

HOW TO SHELTER IN PLACE FROM NUCLEAR FALLOUT

Shelter in a basement or the middle of a large brick or concrete building, as far from the outside walls and roof as you can get, and plan to stay at least 24 hours. Close windows, doors, and fireplace dampers, and turn off anything that pulls in outside air.

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Sheltering in place means getting inside a building and staying there. After a nuclear explosion it is the first thing federal guidance tells people to do. FEMA calls it the best initial action: take shelter in the nearest, most protective building and listen for instructions. This page covers how to choose that spot, how long to stay, and what to have there.

WHY WALLS PROTECT YOU FROM FALLOUT

Fallout is radioactive dust and debris that settles out of the air downwind of a ground-level explosion. The main danger is not breathing it. It is the gamma radiation given off by particles that have landed on the ground and on roofs. FEMA says this outdoor “ground shine” is typically far more hazardous than breathing in or swallowing fallout.

So protection comes from two things: **mass** between you and the fallout, and **distance** from where it has settled. FEMA lists the principles as time, distance, and shielding: reduce time in radioactive areas, increase distance from fallout, and use dense materials such as concrete, brick, or earth as shielding. Ready.gov puts it simply: put as many walls between you and the outside as you can.

FEMA defines an adequate shelter as one that reduces radiation exposure from fallout by a factor of 10 or more. That number is a “protection factor.” A protection factor of 10 means a person there receives one tenth of the dose of a person standing outside.

THE BEST PLACES TO SHELTER

FEMA’s guidance ranks shelter types like this (FEMA, Chapter 3):

- **Underground is best.** Basements, subway tunnels, and underground parking garages.
- **The center of a large, heavy building.** Most commercial buildings contain some adequate shelter. Thick-walled masonry buildings also generally provide adequate protection.

- **A house with a basement.** Residential basements generally provide adequate protection.
- **A wood frame house without a basement** usually does not provide adequate protection above ground, though it is still far better than being outside.
- **A car is not a shelter.** Vehicles lack dense shielding.

Good shielding materials are concrete, brick, stone, and earth. Wood, drywall, and thin sheet metal shield very little on their own, but FEMA notes that many layers can add up, as in a central room with many walls between it and the outside.

WHERE IN THE BUILDING TO GO

Once you are inside, position matters. CDC says to go to the basement or the middle of the building and stay as far from the walls and roof as you can, because radioactive material settles on the outside of buildings. FEMA adds: stay away from windows, corners, doors, and outside walls.

In practice, that means:

- **House with a basement:** the basement, away from windows and outside walls.
- **House without a basement:** an interior room or hallway near the center, with as many walls as possible between you and the outside. If an adequate shelter is close by, see the next section.
- **Apartment or office building:** an interior hallway or windowless room near the center of the building, away from the roof and the outer walls. A basement or underground garage is better if you can reach it.

Damage does not automatically rule a building out. FEMA says buildings with broken windows can still protect against ground shine, and structures do not need to be airtight, so a building with minor damage can be used if it is structurally sound.

■ TIP

Pick your spot now. FEMA asks planners to think through where the closest adequate shelter is and how long you could comfortably shelter there. The same questions work for a household: where would you go at home, at work, and at school, and what would you need there?

IF YOUR SHELTER IS POOR AND A BETTER ONE IS CLOSE

FEMA's guidance addresses this case directly. If an adequate shelter is within about 15 minutes' travel, people in a poor shelter should move to it no later than 30 minutes after the detonation. People in a somewhat better shelter should stay an hour or two before moving. Ready.gov's version is

shorter: if a multi-story building or a basement can be safely reached within a few minutes of the explosion, go there immediately.

HOW LONG TO SHELTER IN PLACE

Plan for **at least 24 hours**. CDC says staying inside for at least 24 hours can protect you and your family until it is safe to leave. FEMA tells individuals to plan to remain sheltered for at least 12 to 24 hours, and notes that the right time to leave can range from a few hours to several days, depending on local radiation levels and the route out.

Leave earlier only if staying is more dangerous: Ready.gov lists fire, a gas leak, building collapse, or serious injury. Otherwise, wait for officials to say it is safe or to give evacuation instructions. The first 72 hours guide walks through the timeline, and the evacuate or shelter guide covers the decision to leave.

AIR AND VENTILATION

Close and lock windows and doors. If possible, turn off fans, air conditioners, and forced-air heating units that bring air in from outside, and close fireplace dampers.

You do not need to seal the room. FEMA says to close windows and doors to limit outside air, but to keep enough ventilation for adequate indoor air quality, and that structures do not need to be airtight to protect against fallout. The danger you are sheltering from is radiation coming through the walls, not air leaking through gaps.

■ WARNING

Do not go outside to reset breakers or check on the house. CDC says do not go outside to reset breakers. If someone arrives from outside, CDC advises letting them in and asking them to remove their outer layer of clothing before entering, then wash.

FOOD AND WATER WHILE SHELTERING

CDC's guidance is reassuring here. Food and drinks that are sealed or were already inside are safe, and so is unspoiled food in the refrigerator or freezer. Wipe off containers that came from outside before opening them.

For drinking, CDC says bottled water is the only water free of contamination until officials say other sources are safe. Water already in a toilet tank (not the bowl) or a water heater is also free of

radioactive material. Boiling tap water does not remove radioactive material, but tap water is still safe for washing. Keep taking your medications.

SUPPLIES TO KEEP IN YOUR SHELTER SPOT

The list below is Ready.gov's basic disaster supplies kit, plus the items Ready.gov's radiation page adds and CDC's emergency radio guidance. Keep it in or near the spot you picked, so you do not have to go looking during the first hour. The fallout shelter kit list covers specific items.

SHELTER SUPPLIES CHECKLIST

WATER AND FOOD

- ☐ Water: one gallon per person per day for several days, for drinking and sanitation
- ☐ At least a several-day supply of non-perishable food
- ☐ Manual can opener
- ☐ Pet food and extra water for pets
- ☐ Infant formula, bottles, and diapers, if needed

INFORMATION AND LIGHT

- ☐ Battery-powered or hand-crank radio, and a NOAA Weather Radio with tone alert
- ☐ Flashlight
- ☐ Extra batteries
- ☐ Cell phone chargers and a backup battery

HEALTH AND CLEANUP

- ☐ First aid kit
- ☐ Prescription medications, eyeglasses, and contact lens solution
- ☐ A spare change of clothes for each person
- ☐ Trash bags for contaminated clothing, with plastic ties
- ☐ Moist towelettes and soap
- ☐ Dust mask

COMFORT AND OTHER

- ☐ Sleeping bag or warm blanket for each person
- ☐ Whistle to signal for help
- ☐ Wrench or pliers to turn off utilities
- ☐ Local maps

☐ Paper, pencil, and activities for children

NEXT STEPS

- Find your shelter spot at home and at work today, using the ranking above.
- See how far you are from documented likely targets with the targets near me calculator.
- Read how fallout works to understand why the first day matters most.

TRACK	Nuclear emergency
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SHEET	3 of 11
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COMPILED FROM THESE SOURCES

1. FEMA, Planning Guidance for Response to a Nuclear Detonation, Third Edition (2022)
2. Ready.gov, Radiation Emergencies (Nuclear Explosion)
3. Ready.gov, Build a Kit
4. CDC, What to Do: Get Inside
5. CDC, What to Do: Stay Inside
6. CDC, Where To Go In a Radiation Emergency (infographic)
7. CDC, What to Do: Stay Tuned
8. CDC, Food, Drinking Water, and Medicine Safety in a Radiation Emergency

Every safety claim on this sheet links to its primary source.