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Protective Action Questions & Answers for Radiological and Nuclear Emergencies:

A companion document to the U.S. Environmental Protection Agency *Protective Action Guide (PAG) Manual*

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Foreword

One of the most critical factors in the success of a radiological response is the effectiveness of public communication. "The timely and effective flow of information between agencies and the public is vital for facilitating and encouraging appropriate protective actions, reducing rumors and fear, maintaining public trust and confidence, and reducing morbidity and mortality."[1]

Pre-scripted radiation emergency public safety messages will both improve timeliness and increase consistency of the information communicated, which will enhance emergency planners' ability to effectively communicate with the largest number of people. Social media and the 24-hour news cycle have created an expectation for answers and information on an accelerated schedule; both the media and the public want access to updated information on crises on various information platforms throughout the day. These answers will help your department or organization to meet and exceed that expectation.

This document is intended to help emergency planners prepare public communications prior to and during a radiological emergency; it is designed to be worked into emergency response plans and standard operating procedures. Each radiological emergency is unique; the messages contained in this book need to be adapted for the specific emergency at hand.

Based on the safety measures in the U.S. Environmental Protection Agency (EPA) *Protective Action Guide (PAG) Manual*, this document is applicable to all types of radiological emergencies that may necessitate the implementation of a protective action. It complements the planning considerations presented in the *PAG Manual* and Federal Emergency Management Agency's incident-specific messaging documents *Improvised Nuclear Device Response and Recovery: Communicating in the Immediate Aftermath and Communicating During and After a Nuclear Power Plant Incident.*

The questions and answers in this document represent the best of the work produced through other government emergency radiological communications efforts. This document includes new messages addressing potassium iodide administration and populations that require special consideration, including pregnant and breastfeeding women, children, and individuals with disabilities.

Ideally, these messages never will be needed; nevertheless, we have a responsibility to be prepared to empower the public by effectively communicating how people can protect themselves and their families in the event of a radiological or nuclear emergency.

[1]Becker, S. 2004. "Emergency communication and information issues in terrorist events involving radioactive materials." *Biosecurity and Bioterrorism: Biodefense Strategy, Practices, and Science* 2 (3); 195–207.

Contents

Protective Action Guidance

1. What is a protective action?

A protective action is an urgent step that people can take to protect their health and the health of their loved ones from radiation in a nuclear or radiation emergency.

The main protective actions that the public might be asked to take are evacuation or sheltering (staying inside).

2. How do people know which steps to take?

Health and emergency management officials will tell the public if protective actions are needed and which steps, whether evacuation or staying inside, will be most effective for avoiding radiation.

Officials make these decisions about how to protect public health by using information about local conditions and by following the recommendations in the *Protective Action Guide (PAG) Manual*.

Be aware that as conditions change, the guidance also may change. Stay tuned for updates.

3. What are the PAGs?

PAGs, or Protective Action Guides, are radiation dose guidelines that would trigger public safety measures, such as evacuation or staying inside, to safeguard public health during a radiation emergency. The U.S. Environmental Protection Agency developed the PAGs to help responders plan for and respond to radiation emergencies.

Every emergency is different, and the best action or set of actions in one situation may not be appropriate at another time or in another situation.

Officials use the PAGs, combined with their existing local knowledge, to help them make the very important decisions about which emergency steps are warranted and when those steps should be enacted.

4. Who uses the PAGs?

State, local and tribal governments have the main responsibility for taking measures to protect life and health.

In a radiation emergency, state, local and tribal emergency response agencies use the Protective Action Guides to decide when special actions are needed to avoid radiation exposure and protect people's health.

5. What kinds of steps are included in the *PAG Manual*?

The *Protective Action Guide (PAG) Manual* includes actions that both government agencies and members of the public can take to protect people's health in a radiation emergency.

In the beginning of a radiation emergency, the public might be asked to take one of two main protective actions to avoid exposure to radiation: evacuation or sheltering (staying inside). The PAGs also provide guidance on food safety and administration of potassium iodide.

6. What is evacuation? What is sheltering? What is the difference?

Evacuation involves urgently moving people away from a specific area to avoid or minimize health and safety risk.

Sheltering, on the other hand, involves having people stay inside their homes, offices, schools or other buildings to reduce exposure to an outdoor hazard.

7. What other steps might officials ask people to take?

Depending on the situation, evacuation or sheltering may be supplemented by other measures.

Limited Access— One possible step is to keep people out of the affected area by limiting access to it.

Decontamination— Another step involves decontamination, which means removing radioactive particles that may have fallen onto a person's clothes, skin or hair. Decontamination is done by having people wash or shower and change clothes.

Food— Sometimes officials may take steps to stop people and animals from consuming certain foods if those foods may be contaminated. Authorities also may act to prevent livestock from grazing in potentially contaminated areas and instead have the animals drink water and eat feed that has been previously stored.

Water— If alternative drinking water is needed, officials can provide bottled water, change the water source (such as switching to ground water), reroute water from an unaffected water system or choose a combination of these actions.

Potassium Iodide— Potassium iodide (KI) is a nonradioactive form of iodine. KI can be useful in situations where radioactive iodine has been released into the environment. KI works by filling a person's thyroid gland with stable iodine so that harmful radioactive iodine is not absorbed, reducing the risk of thyroid cancer in the future. KI is not an "anti-radiation" drug. Never take KI or give it to others unless you have been specifically advised to do so by public health officials, emergency management officials or your doctor.

8. How do officials know when to carry out protective actions?

When a radiation emergency occurs, officials will use available information and computer models to quickly predict how much radiation people could *potentially* receive from the incident.

Officials then use the Protective Action Guides to determine what actions to take to *avoid or minimize* that potential exposure.

Expect recommended actions to be updated as the response evolves. Stay tuned to television, radio and government emergency management websites for updates.

9. Wouldn't it make more sense to carry out all of the protective actions right away, as soon as a radiation emergency occurs?

No. Different safety measures are used for different situations.

Taking all of the safety measures at once is not possible: For example, people should not be told to stay inside and evacuate at the same time. Also, evacuating people when it is unnecessary increases the chance of accidents and injuries.

Officials need to identify the threat the emergency poses to people so they can provide the best advice on how to protect health. Actions will be determined based on available information, with the immediate and most severe safety threats being addressed first.

10. Why don't officials just automatically advise everyone to evacuate when a radiation emergency occurs?

In some situations, sheltering may be a better choice for preventing or reducing radiation exposure. For example, if a cloud containing radioactive particles is expected to pass over an area soon and then leave quickly, evacuation could actually expose people to more radiation than staying inside.

This is because evacuation takes time, and many people might be caught outside or in their cars when the cloud passed over. People staying inside while the cloud passes by would be more protected than those caught outside trying to evacuate.

Also, in some situations, evacuation may not be practical. For example, blocked highways, power outages or severe weather could make evacuation difficult.

Officials using the Protective Action Guides and information about local conditions will tell the public what steps are needed in a radiation emergency. Follow the instructions so that you do what is needed to protect yourself and your loved ones.

11. Are there controls on food?

Officials might advise against eating vegetables from home gardens.

In some situations, officials also might determine that it is necessary to take actions to prevent radioactive material from entering the food supply.

Steps might involve preventing livestock from grazing in potentially contaminated pastures or fields and ensuring that animals eat and drink only feed and water that had been previously stored.

When necessary, officials also might act to stop certain foods from coming to market or limit consumption of certain foods that might be contaminated.

12. Are there controls on drinking water?

If alternative drinking water is needed, officials can provide bottled water, change the water source (such as switching to ground water), reroute water from an unaffected water system or choose a combination of these actions.

13. When should I take potassium iodide?

Never take potassium iodide (KI) or give it to others unless you have been specifically advised to do so by public health officials, emergency management officials or your doctor.

KI is a nonradioactive form of iodine that can be useful in situations where radioactive iodine has been released into the environment. It works by filling a person's thyroid gland with stable iodine so that harmful radioactive iodine is not absorbed, reducing the risk of thyroid cancer in the future.

KI is not an "anti-radiation" drug. KI is issued *only* in situations involving radioactive iodine, and it protects *only* the thyroid gland; it does not help in situations involving other types of radioactive releases, nor does it help protect other parts of the body.

14. Do the PAGs continue to play a role in protecting people after the immediate emergency is over?

Yes, it is possible that protective actions, including food safety measures, will stay in place to protect people until the area has been cleaned up.

One such cleanup measure is decontamination of land and property, which involves cleaning radioactive contamination from an area so that people can return to their homes and businesses. When this is not possible, another measure—relocation—may be required. Relocation involves moving people out of an area permanently. An additional protective action may involve continuing to place controls on food and water.

15. What is the basis for the PAGs?

The Protective Action Guides (PAGs) are radiation dose guidelines, or "trigger levels," designed to prevent immediate harmful health effects from radiation while balancing the risks of developing cancer against the risks of protective actions, such as accidents from evacuation.

Balancing the risks between radiation exposure and protective actions is important. For example, evacuations present additional health and safety risks from traffic accidents and stress-related illnesses. The *PAG Manual* provides updated planning considerations based on the lessons learned from the 2011 evacuations related to the nuclear power plant release in Fukushima, Japan.

16. Where can I find out more about protective actions?

We are strongly committed to keeping the public informed and to answering people's questions. If you want to learn more about the Protective Action Guides (PAGs), please go to www.epa.gov/radiation/protective-action-guides-pags.

For information about [INSERT NAME OF RESPONSE HERE] protective actions, please contact us on the web at [INSERT AGENCY WEBSITE HERE] or by telephone at [INSERT AGENCY CONTACT NUMBER HERE].

17. If I am outside, what steps should I take to protect myself and my loved ones?

Doctors, scientists and health experts recommend a few simple steps that will help protect you and your loved ones.

If you are outside—

Cover your nose and mouth. Covering your nose and mouth with a cloth reduces the risk of breathing in radioactive dust or smoke. You also may use a disposable mask, such as a dust mask, if one is immediately available.

Don't touch objects or debris related to the release—they could be contaminated with radioactive material.

Go inside and stay inside. Quickly go into a building where the walls and windows have not been broken. Close all doors and windows. Go to the basement or middle of the building. This will help shield you from any radiation that might be outside.

Remove your outer clothes. Once you are inside, carefully take off your outer layer of clothing. Do this in case any radioactive dust fell onto your clothes while you were outside.

Seal the clothing in a plastic bag if available. Store the plastic bag away from people and animals.

Shower or wash off. If possible, take a warm shower with lots of soap. Don't scald or scratch your skin. When washing, try to keep dust or water from entering your mouth, and don't swallow the water.

Wash your hair with only shampoo or soap and water. Don't use conditioner because it can cause the radioactive dust to stick to your hair.

Children should be given a shower or washed under supervision of a parent or other adult.

If you cannot shower, use a wet wipe or clean wet cloth to wipe any skin that was not covered by clothing (such as your hands and face).

Gently blow your nose and gently wipe your eyelids, eyelashes and ears with a clean wet cloth.

Put on clean clothes. Clothing stored in a closet or away from radioactive material is clean. If you do not have clean clothes, carefully brush off your outer layer of clothing and get dressed again. Rewash your hands, face and exposed skin at a sink or faucet.

Tune in. Stay tuned to television, radio and government emergency management websites for updates.

18. If I am inside a building, what steps should I take to protect myself and my loved ones?

Doctors, scientists and health experts recommend a few simple steps that will help protect you and your loved ones.

If you are in a building—

Stay inside. If the walls and windows of the building are not broken, stay in the building and don't leave.

If the walls and windows of the building are broken, go to an inside room and don't leave. If the building has been heavily damaged, quickly go into another building where the walls and windows have not been broken.

Close doors and windows. To keep radioactive dust or powder from getting inside, shut all windows, outside doors and fireplace dampers. It is not necessary to put duct tape or plastic sheets around doors or windows.

If weather conditions permit, close the windows and turn off the fan, air conditioner or heater. Otherwise, set the fan, air conditioner or heater on recirculate. In-room fans (for example, ceiling fans) that only recirculate indoor air are okay to use. Air-conditioning systems in large buildings can be used if they are set on recirculate.

If you must go outside, follow the "if you are outside" instructions in question 17 above.

19. If I am in a car or truck, what steps should I take to protect myself and my loved ones?

Cars and trucks provide little protection from radiation.

If you are in a car or truck—

Shut the windows and vents. Close the windows and turn off the fan, air conditioner or heater if weather conditions permit. Otherwise, set the fan, air conditioner or heater on recirculate.

Cover your nose and mouth. Covering your nose and mouth with a cloth reduces the risk of breathing in radioactive dust or smoke. You also may use a disposable mask, such as a dust mask, if one is immediately available.

Go inside and stay inside. If you are near your home, office or a public building where the walls and windows have not been broken, go there immediately and go inside quickly. Close all doors and windows. Go to the basement or middle of the building. This will help shield you from any radiation that might be outside.

If you cannot get to your home or another building safely, pull over to the side of the road and stop in the safest place possible. Turn off the engine and stay in the car until you are told it is safe to get back on the road. Cars offer more protection than being outside.

If it is a hot or sunny day, try to stop under a bridge or in a shady spot so you and your passengers don't overheat.

Tune in. Listen to the car radio or check government emergency management websites for more instructions.

20. If I am in a potentially affected community, what steps should I take to protect myself and my loved ones?

If you are in a potentially affected community—

Go inside and stay inside. If you are near your home, office or a public building where the walls and windows have not been broken, go there immediately and go inside quickly. Close all doors and windows. Go to the basement or middle of the building. This will help shield you from any radiation that might be outside.

The wind can sometimes carry radioactive dust from the site of the release. As a precaution, people should stay inside for their personal safety until authorities say it is okay to leave.

Tune in. Stay tuned to television, radio and government emergency management websites for updates.

21. What should people do if they are on a boat near the affected area?

Like cars, boats do not provide adequate protection from radioactive material. Tune in to the radio for more information about the location of the radioactive material.

If you are in a boat, you have two choices:

- Return to a marina or boat landing, find a building and immediately go inside, **OR**
- Get information about the location of the radioactive material and navigate to a distance far enough away from the incident.

22. What should people do if they're told to evacuate?

If you are told to evacuate, leave the area immediately.

When the public evacuates, they are moved to safer areas depending on levels of radiation and radioactive material to keep exposures as low as possible.

If you are told to evacuate—

- Pay close attention to what officials are telling you.
- Take the designated routes to the location where you will be registered and checked for contamination. A list of these locations can be found at [INSERT AGENCY WEBSITE HERE].
- If easily accessible, bring identification cards and medications with you.
- Follow the instructions from law enforcement personnel.

Transportation will be provided to those who need it, including accessible transportation for people with disabilities.

Limit phone calls to emergencies only, so those who need immediate help can be answered quickly. Text messaging may work better during high-volume periods because it does not require as much bandwidth as a phone call.

23. Are care shelters available for people who are evacuating?

Yes, designated shelters have been opened.

You should first go to a designated location to be checked for contamination. Then you can go to a shelter, or you can stay at a hotel or with family or friends.

24. There is a protective action on the next street but not on mine. How do I know I am safe?

Protective actions include buffer areas for safety. If you have not been issued a safety precaution, it is because you are outside the affected and buffer areas. Safety precautions may be updated as more information becomes available. Stay tuned to television, radio and government emergency management websites for updates.

25. A radiological release occurred. Why haven't I been issued safety precautions?

Safety precautions are not needed. The release was [TOO SMALL, TOO FAR AWAY, CONTAINED PARTICLES THAT WERE TOO HEAVY TO TRAVEL VERY FAR] to necessitate safety precautions.

Even if radiation from the event is detected at your location, the levels will be so low that taking a safety precaution may do more harm than good. Balancing the risks between radiation exposure and protective actions is important. For example, evacuations present additional health and safety risks from traffic accidents and stress-related illnesses.

26. Why are the recommended actions changing, and which one should I follow?

The recommended actions are being updated because the authorities have access to better, more recent information about the event. The recommended actions are designed to minimize risk to the affected population. You always should follow the most recent recommended actions for your group/area.

Potassium Iodide (KI): Important Information

27. What is potassium iodide? How does it work?

Potassium iodide (KI) is a nonradioactive form of iodine.

KI is issued only in situations where radioactive iodine has been released into the environment, and it protects only the thyroid gland.

KI works by filling a person's thyroid gland with stable iodine so that the harmful radioactive iodine from the release is not absorbed, reducing the risk of thyroid cancer in the future.

You should take KI *only* if you have been specifically advised to do so by local public health officials, emergency management officials or your doctor. It is not an "anti-radiation" drug.

28. Should my family take potassium iodide?

Never take potassium iodide (KI) or give it to others unless you have been specifically advised to do so by the health department, emergency management officials or your doctor.

KI reduces risk from radioactive iodine only if taken very close to the time of exposure. It is not an "anti-radiation" drug.

29. What types of incidents release radioactive iodine?

Radioactive iodine *might* be released during a nuclear power plant incident or a nuclear detonation. In the case of a nuclear power plant release, the plant operators will know if radioactive iodine has been released into the environment and will inform local officials so that decisions on distributing potassium iodide can be made quickly.

30. Will potassium iodide protect me from radiation?

Potassium iodide (KI) protects only the thyroid gland from radioactive iodine. It does not provide protection from any other kind of radiation exposure.

KI pills are not "radiation antidotes." KI should be taken *only* if there is a specific public health recommendation to do so.

31. Are over-the-counter medicines that contain iodine, such as disinfectants or throat sprays, a good substitute for potassium iodide?

No. Over-the-counter medicines will not protect your thyroid, and some could be dangerous to your health. It is true that many over-the-counter medicines contain some form of iodine, such as iodine liquid for cuts and sores, disinfectants, and throat sprays. These should never be taken as a substitute for potassium iodide (KI). The amount of iodine contained in most of these products is small and would have no protective effect against radioactive iodine.

Over-the-counter medicines always should be used as directed. Some topical medicines might contain ingredients that can be harmful if ingested.

Never take KI or give it to others unless you have been specifically advised to do so by the health department, emergency management officials or your doctor.

32. What about taking household disinfectants or antiseptics that contain iodine? Are these a good substitute for potassium iodide?

No. Household cleaners will not protect your thyroid. Drinking or consuming them could poison you.

33. Is taking large amounts of iodized salt a good substitute for potassium iodide?

No. Iodized salt will not protect your thyroid. It is true that iodized salt contains small quantities of iodine, but the amount is too low to prevent radioactive iodine from being absorbed by the thyroid.

Furthermore, although most people don't realize this, it could even be dangerous. The main ingredient in salt—sodium chloride—can make people very ill if taken in large amounts. Even tablespoons of salt taken repeatedly over a short period of time can cause poisoning. Eating large amounts of salt also can cause high blood pressure and other medical problems.

34. Are herbs or herbal products a good substitute for potassium iodide?

No. Herbs will not protect your thyroid and could even be dangerous to your health. It is true that some herbs and herbal products may contain iodine. But the amount of iodine is not regulated, so it is not possible to know how much iodine you will be getting.

Taking large amounts of herbs or herbal products could endanger your health.

35. Are there other medications or supplements I can take to minimize my risk?

Other medications and radiation countermeasures can be used in rare cases, but take those medications only when directed by the authorities or your doctor.

36. Do people need a prescription to obtain potassium iodide?

No. If public health and emergency management officials determine that taking potassium iodide is appropriate, the pills will be provided to people at no cost.

Additional Information: Situation Specifics

37. Where should I go for information about the situation?

Stay tuned to television, radio and government emergency management websites for updates.

Public health and emergency management officials will provide regular updates. You also can go to the following website or toll-free hotline for information:

- [INSERT AGENCY WEBSITE HERE]
- [INSERT AGENCY PHONE NUMBER HERE]

38. I am seeing a lot of information and instructions on Internet blogs about what to do. Should I follow that advice?

Check official sources first. You can find the latest information at [INSERT WEBSITE HERE].

Blogs, social media and the Internet in general can provide useful information, but only if the source is known and trustworthy.

Unfortunately, we know from past disasters and emergencies that small numbers of individuals may take the opportunity to distribute false information. Even well-intentioned individuals can sometimes pass on incorrect information or rumors.

Therefore, double-check what you are reading with the information and instructions being provided by the official website listed above, the official toll-free hotline, or local radio and television broadcasts.

In an emergency, get information from reliable sources so that you can protect your health and the health of loved ones.

39. I received a text message giving me instructions on what to do. How do I tell if it is an official message or a fake?

If the government has issued an emergency text message, it will be clearly identified as coming from [INSERT INFORMATION]. That is, the sender will read [INSERT INFORMATION].

Unfortunately, we know from past disasters and emergencies that small numbers of individuals may use the situation to send out official-looking false information. Even well-intentioned individuals can pass on incorrect information or rumors.

If you are unsure about a message, cross-check what you are reading with the information and instructions being provided by the official website or the official toll-free hotline.

- [INSERT AGENCY WEBSITE HERE]
- [INSERT AGENCY PHONE NUMBER HERE]

40. How many people have been injured or killed?

At this time, we do not yet know the specific number of casualties. An update will be provided as soon as reliable information becomes available.

Right now, we are focused on getting help to people in the affected area as quickly and safely as possible.

41. Where is the radioactive material located?

Radiation and environmental health experts are checking air, water and ground conditions in and around the release site to locate the areas with radioactive contamination. Stay tuned to radio or television, or visit [INSERT AGENCY WEBSITE HERE] for the latest information.

42. Where is the radioactive dust and smoke going?

According to current weather predictions, the areas [DIRECTION] of [CITY] could be in the path of the cloud containing the radioactive dust and smoke.

Until advised otherwise, people in neighborhoods and communities that could be in this path should stay inside.

43. What is a plume?

A plume is the cloud of radioactive dust and smoke moving away from the incident site.

44. What should I do if I come across an object that might be radioactive?

Don't approach, pick up or touch debris or other objects that may be contaminated with radioactive material. These objects could be dangerous, especially in the immediate vicinity of the incident.

45. What are emergency responders doing now?

Emergency responders, radiation experts, scientists and representatives from all levels of government are working together to protect the public and save lives.

If terrorism is suspected: Law enforcement is working to identify and apprehend those responsible.

46. How can people learn about the safety of their family members?

Use text messages instead of phone calls to try to reach your family and loved ones.

If phone lines or other types of communication infrastructure are damaged, or if the lines are clogged, you may not be able to complete a phone call.

If you have access to a computer or a Web-enabled device, use e-mail, social media websites like Facebook and Twitter, or online registries such as the Red Cross Safe and Well website.

Emergency responders are gathering and organizing all vital information available. If you are separated from your family or loved ones, search online for registries where people can identify themselves and their location.

Bear in mind that it may take time for registries to put in the latest information. You can seek additional information and counseling services at [LIST ORGANIZATIONS OR LOCATIONS].

47. What will happen to people in the affected neighborhoods?

As appropriate: Lives have been lost, people have been injured, and homes and businesses have been destroyed.

All levels of government are coordinating their efforts to do everything possible to help the people affected by this emergency.

As lifesaving activities continue, follow the instructions from emergency responders. These instructions are for your safety and the well-being of your loved ones. The instructions are based on the best information we have right now; the instructions will be updated as more information becomes available.

48. How can the public help?

Your help is vital in this situation.

Here are six important steps you can take to help:

1. **Don't abandon your car on the road.** Instead, park your car where it won't block traffic. This will allow responders to reach people who need help.
2. **Don't go near the release site.** It could put you in danger and prevent emergency responders from doing their jobs.
3. **Use text messaging.** Phone lines might overload; use text messaging to communicate with your friends and family. Text messages might be more likely to go through.
4. **Don't go to the hospital, police stations or fire stations unless you have a medical emergency.** These facilities will be busy responding to the incident and need to be available to those who are seriously injured or have another medical emergency requiring immediate treatment.
5. **Stay alert.** If you see anything suspicious, contact your local police or the FBI right away.
6. **Stay tuned.** We will continue to update you through television, radio and emergency management websites.

49. When will it be safe for people to return to their homes and businesses?

Federal, state and local partners are collecting information about the hazards in the affected areas. Until this is done, we cannot predict when people can begin returning to the area.

If you have been evacuated, ***do not return until you are told it is safe*** to do so by authorities. Please don't put yourself or your family in danger by attempting to return early. Returning early could interfere with responders' efforts to help those who need immediate assistance.

50. Will this affect air travel?

Until we have more information, expect air travel in and near the affected area to be restricted.

Limiting air travel keeps airline crews and passengers safe and keeps the airspace free for response and recovery efforts.

51. Will this affect travel on waterways, both at home and abroad?

Until we have more information, expect the use of navigable waterways in the affected area to be restricted.

Limiting waterway traffic keeps boaters, ship crews and passengers safe and keeps the waterways free for response and recovery efforts.

Radiation Health Effects

52. What is radiation?

Radiation is energy. It travels in the form of energy waves or energized particles.

Radiation can pose a health risk by damaging the tissues and cells of your body, but these risks can be limited by your distance from the source, the time exposed to the source, and the barriers between you and the source.

During a radiological emergency, we try to keep exposure to radiation as low as possible.

53. What is radioactive material?

Radioactive material is a substance that gives off radiation in the form of energy waves or energized particles.

54. Is there any way for me to tell if radioactive materials are present or if I am being exposed to radiation?

Your natural senses are unable to detect radiation or radioactive material. The only way to determine presence of, or exposure to, radiation or radioactive materials is with special instruments or tests designed for that purpose. Emergency response authorities are using these instruments to find radiation in the affected areas and will notify the public.

55. What are millirem (mrem) and millisieverts (mSv)?

These units measure radiation dose. In the United States, dose is measured in units called millirem (mrem). The international unit is millisievert (mSv).

According to radiation safety experts, radiation exposures of 5–10 rem (5,000–10,000 mrem or 50–100 mSv) usually result in no harmful health effects, because radiation below these levels is a minor contributor to our overall cancer risk.

Safety recommendations are designed to keep your dose as low as possible.

It takes a large dose of radiation—more than 75 rem (75,000 mrem or 750 mSv)—in a short amount of time (usually minutes to hours) to cause immediate health effects, such as acute radiation sickness.

[PUT IN CONTEXT OF RADIATION INCIDENT DOSES]

56. What is a curie (Ci) or a bequerel (Bq)?

These units measure the amount of radioactive material in a sample, such as in a sample of water, soil or air. This is sometimes referred to as the sample's radioactivity (or simply its activity). In the United States, we measure this amount of radioactive material in curies (Ci), and the international community uses becquerels (Bq). Typically, results will be in picocuries (pCi), which is one trillionth of a curie.

[PUT IN CONTEXT OF RADIATION INCIDENT RADIOACTIVITY FINDINGS]

57. Will people who have been exposed to the radiation get cancer?

There is clear evidence that high doses of radiation can raise your risk of cancer. Although cancer has been associated with high doses of radiation received over short periods of time, the cancers usually do not appear for many years, even decades.

According to radiation safety experts, radiation exposures of 5–10 rem (5,000–10,000 mrem or 50–100 mSv) usually result in no harmful health effects, because radiation below these levels is a minor contributor to our overall cancer risk.

Scientists and health experts are working now to gather information on the radiation risks posed by this incident. Meanwhile, health agencies will be establishing testing centers to check people for radioactive contamination and to arrange for any needed follow-up.

Further information will be provided soon by health and emergency management officials.

58. How much radiation is safe? How much is considered low risk?

According to radiation safety experts, radiation exposures of 5–10 rem (5,000–10,000 mrem or 50–100 mSv) usually result in no harmful health effects, because radiation below these levels is a minor contributor to our overall cancer risk.

Safety recommendations are designed to keep your dose as low as possible.

It takes a large dose of radiation—more than 75 rem (75,000 mrem or 750 mSv)—in a short amount of time (usually minutes to hours) to cause immediate health effects, such as acute radiation sickness.

[PUT INCIDENT DOSE IN CONTEXT TO RADIATION SICKNESS DOSES]

Infants, the elderly and pregnant women are more sensitive to radiation exposure than healthy adults. Factors like age, gender and even previous exposure also might influence a body's reaction to radiation exposure.

Follow these three steps to limit your exposure to radiation and lower your risk:

1. **Get inside** a building or to a basement to protect yourself.
2. **Carefully remove the outer layer of your clothing,** seal it in a plastic bag and get clean (shower or wipe off).
3. **Listen** to officials and emergency responders for further safety instructions.

59. Is radiation contagious?

No. Radiation is not like a cold. You cannot catch it from someone.

It is true, however, that people who have radioactive dust on their clothes or their bodies can leave some of that contamination on objects or people they come into contact with.

But there is a simple solution: They should clean up or decontaminate themselves. People who might have radioactive dust on them can take the following steps:

Remove your outer clothes. Once you are inside, carefully take off your outer layer of clothing. Do this in case any radioactive dust fell onto your clothes while you were outside.

Seal the clothing in a plastic bag if available. Store the plastic bag away from people and animals.

Shower or wash off. If possible, take a warm shower with lots of soap. Don't scald or scratch your skin. When washing, try to keep dust or water from entering your mouth, and don't swallow the water.

Wash your hair with only shampoo or soap and water. Don't use conditioner because it can cause the radioactive dust to stick to your hair.

Children should be given a shower or washed under supervision of a parent or other adult.

If you cannot shower, use a wet wipe or clean wet cloth to wipe any skin that was not covered by clothing (such as your hands and face).

Gently blow your nose and gently wipe your eyelids, eyelashes and ears with a clean wet cloth.

Put on clean clothes. Clothing stored in a closet or away from radioactive material is clean. If you do not have clean clothes, carefully brush off your outer layer of clothing and get dressed again. Rewash your hands, face and exposed skin at a sink or faucet.

60. Are people at risk for radiation poisoning or sickness?

Radiation sickness is an illness from short-term exposure to a large amount of radiation.

In the United States, dose is measured in units called millirem (mrem). The international unit is the millisievert (mSv).

According to radiation safety experts, radiation exposures of 5–10 rem (5,000–10,000 mrem or 50–100 mSv) usually result in no harmful health effects, because radiation below these levels is a minor contributor to our overall cancer risk.

Safety recommendations are designed to keep your dose as low as possible.

It takes a large dose of radiation—more than 75 rem (75,000 mrem or 750 mSv)—in a short amount of time (usually minutes to hours) to cause immediate health effects, such as acute radiation sickness.

[PUT INCIDENT DOSE IN CONTEXT TO RADIATION SICKNESS DOSES]

Signs of radiation sickness include skin burn or rash, and nausea and/or vomiting. If you have been exposed to high levels of radiation and are experiencing these symptoms—even days after exposure—seek medical attention immediately.

If you are not experiencing these or other life-threatening symptoms, stay away from hospitals. Hospitals need to care for those most critically injured.

Food, Water and Air Safety

61. Is the food safe to eat?

Food in sealed containers (cans, bottles, boxes, etc.) and any unspoiled food in your refrigerator or freezer is safe to eat.

Use a damp towel or cloth to wipe off cans, bottles, packaged foods, counters, plates, pots and utensils before using them.

Seal these towels or cleaning cloths in a plastic bag and place them away from people and pets.

However, any unpackaged food that was out in the open and near the incident may have radioactive dust on it. Therefore, don't consume food that was out in the open.

Don't eat food that was outdoors from [TIME, DATE] in [AREA].

62. Can people eat food from their gardens or locally caught fish and game?

People in [AREA] are instructed not to eat [FOOD FROM THEIR GARDENS, LOCAL FISH, LOCAL WILDLIFE].

Responders will be monitoring the area around the release and will notify you when it is safe to eat local fish, game and food from your garden.

If you are concerned and suspect that radioactive material has settled on your garden, make sure to wash, or simply don't eat, the food.

Listen for instructions from state and local officials and responders regarding food safety.

63. Is the water safe to use?

Bottled water and sealed juice or soda containers will be free of radioactive contamination. Wipe or rinse the outside of bottles or cans before opening them.

Water from the tap is probably safe. But until we have drinking water test results, only bottled water is certain to be free of contamination.

Tap or well water can be used for cleaning yourself and your food.

If alternative drinking water is needed, officials can provide bottled water, change the water source (such as switching to ground water), reroute water from an unaffected water system or choose a combination of these actions.

Boiling tap water does not get rid of radioactive material.

64. What should farmers do with their crops?

If you are being asked to stay inside (shelter-in-place) or evacuate, follow the instructions of state and local officials. These instructions are for your safety.

We are asking farmers in [AREA] not to tend, harvest, eat or distribute their crops until radiation monitoring and sampling results are analyzed, unless otherwise directed.

We recognize that your crops are your livelihood. State and local officials will keep you informed as radiation monitoring and sampling results come in.

65. What should farmers and ranch owners do with livestock?

If you are being asked to stay inside (shelter-in-place) or evacuate, follow the instructions of state and local officials. These instructions are for your safety.

We are asking farmers and ranchers in [AREA] not to transport their livestock and to not consume or distribute milk from dairy animals until radiation monitoring and sampling results are analyzed, unless otherwise directed. If you have milk-producing animals, contact state and local officials for guidance.

Take these simple steps to protect your livestock from eating feed or drinking water contaminated with radioactive material:

- **Move your livestock inside,** away from more highly contaminated areas outside.
- **Use only stored feed and covered water.** If possible, avoid using hay or alfalfa kept outside.

66. Is the air safe to breathe?

Federal, state and local partners are monitoring [AREA] to determine the location and levels of radioactive material on the ground and in the air.

If radioactive particles are in the air, you can take these simple steps to reduce your exposure:

- **Cover your mouth** and nose with a cloth to reduce the risk of breathing in radioactive dust or smoke. You may also use a disposable mask, such as a dust mask, if one is immediately available.
- **If you have been instructed to stay inside, remain inside.** The roof and walls provide protection from the radioactive material outside.
- **If weather conditions permit, close doors and windows.** To keep radioactive dust or powder from getting inside, shut all windows, outside doors and fireplace dampers. It is not necessary to put duct tape or plastic sheets around doors or windows.

- **If weather conditions permit, turn off the fan, air conditioner or heater.** Otherwise, set the fan, air conditioner or heater on recirculate. In-room fans (for example, ceiling fans) that only recirculate indoor air are okay to use. Air-conditioning systems in large buildings can be used if they are set on recirculate.

We are tracking the radiation levels, and authorities will instruct you to leave the area if it is in your best interest to do so.

Decontamination

67. If people are told by health and emergency management officials to self-decontaminate, what does this mean?

It means that people are being told to take several easy steps to remove any radioactive material that might have fallen onto clothes, skin or hair.

Take the following steps to self-decontaminate:

Remove your outer clothes. Once you are inside, carefully take off your outer layer of clothing. Do this in case any radioactive dust fell onto your clothes while you were outside.

Seal the clothing in a plastic bag, if available. Store the plastic bag away from people and animals.

Wash off. If available, take a warm shower with lots of soap. Don't scald or scratch your skin. When washing, try to keep dust or water from entering your mouth, and don't swallow the water.

Wash your hair with only shampoo or soap and water. Don't use conditioner, because it can cause the radioactive dust to stick to your hair.

Children should be given a shower or washed under supervision of a parent or other adult.

If you cannot shower, use a wet wipe or clean wet cloth to wipe any skin that was not covered by clothing (such as your hands and face).

Gently blow your nose and gently wipe your eyelids, eyelashes and ears with a clean wet cloth.

Put on clean clothes. Clothing stored in a closet or away from radioactive material is clean. If you do not have clean clothes, carefully brush off your outer layer of clothing and get dressed again. Rewash your hands, face and exposed skin at a sink or faucet.

Tune in. Stay tuned to television, radio and government emergency management websites for updates.

68. How quickly does an exposed person have to remove contamination from their body?

There is no set time. People should remove contamination as soon as possible to reduce their radiation dose by following the steps listed above.

69. I am injured, and I think my wound is contaminated. What should I do?

Flush the wound with lots of fresh water or saline, if possible. Otherwise, keep it covered and seek medical attention.

70. Is it safe for me to let someone who might have been affected by the radiological incident into my home?

If someone has radioactive dust on their clothes or body, a few simple steps can clean up or decontaminate the person so that he or she can safely visit your home.

First, ask your visitors to remove their outer layer of clothing and seal it in a plastic bag. Place the plastic bag away from people and pets.

Second, have your visitors clean off using the following steps:

Remove their outer clothes. Once inside, your visitors should carefully take off their outer layer of clothing in case any radioactive dust fell onto their clothes while they were outside.

Seal the clothing in a plastic bag if available. Store the plastic bag away from people and animals.

Shower or wash off. If possible, your visitors should take a warm shower with lots of soap. They should not scald or scratch their skin. When washing, they should try to keep dust or water from entering their mouth, and they shouldn't swallow the water.

Your visitors should wash their hair with only shampoo or soap and water. They should not use conditioner because it can cause the radioactive dust to stick to their hair.

Children should be given a shower or washed under supervision of a parent or other adult.

If your visitors cannot shower, they should use a wet wipe or clean wet cloth to wipe any skin that was not covered by clothing (such as their hands and face).

They should gently blow their nose and gently wipe their eyelids, eyelashes and ears with a clean wet cloth.

Put on clean clothes. Clothing stored in a closet or away from radioactive material is clean. If you do not have clean clothes for your visitors, they can carefully brush off their outer layer of clothing and get dressed again. They should rewash their hands, face and exposed skin at a sink or faucet.

71. How should people decontaminate their homes and their possessions?

Don't decontaminate your home until you get information from emergency responders or local officials.

You may not need to decontaminate your home, or there may be special instructions for how to clean your home. For example, you may receive special instructions on wearing protective clothing, methods for keeping dust to a minimum, and washing the outside of your home. You can find more information on steps you can take at [INSERT AGENCY WEBSITE HERE].

Exposure Versus Contamination

72. How do I know if I've been exposed to radiation or contaminated by radioactive materials?

People cannot see, smell, feel or taste radiation, so you may not know whether you have been exposed.

In addition, low levels of radiation exposure do not cause any symptoms.

People who were in areas of concern may be instructed to go to a screening center—sometimes called a community reception center. At this location, responders will quickly check for radiation by using special equipment to determine how much radiation is present and whether it poses any danger.

If you think you have been contaminated, simply removing the outer layer of your clothing and washing exposed skin will significantly reduce any contamination you may have on your body.

73. What is the difference between radiation exposure and radioactive contamination?

Exposure occurs when radiation interacts with the body. You can be exposed to radiation without having radioactive material on your body (contamination). For example, during a chest X-ray or computed tomography (CT) scan a person is exposed, but that person is not contaminated and not radioactive.

Contamination happens when radioactive material is physically on or inside of a person or object. If you are contaminated with radioactive material, you are being exposed to radiation. Contamination can occur two ways:

1. External contamination occurs when radioactive material settles outside, on the surface of an object, or on a person's body or clothing.
2. Internal contamination occurs when radioactive material enters the body. This can happen when radioactive material is swallowed, inhaled, embedded or absorbed through the skin or wounds.

Special Issues and Concerns: Pregnancy and Breastfeeding

74. I am pregnant. Is my baby in danger?

After any radiation incident, expectant mothers who have concerns should seek advice from their physicians, who should work in consultation with radiation professionals.

It is true that a fetus is extremely sensitive to radiation. According to the Centers for Disease Control and Prevention (CDC), and as history has shown, most radiation releases will not expose the fetus to levels high enough to cause harmful health effects or birth defects.

After some radiation accidents in other countries, pregnant women terminated their pregnancies because they feared that the radiation would harm the developing embryo or fetus, but these terminations turned out to be totally unnecessary.

However, before any potential health risk to the embryo or fetus can be assessed, health care professionals and radiation experts would determine what external or internal doses the expectant mother might have received because of being near the incident.

Once dose levels to the expectant mother and fetus have been determined, your physician can consult with other medical and radiation professionals to identify potential risks (if any) and provide appropriate counseling.

75. Is it safe to breastfeed?

Breastfeeding is very important for the well-being of a baby, providing vital nutrients and a sense of security.

For mothers far from the release site, breastfeeding can continue.

However, if a mother was near the release site and was either injured or is believed to have inhaled significant quantities of radioactive dust or smoke, there is a small possibility that some radioactivity could be passed through breast milk.

Public health and medical officials may advise the mother to temporarily stop breastfeeding and switch to either breast milk that was pumped and stored before the incident or baby formula until she is able to contact her doctor or public health and medical officials for further instructions or advice.

Formula containers and feeding supplies should be cleaned with a damp cloth or clean towel before use.

If possible, pump and dispose of breast milk to continue producing milk while additional information is gathered. Clean the pumping supplies as indicated by the manufacturer.

If no other source of food is available for your baby, continue to breastfeed. The nutritional and hydration benefits from breastfeeding far outweigh any risk from radiation.

76. Can pregnant women take potassium iodide pills?

As with the rest of the population, pregnant women should take potassium iodide (KI) only when specifically advised to do so by public health officials.

KI will cross the placenta and protect the thyroid of the growing fetus, as well as the expectant mother, from radioactive iodine.

77. Can breastfeeding women take potassium iodide?

As with the rest of the population, breastfeeding women should take potassium iodide (KI) pills only when specifically advised by public health officials.

However, this will not be sufficient to fully protect the breastfed child. The child also will need KI in special doses adapted for newborns and infants. Don't administer extra doses of KI to newborns or infants unless directed by your doctor. If you are instructed to give your child KI, follow age-specific dosing instructions. All newborns and infants should be evaluated by a doctor as soon as possible after administration of KI.

Listen to your state or local public health officials for specific guidance on taking KI pills. For the latest information go to [INSERT AGENCY WEBSITE HERE].

78. I am trying to get pregnant. Should I worry that my future children will be affected?

There is no evidence that your future children will be at a greater risk for birth defects or other problems.

Over many years, doctors and scientists have conducted extensive studies of children born to atomic bomb survivors. They have found no indication of genetic effects in these children.

Special Issues and Concerns: Children

79. What should I do about my children and family? Should I leave to find my children?

If your children or family are with you, stay together.

If your children or family are in another home or building, they should stay there until you are told it is safe to travel. You also should stay where you are. You risk exposure to radiation if you go outside. You cannot help them if you are injured.

Schools have emergency plans and shelters. If your children are at school, they should stay there until it is safe to leave. Don't go to the school until public officials say it is safe to do so.

80. What is being done to protect children in school?

Schools have emergency plans in place to protect the children. These plans include keeping everyone inside and providing assistance for those with special needs.

Children in schools will be cared for by teachers and staff until it is safe for them to leave. Children will not be released to go outside until instructed to do so by health officials and emergency responders.

81. If some of the radioactive dust got on my clothes or skin, will I contaminate my child? Is it safe for me to be around my child?

Radioactive dust can be removed by taking off and bagging your outer layer of clothing, showering with soap and warm water, and putting on clean clothes.

People who have cleaned up pose no contamination risk to you, your property or the members of your household.

82. Is it okay for me to give my child a bath?

Yes. If you think your children have radioactive material on their bodies, the most important thing to do is get them clean. A quick bath is one way to do that.

If there is concern that the water contains radioactive material from the incident, you can still bathe your child. There is no additional risk from bathing your child; however, make sure that your child doesn't drink the bath water.

83. If people need to be decontaminated at a reception center or other location, will I be able to stay with my children while they are decontaminated?

Parents should be able to stay with their children during decontamination and other processes.

Children and their families (parents or caregivers) should not be separated unless critical medical issues need to be addressed.

84. Does my child need to have his/her thyroid scanned?

Thyroid scans are needed only when there is a possibility that radioactive iodine has entered the body.

Health experts are gathering information now and determining potential health threats. You will be notified if thyroid scans are needed.

85. What kind of emotional impact can a radiological incident have on children? What should I look out for?

Children are among the most vulnerable of those affected by a radiological emergency, because they lack the maturity, skills and experience to fully understand and process what is going on.

Family members and caregivers should gently try to find out what the child thinks and feels about the incident.

If children are scared because they have misunderstood what has happened, then simple explanations should be provided while avoiding alarming details.

Children who exhibit signs of stress—such as difficulty sleeping, loss of appetite or bed-wetting—should receive extra time and attention from family members and other caregivers. If signs of stress continue, seek advice from a pediatrician or licensed therapist.

It is important to remember that children also need a chance to play and relax. Encourage older children to be helpful and maintain regular routines.

86. Are children exposed to radiation at higher risk of harm?

Children exposed to radiation may be at greater risk of harmful health effects than adults.

Children have higher breathing rates, are growing and have closer physical proximity to the ground, where radiation may be more concentrated; all of this makes children more vulnerable.

Health experts are gathering information now to determine any potential health threats, and they are specifically looking at potential effects on children. Instructions issued by health officials are based on these findings.

87. Will my child and I get cancer from the radiation exposure?

Cancer has many causes, some genetic and some from the environment.

For some people, the low levels of radiation expected from this incident might slightly increase the risk of cancer over what occurs naturally in a person's lifetime.

A person who is near a radioactive source for a short time, inhales a small amount of radioactive dust, or gets a small amount of radioactive material on clothing or skin will not necessarily get cancer later in life.

Scientists, doctors and other health experts are working now to check people and gather information on any potential radiation risks posed by the incident. Once exposure information has been gathered, health officials and your doctor will be able to discuss any possible risks and the practical steps you can take to reduce them.

88. Should my children take potassium iodide?

If public health officials say to take potassium iodide (KI) in the affected area, children should take potassium iodide unless they have known allergies to iodine.

However, the doses and procedures for giving KI to children are not the same as for an adult.

If KI is needed, public health officials will provide specific guidance on doses and procedures for giving KI to children.

Special Issues and Concerns: People With Disabilities or Special Medical Needs

89. If I go through decontamination at a reception center or other facility, will my eyeglasses or contact lenses be taken away?

Your glasses should not be taken away.

Eyeglasses may be washed in the shower.

You can continue to wear your contact lenses until you can safely get replacements.

90. I have a prosthetic limb. If I have to be decontaminated to remove radioactive dust, will my prosthetic limb have to be taken away?

There is no reason for a prosthetic limb to be taken away.

Most prosthetic limbs can get wet, so they can be removed, thoroughly cleaned along with the person, and put back on.

91. Is there a general list of the kinds of devices, adaptive equipment, prostheses and mobility aids that can be decontaminated?

Unfortunately, no single guide currently available covers all situations.

However, a general list was published in 2006 by the New York Center for Terrorism Planning and Preparedness in a document on hospital decontamination protocols.

The list identifies the following items that can be decontaminated: nonelectric wheelchairs, prosthetic limbs (without leather components), walkers, crutches (without foam cushions/parts), canes (without foam cushions/parts), eyeglasses and prosthetic eyes.

Items that cannot be decontaminated, or that pose special challenges, include mechanical ventilators, electric wheelchairs, hearing aids, contact lenses and any leather attachments/components of items.

For such items, discuss options with emergency responders and health officials.

92. What if my service animal is found to be contaminated?

If your service animal is known or suspected to be contaminated, it will be decontaminated.

In 2006, the Pets Evacuation and Transportation Standards (PETS) Act was created to ensure that state and local emergency management partners address the specific needs of individuals with service animals. The law includes provisions for decontaminating service animals.

93. How are service animals decontaminated?

Most animals can be decontaminated by simply using soap and water. For sensitive areas where traditional washing methods may be more difficult—around the animal's eyes, nose and mouth, and in its ears—damp towels or cleaning cloths may be used.

In some situations, emergency responders might place a muzzle on the animal to prevent it from licking or drinking contaminated water.

94. What should people do if they don't have access to their life-sustaining medications?

If you are in the affected area and your life is in danger because you are running out of **life-sustaining** medication, such as insulin or heart medicine, take the following steps to get medication:

- Call 911 if possible.
- Seek help from a neighbor.
- As a last resort, go to the closest medical facility.
- If you must go outside, remember to clean yourself thoroughly when you come back inside: Remove your outer layer of clothes, shower and wash with soap and warm water, and put on clean clothes.

95. I receive radiation treatments for medical reasons. Should I stop my treatments because I might have been exposed to radiation from the emergency?

As a general rule, a radiation incident should not cause people to stop or take a break from potentially lifesaving medical treatments. However, tell your doctor if you think you were exposed to radiation from the emergency. The doctor will decide how to handle your radiation treatments.

Special Issues and Concerns: Pets

96. If people have been told to stay inside and self-decontaminate during a radiation emergency, what should they do with their pets? How do I decontaminate my pet?

If you are instructed to stay inside, your pets should be inside too.

If your pet was outside at the time of the incident, the pet can be brought inside and decontaminated.

Start by putting on waterproof gloves and a dust mask (or other material to cover your mouth).

Also, keep cuts and scrapes (both yours and your pet's) covered to keep radioactive material out of any wounds.

Then wash your pet carefully in a shower or bath using shampoo or soap and water. Rinse the pet completely.

To make sure you have not picked up any contaminants, be sure to shower after you have washed the pet, especially washing your hands and face.

97. Is the water safe for my pet to drink?

Bottled water will be free of radioactive contamination. Wipe or rinse the outside of bottles or cans before opening them. Clean the bowl prior to filling.

Water from the tap is probably safe. But until we have drinking water test results, only bottled water is certain to be free of contamination.

98. Is pet food safe for my pet?

As with other foods, sealed pet food is safe for animals to consume.

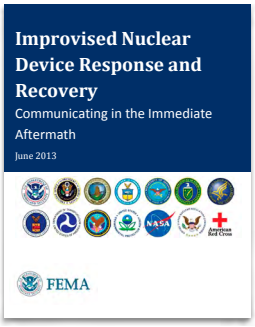
As with other foods, rinse or wipe off any debris from a sealed can or package with tap water and put the cleaning cloth in a plastic bag away from people and animals.

99. What should I do if my pet needs to go outside to use the bathroom?

If possible, remain indoors. If your pet must go outside, minimize the time spent outside and repeat decontamination procedures upon reentering the building (see question 96).

Appendix—Radiation Communication Resources From Emergency Support Function 15: Annex N (July 2016)

Improvised Nuclear Device Response and Recovery: Communicating in the Immediate Aftermath



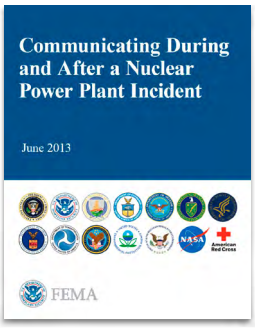
Incident Type: Improvised Nuclear Device (many messages will be applicable to other radiological emergencies)

Content:

- Key messages for affected community and the nation
- Pre-approved answers to anticipated public and media questions
- Social media templates for immediate safety actions

URL: www.fema.gov/media-library-data/20130726-1919-25045-0892/communicating_in_the_immediate_aftermathfinal_june_2013_508_ok.pdf

Communicating During and After a Nuclear Power Plant Incident



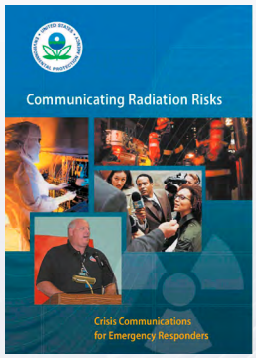
Incident Type: Nuclear Power Plant Incident

Content:

- Roles and responsibilities for communicating after a nuclear power plant incident
- Pre-approved answers to anticipated public and media questions

URL: www.fema.gov/media-library-data/20130726-1919-25045-1433/communicating_during_and_after__npp_incident___june_2013__secure_.pdf

Communicating Radiation Risks: Crisis Communications for Emergency Responders



Incident Type: Radiological Emergency (transportation or dirty bomb)

Content:

- Guidelines for emergency message development
- Example questions and answers for transportation and dirty bomb scenarios

URL: nepis.epa.gov/exe/zypdf.cgi/500025ha.pdf?dockey=500025ha.pdf

CDC Radiation Resources

Radiation Emergency Tool Kits for Public Health Professionals

- Guidance, training and educational materials for professionals
- Fact sheets and other content that can be used for public information

URL: emergency.cdc.gov/radiation/toolkits.asp

Radiation Basics Made Simple Videos

- Eight brief educational videos on protective actions, countermeasures and health effects, which can be used for public education or b-roll

URL: emergency.cdc.gov/radiation/protectiveactions.asp

Radiation Communications Research Reports

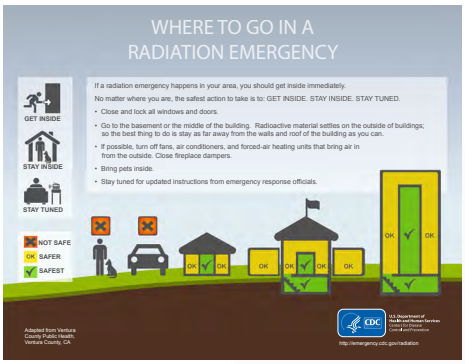
- Formative research reports on radiation-related message testing

URL: emergency.cdc.gov/radiation/professionals.asp

CDC Radiation Infographics

Note: URLs provided after infographic listing.

Where to Go in a Radiation Emergency



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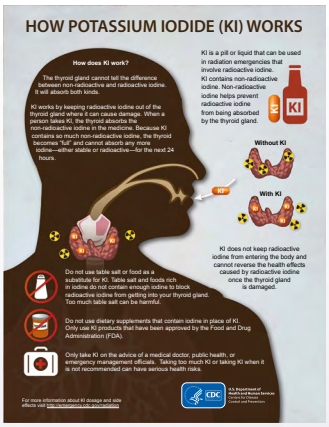
Decontamination

2

Potassium Iodide: KI



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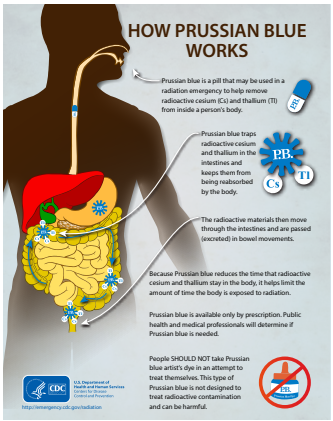
Prussian Blue



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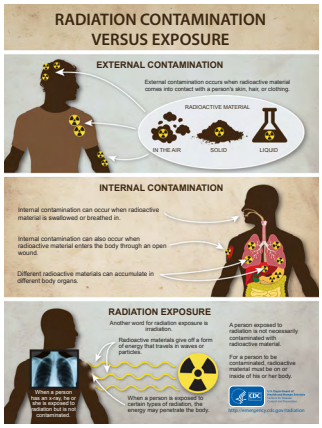
Contamination Versus Exposure



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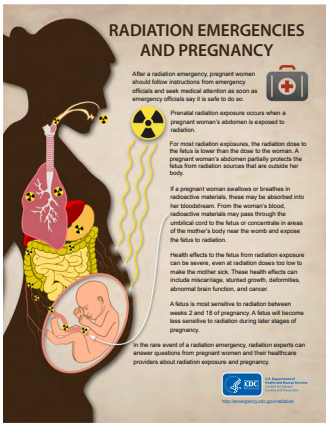
Radiation Emergencies and Pregnancy



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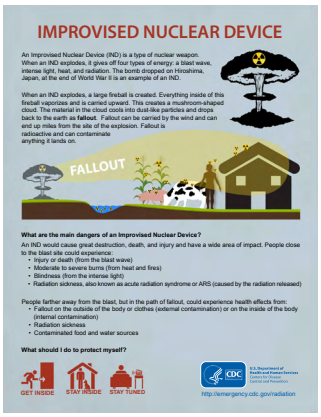
Improvised Nuclear Device



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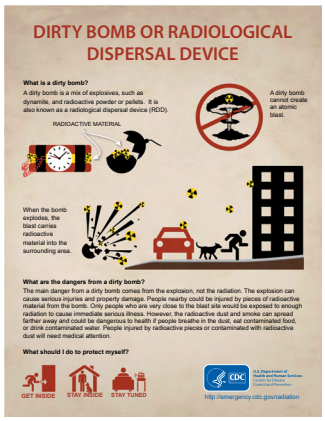
Dirty Bomb



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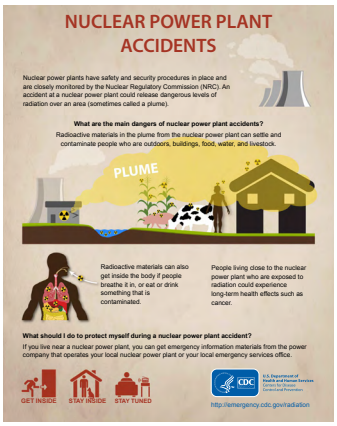
Nuclear Power Plant Accidents

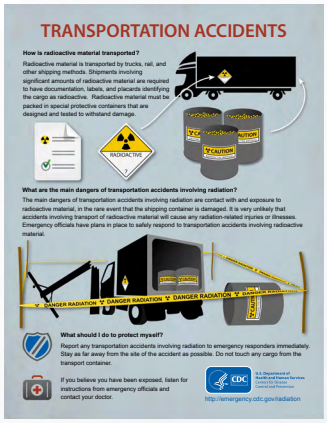


9

Radiological Exposure Device

10

Transportation Accidents



11

Workplace Incidents

12

1. emergency.cdc.gov/radiation/pdf/infographic_where_to_go.pdf
2. emergency.cdc.gov/radiation/pdf/infographic_decontamination.pdf
3. emergency.cdc.gov/radiation/pdf/infographic_ki.pdf
4. emergency.cdc.gov/radiation/pdf/infographic_prussian_blue.pdf
5. emergency.cdc.gov/radiation/pdf/infographic_contamination_versus_exposure.pdf
6. emergency.cdc.gov/radiation/pdf/infographic_radiation_and_pregnancy.pdf
7. emergency.cdc.gov/radiation/pdf/infographic_improvised_nuclear_device.pdf
8. emergency.cdc.gov/radiation/pdf/infographic_radiological_dispersal_device.pdf
9. emergency.cdc.gov/radiation/pdf/infographic_nuclear_power_plant.pdf
10. emergency.cdc.gov/radiation/pdf/infographic_radiological_exposure_device.pdf
11. emergency.cdc.gov/radiation/pdf/infographic_transportation_accidents.pdf
12. emergency.cdc.gov/radiation/pdf/infographic_workplace_radiation_incidents.pdf

Federal Agency Radiation Websites

Federal Emergency Management Agency: www.ready.gov

U.S. Department of Energy, National Nuclear Security Administration: nnsa.energy.gov/aboutus/ourprograms/emergencyoperationscounterterrorism

U.S. Department of Health and Human Services (HHS), Centers for Disease Control and Prevention: emergency.cdc.gov/radiation

HHS, Radiation Emergency Medical Management: www.remm.nlm.gov

HHS, Substance Abuse and Mental Health Services Administration, Disaster Distress Helpline: www.samhsa.gov/find-help/disaster-distress-helpline

U.S. Environmental Protection Agency: www.epa.gov/radiation

U.S. Nuclear Regulatory Commission: www.nrc.gov/about-nrc/emerg-preparedness.html

Additional Resources

Conference of Radiation Control Program Directors: crcpd.org

Health Physics Society: hps.org/publicinformation/ate/find.cfm

International Commission on Radiological Protection: www.icrp.org

National Alliance for Radiation Readiness: www.radiationready.org

National Council on Radiation Protection and Measurement: ncrponline.org