the blast, in general, will destroy everything). However, even at 15 to 20 miles, overpressure can cause windows to break which would be extremely hazardous in the case of tall buildings where falling glass would cause serious harm.

A nuclear blast wave carries thermal radiation (heat from the explosion) and radioactive radiation. Because light travels faster than air, the flash of light from the blast is a signal that that you have a few seconds to hide behind a building or other obstruction which could shield you from the radiation and save your life. The flash can cause temporary blindness for up to 30 minutes at a distance of up to 15 miles from ground zero (assuming a 10KT detonation). Thermal radiation will cause immediate burns from the heat and radioactive radiation can cause sickness or death within weeks or months. Duck and cover. Get behind something, move away from windows, close your eyes and lie down. Ideally, you should be in a fallout shelter many feet below ground with adequate food, water and resources to survive for 3 days (preferably 2 weeks).

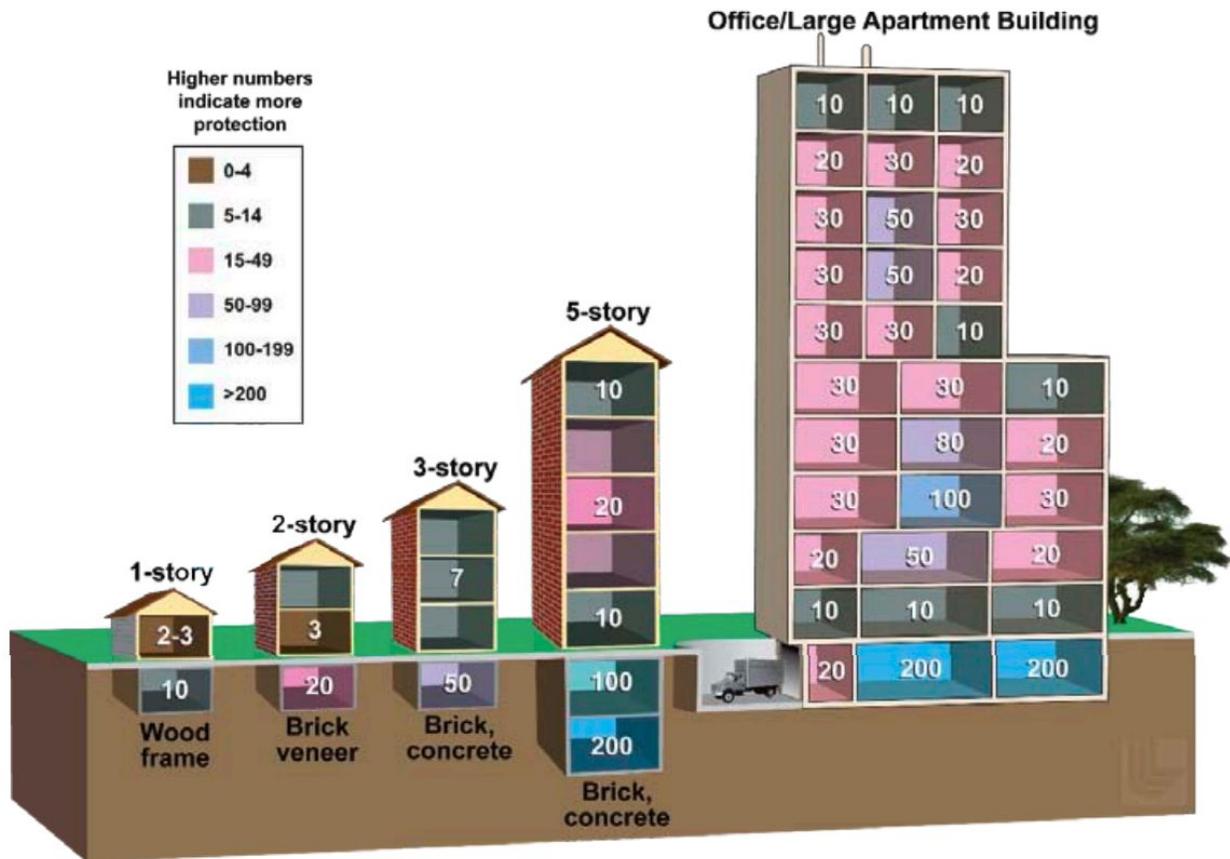
## Fallout

Radiation from fallout can kill you (in the short term) and can cause cancer (in the long term). Stay sheltered for at least 24 hours and until authorities say it's safe.

## Gamma Radiation

The primary fallout danger is from external exposure to gamma radiation. Gamma radiation will penetrate through most substances including wood and metal. Thick concrete, several feet of earth and brick can offer adequate protection from gamma radiation. In general you want to shelter as far away from fallout debris as possible (the debris emits gamma radiation). Fallout debris will fall on roofs and settle next to exterior walls. When sheltering in place move to the lowest most central part of your building.

**Single-story wood frame houses without basements and vehicles provide only minimal shelter and should not be considered adequate shelter inside the dangerous fallout zone (DF zone).**



Building as shielding – Numbers represent a dose reduction factor. A dose reduction factor of 10 indicates that a person in that area would receive 1/10th of the dose of a person in the open. A dose reduction factor of 200 indicates that a person in that area would receive 1/200th of the dose of a person out in the open.

### Beta Burns

Beta burns occur when fallout material remains in contact with your skin. Covering your entire body and brushing yourself off after contamination will help prevent beta burns.

Decontamination can be as simple as removing your clothes (place them in a plastic bag away from people) and showering (including thoroughly brushing out your hair).

### Internal Contamination

The risk of internal contamination, from inhalation or ingestion, are a concern but gamma radiation is orders of magnitude more harmful. Using protective gear like a mask or even a rag is better than no protection at all. Do not consume water or food that has been contaminated. If

possible, seal your shelter with plastic and tape so contaminated air cannot enter, making sure that you have a clean air supply (from under your house, for example). Potassium iodide can protect your thyroid from internal contamination and should be taken in the event of such a disaster. A significant number of affected people near the Chernobyl meltdown experienced thyroid cancer and related issues that could have been prevented with potassium iodide. Hazardous conditions from fallout will be dramatically reduced 24 hours after detonation. However, radioactivity from the initial blast may be so high that the residual radioactivity may still be elevated to hazardous levels, even after several days. Distance from ground zero will determine residual radioactivity. Fallout can travel several hundred miles from ground zero within hours of detonation and warrants protective action. If you are within a few hundred miles of ground zero immediately seek shelter and stay there until you hear otherwise from your local authorities. Go in, stay in, tune in.

## EMP - Electromagnetic Pulse

There are no direct health threats from an EMP but it is a phenomenon that must be considered. A nuclear detonation at ground level will severely disrupt or destroy electronics and disable vehicles within 2 to 5 miles of ground zero (assuming a 10KT explosion). A nuclear explosion high in the atmosphere would cause a much greater area of disruption. If you are in the affected range it may prohibit you from communicating or receiving public announcements via any electronic device. It may also leave you without the ability to cook, heat or have light. Precautions should be taken so you can survive in place for at least 3 days (preferably 2 weeks) without affected equipment.

Source: <https://www.fema.gov/media-library/assets/documents/24879>



