

# WHERE TO GO IN A RADIATION EMERGENCY



GET INSIDE



STAY INSIDE



STAY TUNED


## WHAT YOU SHOULD DO:

If a radiation emergency happens in your area, you should get inside immediately.

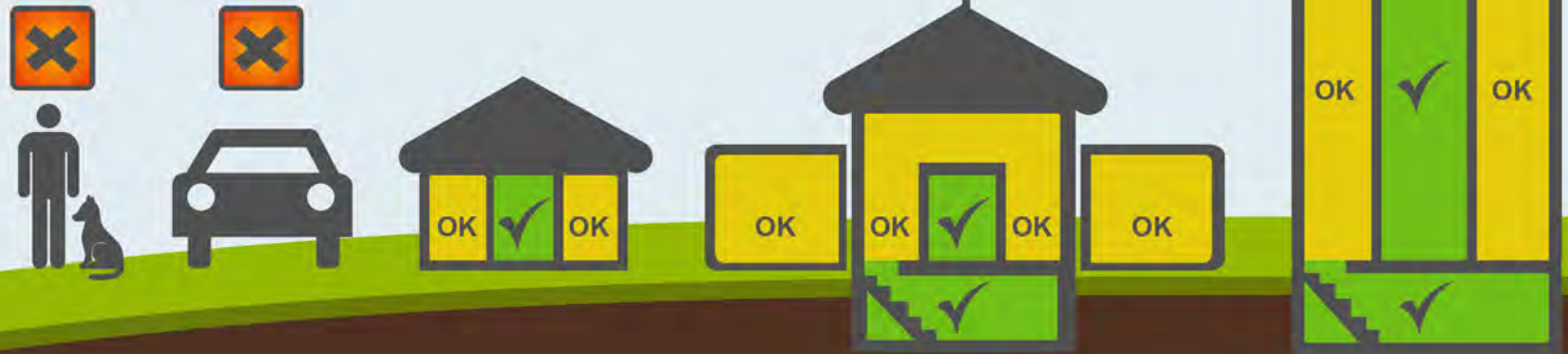
No matter where you are, the safest action to take is to: GET INSIDE. STAY INSIDE. STAY TUNED.

Close and lock all windows and doors. Go to the basement or the middle of the building. Radioactive material settles on the outside of buildings, so the best thing to do is stay as far away from the walls and roof of the building as you can. If possible, turn off fans, air conditioners, and forced-air heating units that bring air in from the outside. Close fireplace dampers. Bring pets inside. Stay tuned using radio, television, or other news sources for updated instructions from emergency response officials.

 NOT SAFE

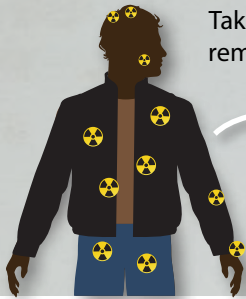
 SAFER

 SAFEST



# DECONTAMINATION FOR YOURSELF AND OTHERS

## ① TAKE OFF OUTER LAYER OF CLOTHING



Taking off your outer layer of clothing can remove up to 90% of radioactive material.

Be very careful in removing your clothing to prevent radioactive dust from shaking loose.

Put the clothing in a plastic bag or other sealable container.



Put the bag in an out-of-the-way place, away from other people and pets.



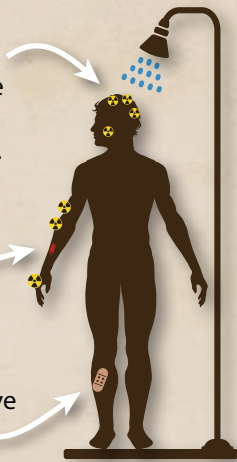
## ② WASH YOURSELF OFF

### If you can take a shower:

Use soap and shampoo. Do not use conditioner because it will cause radioactive material to stick to your hair.

Do not scald, scrub, or scratch your skin.

Keep cuts and scrapes covered when washing to keep from getting radioactive material in open wounds.



### If you cannot take a shower:

Wash your hands, face, and parts of your body that were uncovered at a sink or faucet. Use soap and plenty of water.



### If you can not use a sink or faucet:

Use a moist wipe, clean wet cloth, or damp paper towel to wipe the parts of your body that were uncovered. Pay special attention to your hands and face.



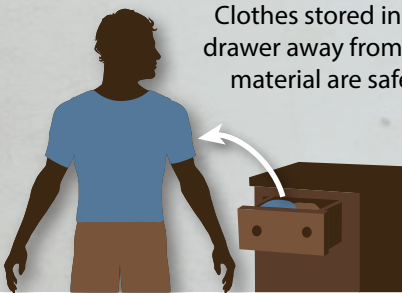
Blow your nose and wipe your eyelids, eyelashes, and ears with a moist wipe, clean wet cloth, or damp paper towel.



## ③ PUT ON CLEAN CLOTHES

### If you have clean clothes:

Clothes stored in a closet or drawer away from radioactive material are safe to wear.

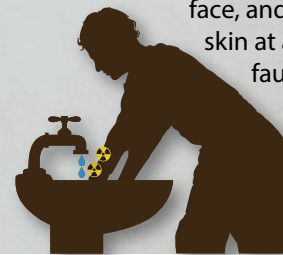


### If you do not have clean clothes:

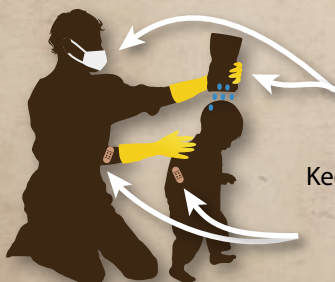
If you do not have clean clothes, take off your outer layer of clothing, shake or brush off your clothes, and put your clothes back on.



Rewash your hands, face, and exposed skin at a sink or faucet.

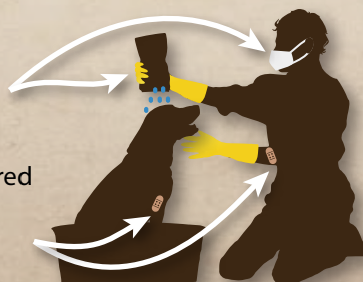


## ④ HELP OTHERS AND PETS



Wear waterproof gloves and a dust mask if you can.

Keep cuts and scrapes covered when washing to keep radioactive material out of the wound.



Rewash your hands, face, and parts of your body that were uncovered at a sink or faucet.



STAY TUNED FOR UPDATED INFORMATION



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# RADIATION EMERGENCIES & PREGNANCY

Pregnant women should follow instructions from emergency officials and seek medical attention as soon as emergency officials determine it is safe.



Prenatal radiation exposure can occur when the mother's abdomen is exposed to radiation from outside her body.

A pregnant woman who swallows or breathes in radioactive material can also absorb the material into her bloodstream. Radioactive materials in the blood may pass through the umbilical cord to the fetus or concentrate in areas of the mother's body near the womb, exposing the fetus to radiation.

For most radiation exposures, the radiation dose to the fetus is lower than the dose to the mother. The mother's abdomen partially protects the fetus from radioactive material outside the mother's body.

Health effects to the fetus can be severe, even at radiation doses too low to make the mother sick. These can include miscarriage, stunted growth, deformities, abnormal brain function, or cancer.



Fetuses are particularly sensitive to radiation between weeks 2 and 18 of pregnancy. Fetuses are less sensitive to radiation during later stages of pregnancy.



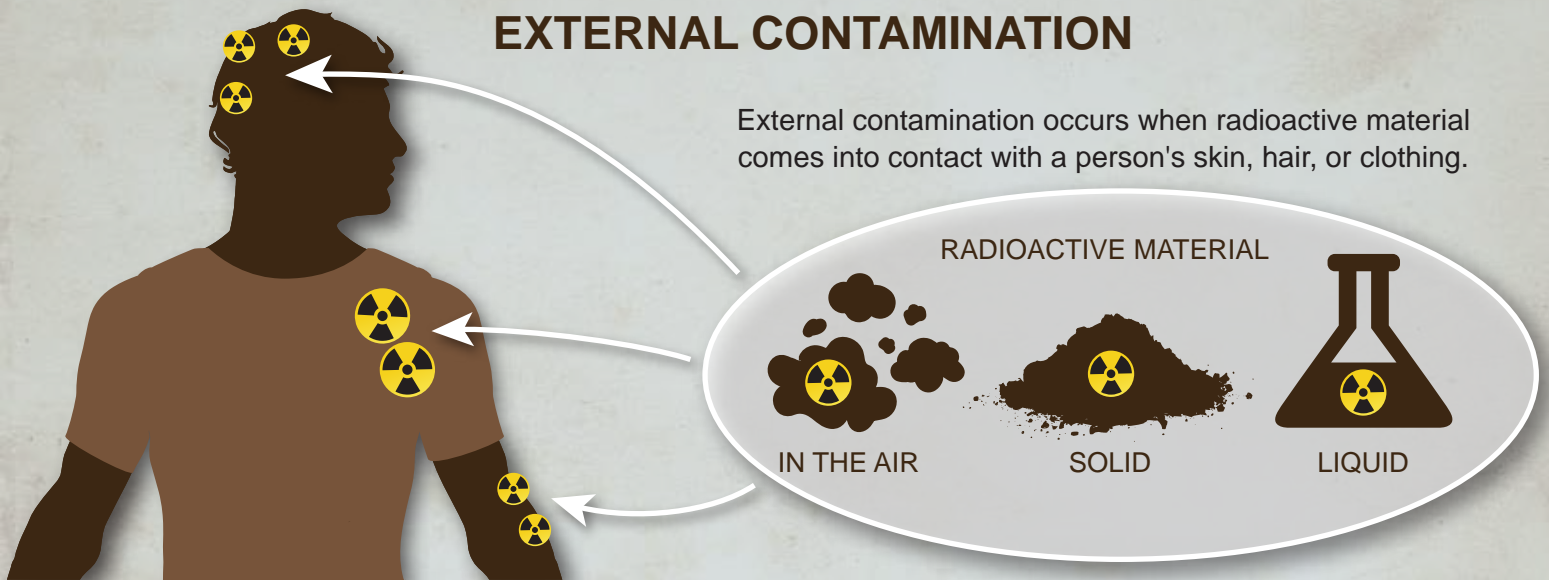
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# RADIATION CONTAMINATION VERSUS EXPOSURE

## EXTERNAL CONTAMINATION

External contamination occurs when radioactive material comes into contact with a person's skin, hair, or clothing.

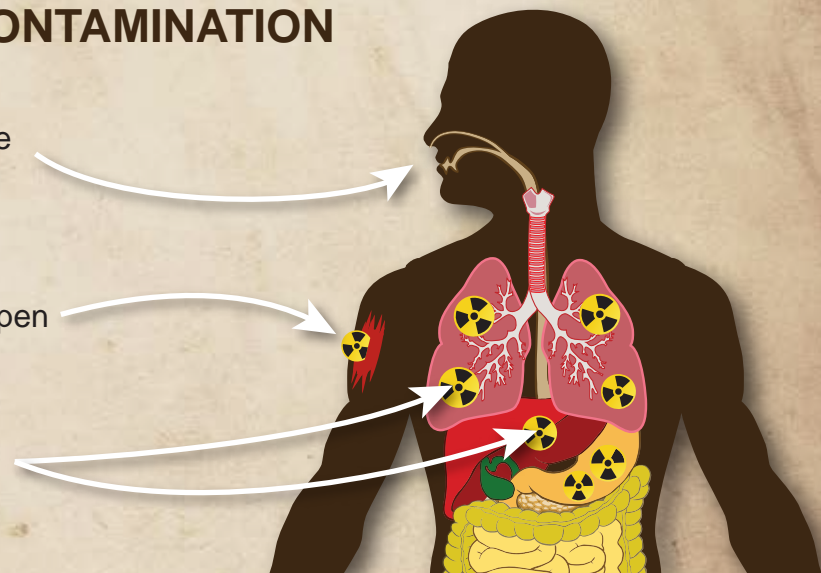


## INTERNAL CONTAMINATION

Internal contamination can occur when radioactive material is swallowed or breathed in.

Internal contamination can also occur when radioactive material enters the body through an open wound.

Different radioactive materials can accumulate in different body organs.

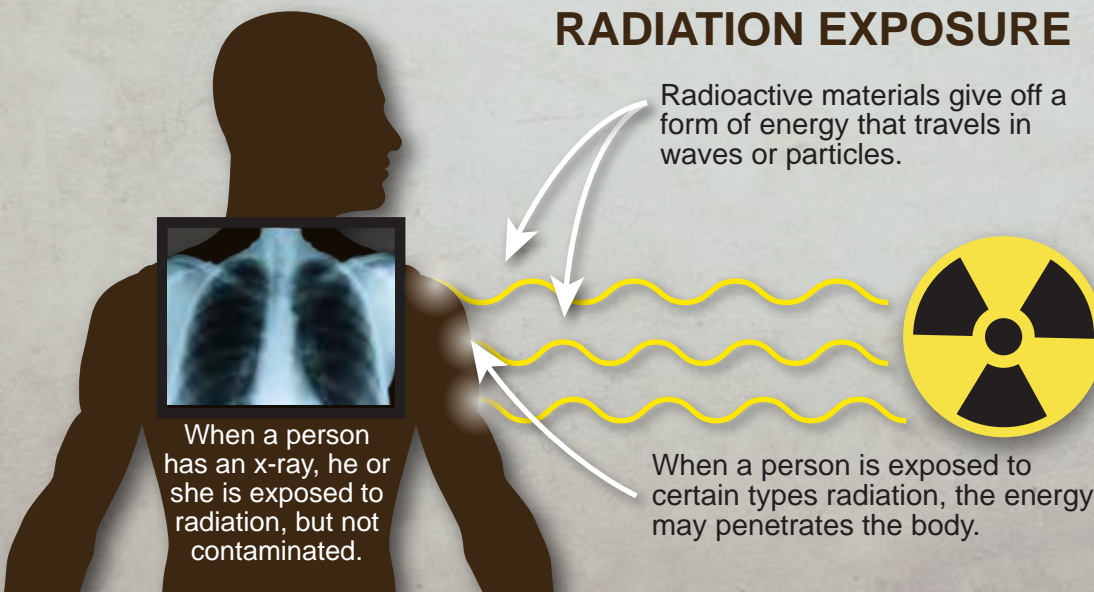


## RADIATION EXPOSURE

Radioactive materials give off a form of energy that travels in waves or particles.

A person exposed to radiation is not necessarily contaminated with radioactive material.

For a person to be contaminated, radioactive material must be on or inside of his or her body.



When a person has an x-ray, he or she is exposed to radiation, but not contaminated.

When a person is exposed to certain types radiation, the energy may penetrate the body.



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# HOW KI WORKS

## How does KI (potassium iodide) work?

The thyroid gland cannot tell the difference between stable and radioactive iodine and will absorb both.

KI blocks radioactive iodine from entering the thyroid. When a person takes KI, the stable iodine in the medicine gets absorbed by the thyroid. Because KI contains so much stable iodine, the thyroid gland becomes "full" and cannot absorb any more iodine—either stable or radioactive—for the next 24 hours.

KI comes in a pill or liquid and contains stable (not radioactive) iodine that can help block radioactive iodine from being absorbed by the thyroid gland.



### Without KI



### With KI



KI does not prevent radioactive iodine from entering the body and cannot reverse the health effects caused by radioactive iodine once the thyroid is damaged.



Do not use table salt or iodine-rich foods. Table salt and foods rich in iodine do not contain enough iodine to block radioactive iodine getting into your thyroid gland.



Do not use dietary supplements that contain iodine in place of KI. Only use KI products that have been approved by the FDA.



People should only take KI on the advice of public health officials or emergency management officials. There are potential health risks associated with taking KI.



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# HOW PRUSSIAN BLUE WORKS

Prussian blue is a pill that can help remove radioactive cesium and thallium from inside people's bodies.

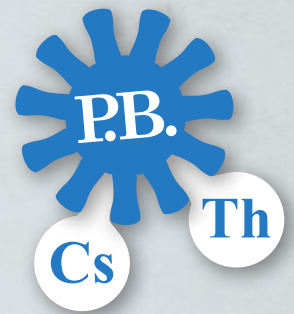
Prussian blue traps radioactive cesium and thallium in the intestines and keeps them from being re-absorbed by the body.

The radioactive materials then move through the intestines and are excreted (passed) in bowel movements.

Because Prussian blue reduces the time that radioactive cesium and thallium stay in the body, it helps limit the amount of time the body is exposed to radiation.

Prussian blue is available only by prescription. Medical professionals will determine if Prussian blue is needed.

People **SHOULD NOT** take Prussian blue artist's dye in an attempt to treat themselves. This type of Prussian blue is not designed to treat radioactive contamination and can be harmful.



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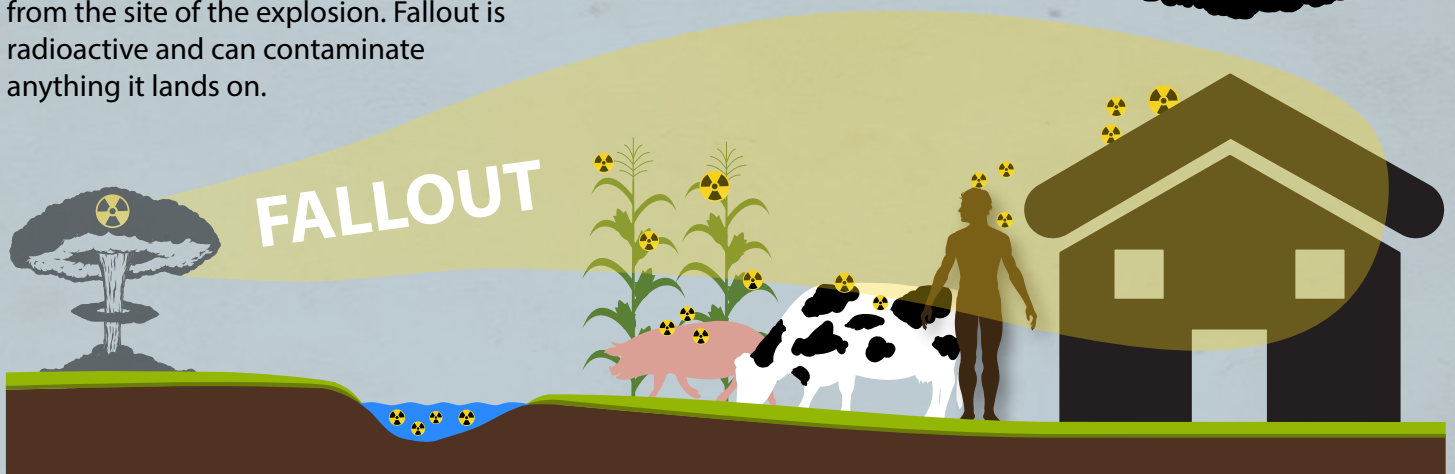


# IMPROVISED NUCLEAR DEVICE (IND)

## What is an Improvised Nuclear Device?

When an Improvised Nuclear Device (IND) explodes, it produces an intense pulse. The pulse is made up of heat, light, air pressure, and radiation. The bomb dropped on Hiroshima at the end of World War II is similar to an IND.

When an IND explodes, a large fireball is created. Everything inside of this fireball vaporizes, and is carried upwards. This creates a mushroom-shaped cloud. The material in the cloud cools into dust-like particles and drop back to the earth, as “**fallout**”. Fallout can be carried by the wind and end up miles from the site of the explosion. Fallout is radioactive and can contaminate anything it lands on.



## What are the main dangers of an Improvised Nuclear Device?

An IND would cause great destruction, death and injury, and have a wide area of impact. People close to the blast site could experience:

- Injury or death (as a result of the blast)
- Moderate to severe burns
- Flash blindness
- Radiation sickness (also called acute radiation syndrome or ARS)

Those farther away from the blast, in the path of fallout could experience health effects from:

- Fallout on the outside of the body or clothes (external contamination) or on the inside of the body (internal contamination)
- Radiation sickness (also called acute radiation syndrome or ARS)
- Contaminated food and water sources

## What should I do to protect myself?



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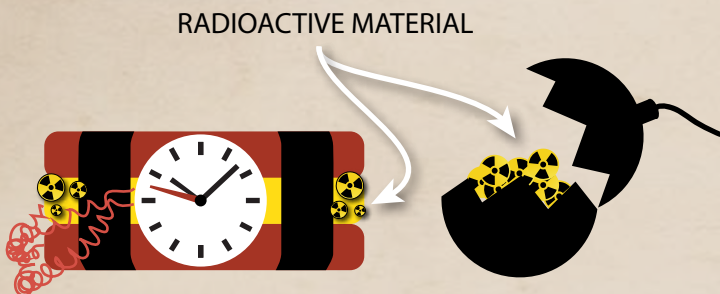
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# DIRTY BOMB OR RADIOLOGICAL DISPERSAL DEVICE (RDD)

## What is a dirty bomb?

A dirty bomb, also known as a radiological dispersal device, is a mix of explosives, such as dynamite, with radioactive powder or pellets.



A dirty bomb works differently and cannot create an atomic blast.

When the dynamite or other explosives are set off, the blast carries radioactive material into the surrounding area.



## What is the main danger of a dirty bomb?

The main danger from a dirty bomb is from the explosion, not the radiation. The explosion can cause serious injuries and property damage. Only people who are very close to the blast site would be exposed to enough radiation to cause immediate serious illness. However, the radioactive dust and smoke can spread farther away and could be dangerous to health if people breathe it in, eat contaminated food, or drink contaminated water.

## What should I do to protect myself?



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# RADIOLOGICAL EXPOSURE DEVICE (RED)

## What is a Radiological Exposure Device?

A Radiological Exposure Device, (also called a “hidden sealed source”) is an object made of or containing radioactive material that is hidden from sight to expose people to radiation without their knowledge.

REDs could be hidden from sight in a public place (e.g., under a subway seat, in a food court, or in a busy hallway), exposing those who sit or pass close by to radiation.



## What are the main dangers of a Radiological Exposure Device?

The dangers of a Radiological Exposure Device depend on the type and amount of radioactive material, how long people were near the device, and what parts of their bodies were exposed.

People exposed to high levels of radiation could develop symptoms of acute radiation syndrome (ARS), or could develop radiation burns. Health effects might take hours, days, or weeks to appear. These effects range from mild to severe effects, such as death or cancer. Some people may not experience any health effects.



### What should I do to protect myself?

Report a suspected Radiological Exposure Device to law enforcement officials immediately. Stay as far away from the suspected RED as possible.



If a RED is identified, and you believe you have been exposed, listen for instructions from emergency officials and contact your doctor.



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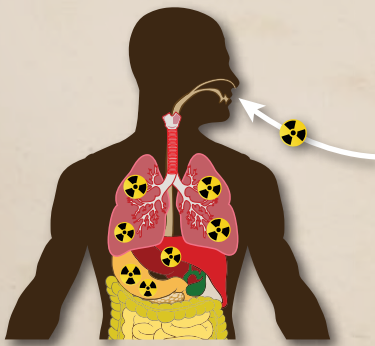
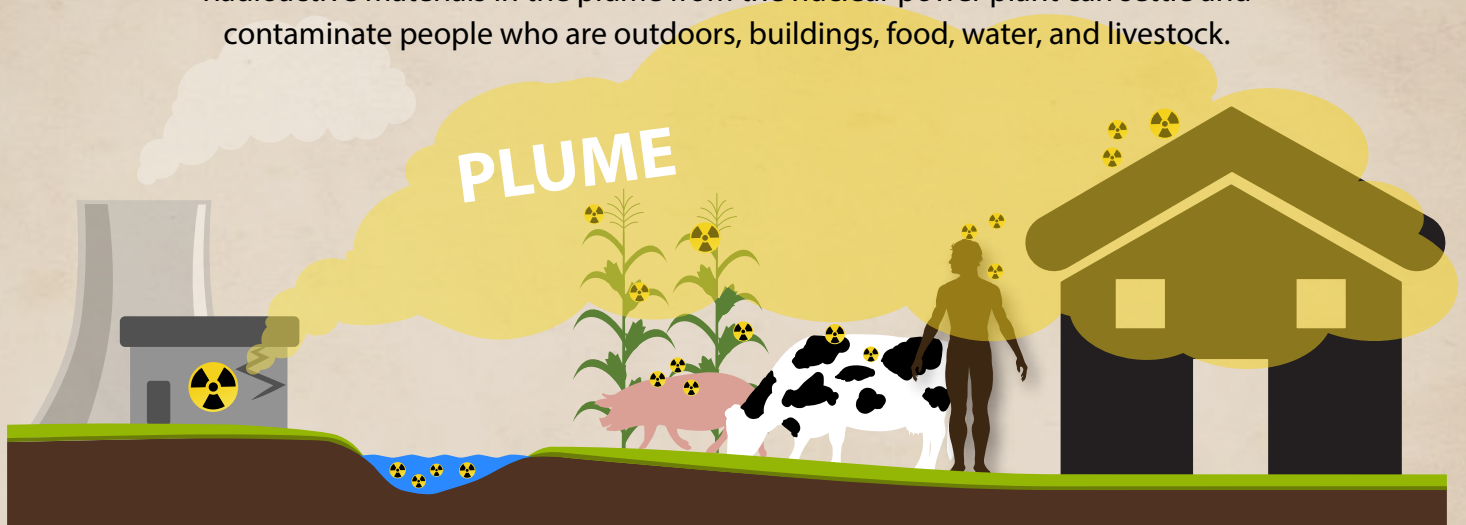
# NUCLEAR POWER PLANT ACCIDENT

Nuclear power plants have safety and security procedures in place and are closely monitored by the Nuclear Regulatory Commission (NRC). An accident at a nuclear power plant could release dangerous levels of radiation over an area (sometimes called a plume).



## What are the main dangers of a Nuclear Power Plant accident?

Radioactive materials in the plume from the nuclear power plant can settle and contaminate people who are outdoors, buildings, food, water, and livestock.



Radioactive material can also get inside the body if people breathe it in, or eat or drink something that is contaminated.

People living close to nuclear power plant who are exposed to radiation could experience long-term health effects, like cancer.

## What should I do to protect myself?

If you live near a nuclear power plant, you can get emergency information materials from the power company that operates your local nuclear power plant or your local emergency services office.



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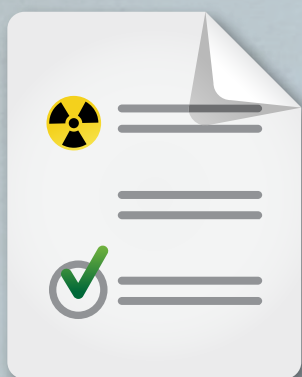
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# TRANSPORTATION ACCIDENTS

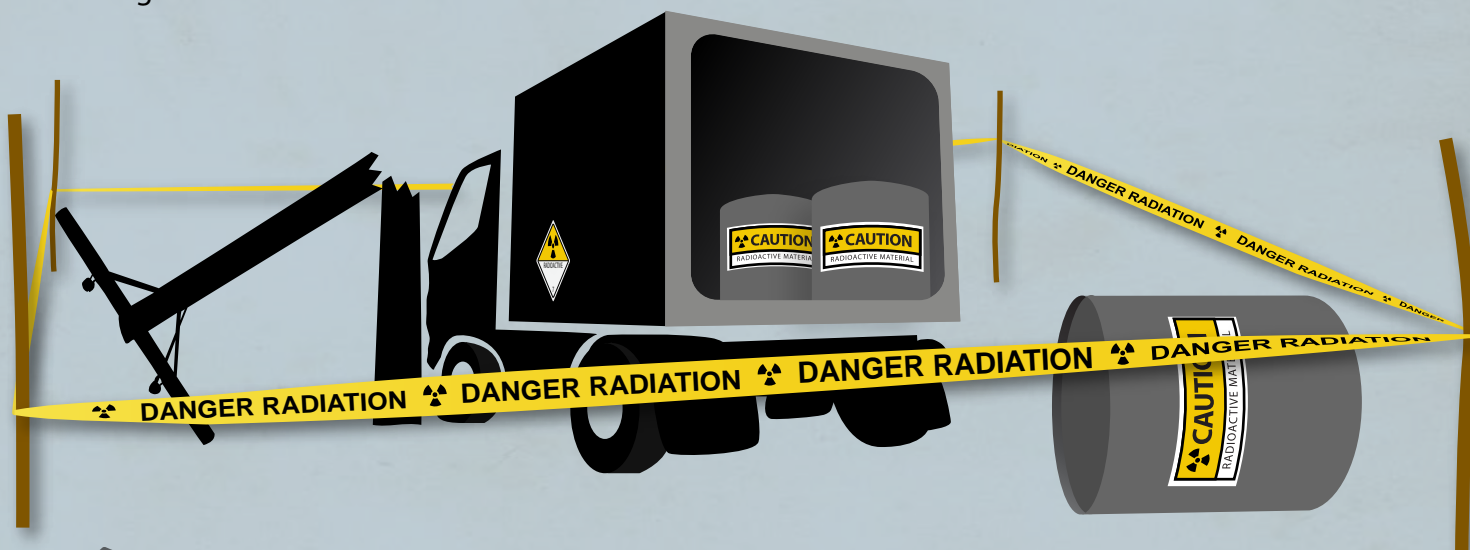
## How is radioactive material transported?

Shipments involving significant amounts of radioactive material are required to have documentation, labels and placards identifying their cargo as radioactive.



## What are the main dangers of a transportation accident involving radiation?

It is very unlikely that an accident involving transport of radioactive material will cause any radiation-related injuries or illnesses. Emergency officials have plans in place to safely respond to transportation accidents involving radioactive materials.



## What should I do to protect myself?

Report any transportation accidents involving radiation to emergency responders immediately. Stay as far away from the accident as possible. Do not touch any cargo from the container.



If you believe you have been exposed, listen for instructions from emergency officials and contact your doctor.



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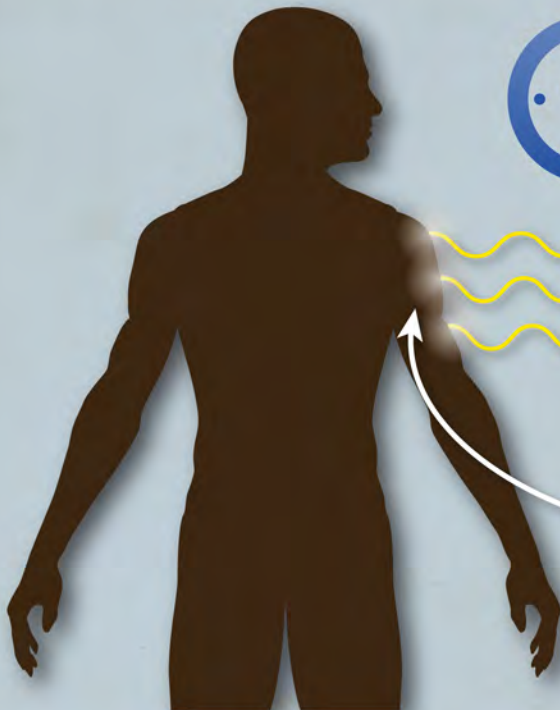
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# OCCUPATIONAL ACCIDENTS

## What is an Occupational Accident involving Radiation?

Radiation sources may be found in a wide range of occupational settings, including health care facilities, research institutions, and various manufacturing operations.

Accidents can occur if the radiation source is used improperly, or if there is a malfunction of safety controls.

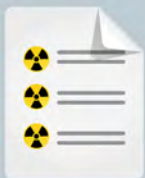


## What are the main dangers of an occupational accident involving radiation?

The dangers of an occupational accident involving radiation depend on the type and amount of radioactive material:

- how long people were near the source
- how close people were to the source
- what parts of their bodies were exposed.

If people get radioactive material from the source in or on their bodies, that may also affect their health.



## What should I do to protect myself?

If you work in an occupation that uses radiation sources, make sure you are familiar with safety precautions and procedures for your location.



Report any occupational accidents involving radiation to safety officials immediately. Stay as far away from the site of the accident as possible.



If you believe you have been exposed, listen for instructions from safety officials and contact your doctor.



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