# Nuclear Detonation Preparedness
# Communicating in the Immediate Aftermath

**Approved for Interim Use**

**September 2010**

## Foreword

A nuclear detonation in the United States is one of the most devastatingly catastrophic incidents imaginable. While the United States Government is working with its international partners to ensure this nightmare scenario never becomes reality, failing to plan for managing the consequences would be irresponsible.

Amidst the calamity ensuing from a nuclear detonation, a crucial task for federal, state, and local authorities will be communicating clear and consistent messages to the public. All levels of government have responsibility for coordinating and communicating information regarding the incident to the public. State, local and tribal authorities retain the primary responsibility for communicating health and safety instructions for their population. Effective communications will be a critical factor in building trust, comforting a nation in distress, and, ultimately, saving lives and minimizing injury.

This document was developed as a resource for emergency responders and federal, state, and local officials communicating with the public and media during the immediate aftermath following a nuclear detonation in the United States. This document has been approved for INTERIM USE while it undergoes public message testing and review by state, local and tribal emergency communicators, planners, public health officials and responders.

As an interagency group of communications and radiation technical experts, we developed the messages in this document, which include key messages for the impacted community and the nation, and anticipated questions and answers for the immediate aftermath of a nuclear detonation. This document has been reviewed by the Advisory Team for Environment, Food and Health, which is a radiological emergency response group tasked with providing protective action recommendations to state and local governments on behalf of its member agencies (CDC, FDA, USDA and EPA). As you are aware, every emergency presents its own set of challenges, which must be reflected in incident-specific information.

While we hope there is never a need for these messages, we have a responsibility to the American people to be prepared to respond and communicate effectively in the event of any type of national emergency, including a nuclear detonation.

September 1, 2010
Members of the Domestic Resilience Group
IND Response Sub-IPC
Nuclear Detonation Response Communications Working Group

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**Roles and Responsibilities**

# Key Messages

## Impacted Community: Immediate Action Message

*Suggested for local or state spokesperson; Fire Chief, Mayor, Governor*

- We believe a nuclear explosion has occurred at [Location] here in [City].
- If you live anywhere in the metropolitan area, get inside a stable building immediately.
- You can greatly increase your chance of survival if you take the following steps quickly.
    - **Go deep inside:**
        - Find the nearest building, preferably built of brick or concrete, and go inside to avoid any radioactive material outside.
        - If better shelter, such as a multi-story building or basement can be reached within a few minutes, go there immediately.
        - If you are in a car, find a building for shelter immediately. Cars do not provide adequate protection from radiation from a nuclear detonation.
        - Go to the basement or the center of the middle floors of a multi-story building (for example the center of the 5$^{th}$ floor of a 10 story building or the 10$^{th}$ to 20$^{th}$ floors of a 30 story building).
        - These instructions may feel like they go against your natural instinct to evacuate from a dangerous area; however, health risks from radiation exposure can be greatly reduced by:
            - Putting building walls, brick, concrete, or soil between you and the radioactive material outside, and
            - Increasing the distance between you and the exterior walls, roofs and ground, where radioactive material is settling.
    - **Stay inside:**
        - Do not come out until you are instructed to do so by authorities or emergency responders.
        - All schools and daycare facilities should be locked down. Adults and children in those facilities should take the same protective actions you are taking – and they should not be released to go outside for any reason until they are instructed to do so by emergency responders.
    - **Stay tuned to television and radio broadcasts for important updates:**
        - If your facility has a National Oceanic and Atmospheric Administration **(**NOAA) Weather Radio, this is a good source of information.
        - If you have been instructed to stay inside, stay tuned because these instructions will change.
            - Radiation levels are extremely dangerous after a nuclear detonation but the levels reduce rapidly, in just hours to a few days.
            - During the time with the highest radiation levels it is safest to stay inside, sheltered away from the radioactive material outside.
        - When evacuating is in your best interest, you will be instructed to do so.
        - People in the path of the radioactive material – downwind from the detonation – may also be asked to take protective measures.

# Impacted Community: Additional Safety Measures
## (self-decontamination, food and water safety)

*Suggested for local or state spokesperson: Fire Chief, Mayor, Governor*

- We believe a nuclear explosion has occurred at [Location] here in [City].
- If you live anywhere in the metropolitan area, you should be inside a stable building (preferably brick or concrete).
- If you were outside at the time of the explosion, and located in [Specify Area], there are simple steps you can take to remove radioactive material that may have settled on your body.
    - **Remove your clothing to keep radioactive material from spreading.**
        - You should act as if you are going home covered in mud: you do not want to track mud in your home.
        - If practical, place your clothing in a plastic bag and seal or tie the bag.
        - Place the bag as far away as possible from humans and animals so that the radiation it gives off does not affect others.
        - Removing the outer layer of clothing can remove up to 90% of radioactive material.
    - **When possible, take a shower with lots of soap and water to help remove radioactive contamination. Do not scrub or scratch the skin.**
        - Wash your hair with shampoo or soap and water. Do not use conditioner in your hair because it will bind radioactive material to your hair, keeping it from rinsing out easily.
        - Gently blow your nose and wipe your eyelids and eyelashes with a clean wet cloth. Gently wipe your ears.
    - **If you cannot shower, use a wipe or clean wet cloth to wipe your skin that was not covered by clothing.**
    - **Put on clean clothing.**
- For food safety:
    - Rinse all counters, plates, pots and utensils before use to remove any radioactive material that may have settled on them.
    - Food in your refrigerator or freezer is safe to eat, if you have not lost power.
    - Food in sealed containers is also safe to eat.
    - Rinse the outside of all packaged food before opening them.
- For water safety:
    - Bottled water is the only source that we are certain is free of contamination.
        - Before opening, use a clean towel to wipe off the bottle to remove any radioactive material that may have settled on it.
    - It is important to note that most distribution systems have several days of water supply in covered storage.
    - If you have water pressure and need water to drink, save water in clean containers for drinking.

## Nationwide: Immediate Message

*Suggested for national spokesperson: President of the United States, Department of Homeland Security Secretary*

- We believe a nuclear explosion has occurred at [Location] here in [City].
- The federal government is operating and we are doing everything we can to help the nation get through this.
    - Across the country, we have deployed and continue to coordinate resources to help those in need.
    - We are following existing emergency response plans for maximizing and coordinating resources across the government to help those in need.
- We are doing everything possible to identify those responsible for this malicious, tragic event. We will hold fully accountable any nation, terrorist group or accomplices involved in carrying out or facilitating this attack against our nation.
    - The United States Government is using all available means, including law enforcement, intelligence and technical nuclear forensics, to determine who is responsible for this attack.
    - It will take time to determine those responsible and we will take whatever time is necessary to do so.
- As a nation, during this time of crisis, we must continue to be alert.
    - We are taking all available security precautions to protect the American people.
    - If you see anything suspicious, please contact your local authorities immediately.
- Americans across the nation can best help by:
    - Staying tuned to television and radio broadcasts for important updates.
        - Things will change and you will be kept fully informed.
        - You can also get information on the internet at [Website].
    - Keeping phone lines clear and staying away from [City] so emergency responders can do their work.
        - We ask that you use text messaging to communicate with friends and family rather than calling on landline and cell phones.
        - This will free up lines so people who are in need can call for help and emergency responders can contact each other.
    - Visit websites of local community support and volunteer groups to see how you can help support those in need. [Provide links to volunteer sites]
- We, as a city and a nation, will recover from this tragedy.
    - This process will not occur overnight.
    - We need everyone to work together to support those in need and rebuild what we have lost.

## Nationwide: Repeated Informational Message

*This message can be used to instruct people on what they can do to protect themselves in case of another attack and to provide people with specific actions to take.*

*Suggested for national spokesperson: President of the United States, Department of Homeland Security Secretary*

- Know that it is reasonable for individuals to feel anxious about their personal safety and worried about the unknown.
- If you are concerned for the immediate health and safety of yourself and your family, know that this type of event is survivable if you take the appropriate steps.
    - **Go deep inside:**
        - Find the nearest building, preferably built of brick or concrete, and go inside to avoid any radioactive material outside.
        - If you are in a car, find a building for shelter immediately. Cars do not provide adequate protection from radioactive material.
        - Go to the basement or the center of the middle floors of a multi-story building (for example the center of the 5$^{th}$ floor of a 10 story building or the 10$^{th}$ to 20$^{th}$ floors of a 30 story building).
        - These instructions may feel like they go against the natural instinct to evacuate from a dangerous area; however, health risks from radiation exposure can be greatly reduced by:
            - Putting building walls, brick, concrete or soil between you and the radioactive material outside, and
            - Increasing the distance between you and the exterior walls, roofs and ground, where radioactive material is settling.
    - **Stay inside:**
        - Do not come out until you are instructed to do so by authorities or emergency responders.
    - **Stay tuned to broadcasts for important updates**
        - If you have been instructed to stay inside, stay tuned to TV or radio because these instructions will change.
            - Radiation levels are extremely dangerous after a nuclear detonation but the levels reduce rapidly, in just hours to a few days.
            - During the time with the highest radiation levels it is safest to stay inside, sheltered away from the material outside.
            - When evacuating is in your best interest, you will be instructed to do so.
    - There are ways we can all support the on-going effort.
        - Care for those around you. This incident has directly affected people across the nation and across the world.
        - Contact your local community support and volunteer groups to see how you can help support those in need. [Provide links to volunteer sites]

# Situation Update

## Situation Specifics

### 1. What happened?

- We can confirm there was a nuclear explosion at [LOCATION] in [CITY].
    - Please be aware that radiation cannot be seen.
    - If you are outside of the blast zone, your surroundings may appear normal; however, danger may still exist.
    - We are working to define the areas at high risk for radioactive fallout.
    - Please continue to listen and follow specific instructions.
- We are responding to this devastating event.
    - With the limited amount of information we have at this time, we are monitoring the path of the radioactive material in the atmosphere and the radioactive fallout on the ground from the explosion.
    - Based on this information, emergency responders are assessing and identifying dangerous areas.
    - Rescue, evacuation and recovery efforts are underway.
- We, as a city and a nation, will recover from this tragedy.
    - However, this process will not occur overnight.
    - We need everyone to work together to support those in need and rebuild what we have lost.
- The situation will change, and you will be kept fully informed.
    - Radiation levels will continue to decrease over time.
    - As the situation changes, those of you who have been instructed to stay inside may be asked to leave the area; but not until it is in your best interest to do so.
    - If you are asked to leave, do so quickly and follow specific instructions.

### 2. How many people were harmed?

- We know there were many people harmed in this attack, but we don't want to speculate on the specific number.
- We also know that there are many people out there who need our help.
- We are focused on getting them that help as quickly and safely as possible.

### 3. How many people have died?

- It is too early to speculate on the number of casualties. Right now, we are upset and angry like all Americans and we must stay focused on saving as many lives as possible in spite of these emotions.
- When even one person dies at the hand of terrorists, it is too many.

## 4. What was the location of the bomb when it exploded?

- We know that the detonation took place in [CITY]
    - We have experts working on identifying the exact location of the detonation.
- We know that people in that area are in immediate danger from radiation exposure.
    - We need people in this area to get inside and stay inside until told otherwise.
    - These instructions may feel like they go against the natural instinct to evacuate from a dangerous area; however, health risks from radiation exposure can be greatly reduced by putting building walls, brick, concrete or soil between you and the radiation outside.
    - This can help save your life.

## 5. When did the detonation occur?

- The bomb exploded at [TIME].
    - It is important to note that radiation levels are extremely dangerous after a nuclear detonation but the levels reduce rapidly, in just hours to a few days.
    - Follow the instructions of state and local officials and responders. These instructions are for your safety.
- Stay tuned to TV and radio for instructions.

## 6. How big was the explosion?

- It is too early to know the size of the explosion.
- However, this is a very serious radiological disaster.
- At this time we are focusing on saving as many lives as possible.

## 7. What radioactive materials were spread due to the nuclear detonation?

- A large variety of radioactive materials are produced and dispersed during a nuclear detonation. Many will be identified over time, but the initial response efforts do not depend on knowledge of the specific materials.
- Our first priority is saving lives.
- What we do know is that radiation levels are extremely dangerous after a nuclear detonation but the levels reduce rapidly, in just hours to a few days.
- Please follow instructions from responders.
    - Whether you are told to go inside or evacuate, these instructions are meant to limit your exposure to high levels of radiation and reduce your risk of contamination.
    - If you are told to go inside and stay inside, go to the basement or the center of the middle floors of a multi-story building (for example the center of the $5^{th}$ floor of a 10 story building or the $10^{th}$ to $20^{th}$ floors of a 30 story building).
    - These instructions may feel like they go against your natural instinct to evacuate from a dangerous area; however, health risks from radiation exposure can be greatly reduced by:
        - Putting building walls, brick, concrete or soil between you and the radioactive material outside, and
        - Increasing the distance between you and the exterior walls, roofs and ground, where radioactive material is settling.

## 8. Where is the fallout going?

- According to current weather modeling, we expect the areas [DIRECTION] of [CITY] to have the highest concentrations of radioactive material, but that can change depending on the local weather conditions.
- People in these areas may be asked to take protective measures.
    - Please follow instructions from responders.
    - Whether you are told to go inside and stay inside or evacuate, these instructions are meant to limit your exposure to high levels of radiation and reduce your risk of contamination.
    - If you are told to go inside, go to the basement or the center of the middle floors of a multi-story building (for example the center of the 5th floor of a 10 story building or the 10th to 20th floors of a 30 story building)
    - These instructions may feel like they go against your natural instinct to evacuate from a dangerous area; however, health risks from radiation exposure can be greatly reduced by:
        - Putting building walls, brick, concrete or soil between you and the radioactive material outside, and
        - Increasing the distance between you and the exterior walls, roofs and ground, where radioactive material is settling.
- The farther away you are from the point of the explosion, the less airborne radioactive material will reach your area.
    - The larger particles, containing greater amounts of radioactive material, fall to the ground in the area closest to the explosion.

## 9. Where is the perimeter of the hot zone? Where is the radioactive material located?

- We are in the process of monitoring the air and ground for radiation to determine the location of dangerous areas as well as the path of the radioactive material.
- Areas of concern change over time as radioactive material on the ground decays and because winds may move deposited radioactive material.
- We are working with our federal, state and local partners in an effort to get people out of the areas with the highest levels of radiation exposure as soon as possible.
    - In some cases this means we are asking people to stay inside to wait for some of the most dangerous radiation levels to decrease, which can take anywhere from a few hours to a few days.
    - In these cases they will be safer staying inside than evacuating outside.
    - They will be instructed to leave the area as soon as the risk from exposure decreases.
- Responders are working to save lives as close to the impacted area as possible.
    - We need to keep our responders safe so they can do their jobs.

### 10. What can we expect next?

- Expect the situation to keep changing.
    - For the time being, the focus will continue to be on assessing the risks to the public in and around the affected area and providing food, shelter, and medical attention to those in need.
    - We are gathering more information on everything including structural damage, radiation exposure, location of the radioactive material, and how quickly the radioactive material is disappearing.
- State and local officials may issue further instructions with additional actions for people to take to protect themselves.
- There are ways we can all support the on-going effort.
    - Care for those around you. This incident has directly impacted people across the nation and across the world.
    - If possible, please support the American Red Cross relief efforts by donating time, blood or money. More information on how you can help is available on www.redcross.org.
    - Contact your local community support and volunteer groups to see how you can help support those in need. [Provide links to volunteer sites]

### 11. How long will it be before the situation returns to normal?

- We all want to return to normal, which is why so many people from across the country, from so many communities, are helping to respond to this attack.
- As we found after 9/11, normal after the attack may not look like normal before the attack.
- We, as a city and a nation, will recover from this tragedy, but recovery is a process that will not occur overnight.
    - A long, difficult cleanup awaits and the most important goal of the cleanup is to keep people safe.

### 12. Is there concern about a second nuclear detonation?

- It would be irresponsible not to be concerned.
- This is why we are taking all available security precautions to protect the American people.
- As a nation, during this time of crisis, we must continue to be alert.
    - If you see anything suspicious please contact the FBI at [phone number]
- Stay tuned to broadcasts for important updates

### 13. Is the situation under control?

- The federal, state and local governments are coordinating closely to respond in the most effective manner.
- We have radiation specialists working closely with responders to help maximize our ability to respond while keeping our responders safe.

### 14. What effects will this have on the people in the impacted communities?

- While it is too early to know the specific impacts, we know that this has been a catastrophic event where lives have been lost, homes destroyed and worlds turned upside down.
- We will do everything we can to help the people impacted.

- As we continue life-saving activities, we urge people to follow the instruction of responders:
    - These instructions are based on the best information we have right now.
    - These instructions may change as we gather more information.
    - These instructions are for your safety.

## Public Safety and Protective Action Guidance

### 15. What are the most appropriate actions to be taken by the public? What can people do to protect themselves from harm?

- Follow the instructions from state and local officials and responders.
    - These instructions are based on the best information we have right now and may change based on your location.
    - These instructions may change as we gather more information.
    - These instructions are for your safety.
- If you are in the directly impacted area, stay inside until you are told otherwise by authorities.
    - Building walls, brick, concrete or soil will help protect you from the radioactive material outside.

### 16. Who should evacuate and who should seek shelter (go inside and stay inside)?

- We are working to reduce people's exposure to dangerous levels of radiation.
    - Radiation levels are extremely dangerous after a nuclear detonation, but the levels decrease rapidly, in just hours to a few days.
    - During the time with the highest radiation levels it is safest to stay inside, sheltered away from the material outside.
    - As radiation levels decrease, safety measures may change.
- If you are told to go inside and find shelter, go to the basement or the center of the middle floors of a multi-story building (for example, the center of the $5^{th}$ floor of a 10 story building, or the $10^{th}$ to $20^{th}$ floors of a 30 story building).
    - These instructions may feel like they go against your natural instinct to evacuate from a dangerous area; however, health risks from radiation exposure can be greatly reduced by:
        - Putting building walls, brick, concrete or soil between you and the radioactive material outside, and
        - Increasing the distance between you and the exterior walls, roofs and ground, where radioactive material is settling.
    - Individuals who are sheltering will be instructed to leave the area as soon as the risk from exposure decreases.
- People in the path of the radioactive material may be asked to take protective measures.
    - Please follow instructions from responders.
    - Whether you are told to stay inside or evacuate, these instructions are meant to limit your exposure to high levels of radiation and minimize your risk of contamination.

### 17. What should people do if they are told to stay inside but do not have food, water or medications?

- Continue to remain inside for as long as you can until you receive additional instructions from authorities.
    - The longer you stay inside the safer you will be from radiation and other hazards associated with the incident.
    - Please remember that leaving your location may expose you to harmful radiation that could further injure you as well as those assisting in response efforts.
    - Once authorities provide instructions that it is safe to go outside, please proceed to designated assembly areas or shelters if you require food, water, or medical attention.
- For food or water concerns:
    - Authorities are aware of the limitations in food and water and are making efforts to resolve these issues.
- For needed medication concerns:
    - Stay sheltered for as long as possible.
    - If the lack of medications creates a life-threatening condition that requires immediate medical attention, please call 911 or proceed to the nearest fire station, hospital, or pre-determined medical triage area for help.
- For non-life threatening medical care:
    - If you have injuries that are not life-threatening, please remain in your shelter until it is safe to proceed to your nearest fire station, hospital, or pre-determined medical triage area for help.

### 18. What are you doing to protect people from harm?

- Public safety is our highest priority.
    - We are working closely with the other responding agencies at the federal, state, and local levels.
    - We are working quickly but carefully to assess and mitigate the dangers.
- Follow the instruction from state and local officials and responders.
    - These instructions are based on the best information we have right now and may change based on your location.
    - These instructions may change as we gather more information.
    - These instructions are for your safety.
- If you are in the area impacted by the explosion, stay inside until you are told otherwise by authorities.

    Building walls, brick, concrete or soil will help protect you from the radioactive material outside.

### 19. Why are some people being told to stay inside while other people are being evacuated?

- This guidance is based on the best information we have right now and is intended to limit radiation exposure and provide protection.
    - These decisions are based on factors, such as direction of wind, size of the detonation, how quickly radioactive material disappears, and damage to roads and structures along evacuation routes.
- As we gather more information and as the situation changes, protective actions may change.
- Follow the instructions of state and local officials and responders.
    - These instructions are for your safety.

### 20. Will shelters be available for people instructed to evacuate?

- Yes, designated shelters will be available.
- Even though shelters often provide water, food, medicine, and basic sanitary facilities, you should plan to take your disaster supplies kit with you so you will have the supplies that you require.

### 21. Is the food safe to eat?

- If you are concerned about the safety of your food:
    - Wash your hands with soap and water before handling any food. This will help remove radioactive material from your hands, limiting its spread to your food.
    - Rinse all food contact surfaces; counters, plates, pots and utensils before use to remove any radioactive material that may have settled on them.
    - In order to keep radioactive material from falling on areas that you already cleaned, remember to work from the higher areas to the lower levels
    - Food in your refrigerator or freezer also is safe to eat, if you have not lost power.
    - Keep food off counters or anything else that could be contaminated with radioactive material.
    - Do not pick or eat produce from your garden.
    - You can use sealed or frozen food and liquids.
    - Rinse the outside of all packaged food before opening them.
    - Consumers can call the toll-free U.S. Department of Agriculture Meat and Poultry Hotline 24 hours a day at 1-888-MPHotline (1-888-674-6854); for the hearing-impaired (TTY) 1-800-256-7072.

### 22. Should people eat food from their gardens or locally caught fish and game?

- Do not eat food from your garden if you suspect that radioactive material has settled on it.
- It is likely that the radioactive fallout has contaminated the ground and any crops that were planted.
- Locally caught fish and game should be tested for radioactive contamination before it is eaten. Local response authorities will be testing fish and game and will notify you if it is safe to eat.
- Listen for instructions from state and local officials and responders regarding food safety.

### 23. Is pet food safe?

- Just like our food, if pet food is sealed it should be safe to consume.
- If the outside of the can or package appears to have dust or debris on it, rinse the closed item with tap water or wipe with a disposable damp cloth.

### 24. Is the water safe to drink?

- Until we have verified test results, if you are in the affected area, OR if your water source is in the affected area, bottled water is the only source that we are certain is free of contamination.
    - If you have been asked to stay inside, it is because radiation levels outside are dangerously high. Do not go out looking for bottled water.
    - If you have bottled water, before opening, use a clean towel to wipe off the bottle to remove any contaminants.
- It is important to note that most distribution systems have several days of water supply in covered storage. Even above ground sources contain large amounts of water that would significantly dilute radioactive contamination.
    - If you have water pressure and need water to drink, save water in clean containers for drinking.
- We have started to collect water samples. The analyses take time.
    - Once the samples get to the laboratory, we may have initial results within several hours.
    - Complete analysis can take weeks.
- Please follow the instructions of state and local officials and responders.
    - As we gather more information, instructions may change.
    - As the data is received and verified we will work with state and local officials and responders to release the information.

### 25. Is the air safe to breathe?

- This explosion released large amounts of material and debris into the air.
    - Radioactive material is one of many pollutants released by this event.
    - The radioactive material released in the air is dangerous for the area downwind from the explosion.
- Please follow safety instructions provided by state and local officials and stay tuned because instructions will change.
    - Covering your mouth and nose with a protective layer – like a mask, cloth, or towel – can help reduce the amount of particles you breathe.
    - If you have been instructed to stay inside, it is because walls provide protection from the radioactive material outside.
        - Radiation levels are extremely dangerous after a nuclear detonation but the levels reduce rapidly, in just hours to a few days.
        - We are tracking the radiation levels and authorities will instruct you to leave the area when it is in your best interest to do so.
- Federal, state and local partners are monitoring the air across the country to determine the location and levels of radioactive material in the air.
    - Weather will be a major factor in determining where the radioactive material goes because it is carried by the wind as it moves through the atmosphere and can be brought to the ground by precipitation.
    - We will work with state and local officials to release the monitoring information as soon as possible.

### 26. Is there an immediate danger?

- If you are being told to stay inside, it is because exposure to the radioactive material outside is very dangerous.
    - Building walls, brick, concrete or soil can help protect you from the harmful radiation exposure.
    - Stay inside until you are told otherwise by local authorities.
- Instructions may change based on location.
- If you are given any instruction by local or state officials or responders it is for your safety.

### 27. What should people do if they are on a boat near the impacted area?

- If you are in a boat on the water, return to a marina or boat landing and find a building for shelter and go inside immediately.
- Boats do not provide adequate protection from radioactive material.

### 28. When will it be safe to return to the area?

- A long, difficult cleanup awaits us and the most important goal of the cleanup is to keep people safe.
    - This nuclear detonation has created areas with dangerously high levels of radiation.
    - It may be years before the most contaminated areas are reoccupied.
- First and foremost, if you have been evacuated, do not return until you are told it is safe to do so by authorities.
    - Please do not put yourself in danger by attempting to return early.
    - Attempting to return early will divert responders' efforts away from those who need immediate assistance.
- Federal, state and local partners are collecting information about the impacted areas to determine the extent and levels of contamination.
    - Until this is done we cannot predict when people can begin returning to the area.
    - Local and state decision-makers will use the information we collect to determine appropriate safety measures for people in their jurisdictions.

### 29. Are people out of danger? Are people safe?

- There are people being told to stay inside because exposure to the radioactive material outside is very dangerous.
    - Building walls, brick, concrete or soil can help protect from the harmful radiation exposure.
    - If you were instructed to stay inside, remain inside until you are told otherwise by local authorities.
- Instructions may change based on location.
- Instructions given by local or state officials are for your safety.

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

- This is an overwhelming situation that is affecting many people.
- At this time, responders are in the process of gathering and organizing all vital information available.
    - We are setting up registries at evacuation centers.
- We encourage you to seek additional information and/or counseling services at [LIST ORGANIZATIONS or LOCATIONS].

### 31. How do you decide when and where to implement protective actions, specifically evacuate or shelter (go inside and stay inside)?

- The decision to shelter (go inside and stay inside) or evacuate is made by state and local officials with the support of radiation specialists.
- Officials work with experts to determine the actions that will save the most lives and keep exposure to public as low as possible.
    - These decisions are based on radiation science and the best information we have at the time.
    - These decisions are based on a number of important factors, such as direction of the wind, size of the detonation, how quickly radioactive material disappears, and damage to roads and structures along evacuation routes.
- Stay tuned because instructions may change.
    - Radiation levels are extremely dangerous after a nuclear detonation but the levels reduce rapidly, in just hours to a few days.
    - During the time with the highest radiation levels it is safest to stay inside, sheltered away from the material outside.
    - As radiation levels decrease, safety measures may change.
    - People in the path of the radioactive material may also be asked to take protective measures.

### 32. What are the options for evacuation and sheltering with pets?

- While pets are accepted at some facilities, for public health reasons, many large-scale emergency shelters cannot accept pets.
    - We understand that for many of you, your pets represent members of your family and designated mass shelters will make every attempt to help your pets.
    - Please understand, however, that preserving and protecting human life takes priority.
- If you are evacuating with a pet:
    - If possible and easily accessible, bring a cage, leash, food, and veterinary records, including immunization records.
    - Understand that pets will not be allowed into any shelter until they are thoroughly washed to remove any radioactive material.
- There are several sheltering options for your pet that may be available.
    - Stay with friends or relatives outside the evacuation area who will house both you and your pet.
    - You can try locating a motel or hotel that will allow you to stay with your pet.
    - Listen to local radio/news broadcasts for information on pet evacuation and the locations of available pet shelters

### 33. What should farmers do with crops?

- While lifesaving is still our primary focus as this point, we understand that you are concerned about your crops, which are your livelihood.
- Similar to the advice on eating food from a garden, we are asking farmers in [AREA] to not harvest, eat or distribute their crops until we get monitoring and sampling results back.
- We know that this is frustrating, and state and local officials will keep you informed as results come in.

### 34. What should farmers and ranch owners do with livestock?

- If you are being asked to stay inside or evacuate, follow the instructions of state and local officials.
    - These instructions are for your safety.
- If you are outside the shelter and evacuation areas, there are a few simple steps you can take for the safety of your livestock:
    - Shelter your livestock (get them inside)
    - If recommended by authorities and if feasible, wash your livestock thoroughly with soap and water
    - Use stored feed and covered water
    - If you are working in a potentially contaminated area, wear waterproof gloves, boots, an apron and a dust mask to protect yourself.
- As we get monitoring and sampling data we will be able to provide additional instructions.

# Infrastructure Damage

### 35. How much radiation-related damage has occurred?

- The extent of the damage and contamination is currently being assessed.
- Complete assessment will take time.

### 36. What is the initial assessment of damage to the city that was attacked?

- This attack caused major infrastructure damage in the [AREA].
    - (As appropriate, provide updates on the status of power outages, communications outages, water systems, sewage systems, road and bridge conditions)
- We will not be able to do a full assessment until it is safe for experts to enter the area.
    - It may take days, months and, in some cases, years to get systems fully functional again.
- We are taking the following steps to bring damaged systems back on line:
    - (Provide information on steps being taken to bring systems back up online)

### 37. What are the effects on national infrastructure?

- At this time we don't know if there will be any long lasting effects on national infrastructure.
    - The attack caused major damage in the [AREA].
    - (As appropriate, provide updates on the status of power outages, communications outages, water systems, sewage systems, road and bridge conditions)
    - (Provide information on steps being taken to bring systems back up online)

# Emergency Response Capabilities

### 38. What is being done in response to the detonation?

- It is still early in the response, and our focus is on saving lives.
    - Specialized teams are assessing the nature and extent of the damage and radioactive contamination.
- The federal, state and local responders are coordinating closely to respond as effectively as possible.
    - Responders are working to save lives as close to the impacted area as possible.
    - This nuclear detonation has created some areas where the destruction is so devastating and levels of radiation are too high for responders go into at this time.
- State and local officials have issued safety instructions.
    - We are asking people to follow these instructions and stay tuned.
    - Instructions may change as we get more information.
    - These instructions are for your safety.

### 39. Who is responsible for managing the response?

- With an incident of this size, it is a joint effort among local, state and federal responders.
- We are coordinating to maximize our assets and respond as quickly and safely as possible.

### 40. How are state and local personnel resources responding?

- Public safety is our highest priority.
    - We are working closely with the other responding agencies at the federal, state, and local levels.
    - We are working quickly but carefully to assess and mitigate the dangers.
- Follow the instruction from state and local officials and responders.
    - These instructions are based off the best information we have right now and may change based on your location.
    - These instructions may change as we gather more information.
    - These instructions are for your safety.
- If you are in the area impacted by the explosion, stay inside until you are told otherwise by authorities.
    - Building walls, brick, concrete or soil will help protect you from the radioactive material outside.

### 41. What is the federal government doing to respond?

- The federal government is operating and doing everything possible to help the nation get through this.
    - The federal, state and local responders are coordinating closely to respond as effectively as possible.
    - Across the country, federal responders have deployed and officials continue to coordinate resources.
    - The federal government is following existing emergency response plans for maximizing resources, coordinating across all levels of government, and ultimately helping those in need.

### 42. When will it be safe for response personnel to enter the affected area?

- Responders are working to save lives as close to the impacted area as possible.
- We need to keep our responders safe so they can do their job.
- As radiation levels decrease over time, we will assess and revise our response efforts.
- We will keep you updated on the situation.

### 43. Which areas are safe for first responders to enter?

- For their protection, emergency responders may enter contaminated areas for only a limited amount of time.
- Guidelines established by experts in the effects of radiation on the human body are used by emergency responders to determine where they can go and how long they should stay.
- Special devices measure levels of radioactivity in various areas so emergency responders can determine if and how long they should say in contaminated areas.

### 44. Are there people who specialize in the effects of nuclear disasters? What is their role?

- We have experts that specialize in the effects of radiation on the human body and the environment.
- Their knowledge will help us understand the potential impacts of this nuclear detonation.
- Radiation experts are working closely with state and local officials as they make protective action recommendations and health and safety decisions.

### 45. How soon will a map displaying the areas affected be available?

- Initial maps showing the areas where the radioactive material is going and locations where actions need to be taken are being developed.
- The initial maps are based on very limited information.
    - Until we have more information, the maps are based on best estimates and predictions.
    - As we gather actual monitoring and sampling data and apply it to the map, the map may look very different.
- The maps will be updated and shared as more information is obtained.

# Radiation and Improvised Nuclear Device (IND) Overview

## IND Basics

### 46. What is an Improvised Nuclear Device (IND)?

- An IND may be constructed from components of a stolen state-built nuclear weapon or from scratch using nuclear material and may produce a nuclear explosion.
- An IND is very different from a radiological dispersal device (RDD) (i.e., – a "dirty bomb") which simply disperses radioactive material.
- As with any nuclear explosion, after an IND detonation, it is most important to follow instructions from your state and local officials and first responders.

### 47. What is a nuclear weapon explosion?

- A nuclear explosion involves a blast that produces an intense wave of heat, light, air pressure, and radiation.
    - When such an explosive device detonates, a large fireball is created. Everything inside of this fireball vaporizes and creates a mushroom cloud.
- As the fireball cools, it condenses, and falls back to the earth in the form of particles composed of the material that was vaporized; this is known as fallout.
    - Fallout is dangerous because it contains radioactive material.
    - The radioactive material in "fallout" can be carried long distances by wind currents before they fall back to the earth.
- An IND can create an extremely destructive nuclear explosion with very high radiation levels.
    - The blast, heat, and radiation from an IND detonation can cause massive casualties and significant damage to infrastructure.
    - People in areas not affected by the explosion could be exposed to radioactive fallout, which is radioactive material that settles to the ground after the explosion.
    - Close to the detonation, radiation levels can cause sickness and even death if people are not inside adequate shelter.
    - Areas hundreds of miles downwind are susceptible to lower levels of radioactive fallout.
- It is important to note that radiation levels from fallout decrease rapidly.
    - Radiation levels are extremely dangerous after a nuclear detonation but the levels decrease rapidly, in just hours to a few days.
    - This does not mean that the material is not harmful.
    - Scientists who specialize in radiation safety are helping us determine the best action to limit radiation exposure and protect from contamination.
    - Follow instructions from state and local officials and responders. These instructions are for your safety.

### 48. How far will the radioactive material travel?

- The radioactive material will move a considerable distance in the atmosphere.
- As it moves within the atmosphere's air flow, radioactive material will be deposited on the ground.
    - This is referred to as fallout.
- It is important to note that the farther away you are from the point of the explosion, the less airborne radioactive material will reach your area.
    - The larger particles, containing greater amounts of radioactive material, fall to the ground in the area closest to the explosion.
- People within the path of radioactive material should pay attention to local and state officials and responders for instructions.

### 49. How will precipitation affect the fallout?

- Any type of precipitation, such as rain or snow, will take the radioactive material that was raised into the atmosphere from the blast – commonly called fallout – and deposit it on the ground.

# Radiation Basics

### 50. What is radiation?

- Radiation is the release of energy from unstable atoms in the form of particles or waves.
    - Everything is made of atoms.
    - Some atoms are unstable and release energy to become stable.
    - These atoms are radioactive.
- Radiation can be detected using special equipment.
    - People cannot see, smell, hear, feel, or taste radiation.
    - With the correct instruments, radiation is easily detectable.
- Radiation affects people by depositing energy in body tissue.
    - When an incident occurs, scientists can predict how much radiation energy a person might absorb.
    - There is a direct relationship between how much radiation energy a person absorbs (dose) and potential health effects.
    - Unnecessary radiation exposure should be avoided.

### 51. What is ionizing radiation?

- Ionizing radiation can remove electrons from atoms.
    - The removal of electrons can begin chemical processes that change materials.
    - In living organisms, this could alter DNA or other structures in the cells.
- Unnecessary exposure to ionizing radiation should be avoided.

### 52. What is the difference between ionizing and non-ionizing radiation?

- Ionizing radiation can remove electrons from atoms.
    - The removal of electrons can begin chemical processes that change materials.
    - In living organisms, this could alter DNA or other structures in the cells.
    - When we talk about radiation from a nuclear detonation, we are talking about ionizing radiation.
- Non-ionizing radiation does not have enough energy to remove electrons from atoms.
    - Examples of non-ionizing radiation include microwaves, radio waves, visible light, and sunlight.

### 53. What is the difference between alpha, beta, gamma and neutron radiation? How can you protect yourself?

There are four major types of radiation:

- Alpha particles:
    - Alpha particles cannot penetrate most matter. A piece of paper or the outer layers of skin is sufficient to stop alpha particles.
    - Radioactive material that emits alpha particles (alpha emitters) can be very harmful when inhaled, swallowed, or absorbed into the blood stream through wounds.
- Beta particles:
    - Beta particles can be stopped by a layer of clothing or by a few millimeters of a substance such as aluminum.
    - Beta particles are capable of penetrating the skin and causing radiation damage, such as skin burns.
    - As with alpha emitters, beta emitters are most hazardous when they are inhaled or swallowed or absorbed into the blood stream through wounds.
- Gamma rays and X-rays:
    - Gamma rays and X-rays are penetrating. Several feet of concrete or a few inches of lead are required to stop them.
    - Gamma rays and X-rays are a radiation hazard for the entire body.
    - While gamma rays and X-rays can easily pass completely through the human body, some fraction of the energy will always be absorbed by body tissue.
- Neutrons:
    - Neutrons are particles and are very penetrating. Several feet of concrete or another material rich in hydrogen (such as water) are required to stop them.
    - Neutrons are a radiation hazard for the entire body.
    - Neutrons interact with tissues in the body and have the potential to cause damage.
    - Neutrons are only a hazard close to and during the initial blast.

### 54. What should we know about low levels of radiation?

- Radiation, from natural and man-made sources, is always around us. This is called background radiation.
- It is reasonable to assume that less radiation exposure is better.
- Take all reasonable precautions to reduce exposure.
- There are steps you can take to limit exposure.
    - Similar to wearing a lead apron for a dental x-ray, getting inside a building, preferably made of brick or concrete, or in a basement can provide shielding from radiation exposure.
    - During an emergency, listen to state and local officials and responders for instructions.
    - Advice given during emergencies is meant to limit exposure.

## 55. How much radiation is safe? How much radiation is considered low risk?

- Radiation, from natural and man-made sources, is always around us. This is called background radiation.
- The amount of radiation that will have an impact on a person's health depends on the type of radiation and the sensitivity of the individual to the radiation exposure.
    - Differences like age, gender and even previous exposure are factors that might influence a body's reaction to radiation exposure.
- It is reasonable to assume that less radiation exposure is better.
- There are steps you can take to limit exposure.
    - Similar to wearing a lead apron for a dental x-ray, getting inside a strong building or in a basement can provide shielding from radiation exposure.
    - During an emergency, listen to state and local officials and responders for instructions.
    - Advice given during emergencies is meant to limit exposure.

## 56. Who sets radiation exposure limits?

- It takes a large dose of radiation to cause immediate effects (i.e., acute radiation sickness).
- Federal agencies like the Environmental Protection Agency and the Food and Drug Administration, and others, provide guidance on levels of radiation that may warrant taking protective actions.
    - Specialists from these and other agencies are advising state and local officials and emergency responders accordingly.
- It is important to act based on the safety instruction given by state and local officials and emergency responders.

## 57. What does "background radiation" mean?

- Background radiation is radiation that is always around us.
    - Background radiation comes from natural sources such as rocks, soil, and cosmic radiation from the sun.
    - Background radiation also includes some man-made sources, such as radiation exposure received during certain routine medical procedures.
    - Everyone is exposed to background radiation.
- Exposure to background radiation varies across the country.
    - This can be due to elevation – the higher up, the more exposure to cosmic radiation.
    - It can be due to rock composition - some kinds of rocks contain more radioactive materials than others.

### 58. What are rems and millirems? How are they measured?

- In the United States, we use a unit called a rem to describe how much radiation a person has absorbed, otherwise known as radiation dose.
    - A millirem is one thousandth of a rem.
- To put radiation absorption into perspective, the dose for cancer treatment patients who receive external beam radiotherapy (one of the most aggressive radiation cancer treatments) can range from 40 rem (40,000 millirem) to 4,000 rem (4,000,000 millrem).
- Scientists estimate that the average person in the United States receives a dose of about 620 millirem of radiation due to background sources per year.
    - Approximately 320 millirem per year is from natural sources.
    - Exposure from medical sources will vary based on the individual, but may account for an additional 300 millirem per year, averaged over a person's lifetime and the population.
- Scientists use complex tools to measure, analyze, and calculate how much dose a person receives following a radiological incident.

# Monitoring

## Environmental Monitoring

### 59. How do you monitor/detect radiation?

- Specialized instruments are used to detect radiation.
- There is no one detector that measures all types of radiation.
- There are specialized emergency responders who are trained and skilled in using these instruments.

### 60. How do you distinguish between background radiation and radiation from the incident?

- Distinguishing between background radiation and radiation from a specific event is not easy.
- In some areas we have historical baseline data on background radiation levels.
- In a situation like a nuclear detonation, there will be areas where radiation levels are clearly above background levels.
- As we gather more information, our radiation scientists will help identify radioactive material from this event.

### 61. What is the plan to let people know what areas are contaminated and which ones are not?

- Monitoring and sampling are being conducted to confirm the locations of the affected and unaffected areas.
- A monitoring and sampling plan has been developed and will be updated as new information comes in.
- It is important to identify areas that have not been contaminated for use in future planning.
- People will be informed of our findings as the information comes in and is verified.

## 62. What are the environmental impacts of a nuclear detonation?

- Responders are taking environmental samples of radiological contamination, as well as other environmental contamination, to get a better picture of the extent of the environmental impacts.
- We are working with our federal, state and local partners to implement plans for sampling and analysis.
    - Right now we are gathering information that has a direct impact on public safety, such as levels of contamination and water safety, while taking into account the need to protect our field teams and responders.
    - In the days, weeks and months ahead, we will be analyzing all types of samples that will help us understand the environmental impacts. These samples will include precipitation, bodies of water, soil, vegetation, crops, livestock, and milk – just to name a few.
- Until we figure out the extent of the contamination we cannot truly understand the environmental impacts from this attack.

# Population Monitoring

### 63. Where can people go to be checked for radiation contamination or exposure?

- Tune in to your local TV news or radio for more information about the situation and specific instructions.
- Follow the instructions of your state and local officials and responders.
- Your local officials may set up community reception centers within days after the explosion to check people for radiation contamination and assist them with needed services.

### 64. How do people know if they have been exposed?

- Tune in to your local TV news or radio station for more information about the situation and specific instructions.
- Emergency responders will monitor the levels of radiation and state and local government officials will use this information to determine areas of concern.
- We will keep you informed as we get more information.

### 65. How are you tracking people who have been exposed?

- Tune in to your local TV news or radio for more information about the situation and specific instructions.
- Your local officials may set up community reception centers within days after the blast to check people for radiation contamination, assist them with needed services, and enter them into a registry for tracking and follow-up.

### 66. Why are you tracking people who have been exposed?

- The registry allows us to follow up with people who need immediate health care and allows us to do long-term health monitoring for individuals who have been exposed to radiation from detonation.
- Being part of the registry does not imply any form of future compensation.
- The registry is for tracking purposes only.

# Exposure, Contamination, and Decontamination

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

- Exposure occurs when radiation interacts with the body.
    - Exposure can be long-term at low levels, such as that from background radiation (the radiation that is in the environment all the time).
    - Exposure can be short-term at a high dose, such as that from a major accident, diagnostic medical imaging or radiation therapy.
    - Health effects depend on the strength and length of the exposure.
- You can be exposed to radiation without being contaminated.
    - Having a medical x-ray is an example of being exposed but not contaminated.
    - During an x-ray, you are exposed to radiation but you don't have radioactive material on your skin or clothing.
- External contamination occurs when radioactive material settles on a surface.
    - That surface could be your body or clothing, a structure, or an object.
    - If a person is contaminated with radioactive material, they are being exposed to radiation.
- Internal contamination occurs when radioactive material enters the body.
    - It can be swallowed, inhaled, injected or absorbed.

## 68. What is radiation exposure and how does it occur?

- Exposure occurs when radiation interacts with the body.
    - Exposure can be long-term at low levels, such as that from background radiation (the radiation that is in the environment all the time).
    - Exposure can be short-term at a high dose, such as that from a major accident, diagnostic medical imaging or radiation therapy.
    - Health effects depend on the strength and length of the exposure.
- Exposure can be from radioactive material inside the body.
    - We receive exposure from radioactive material taken in through eating, inhalation, injection or absorption.
    - Our organs and cells can be exposed to radiation from these materials.
    - Different kinds of radioactive materials may concentrate in and affect different organs.
- Exposure can be from radioactive material outside the body.
    - Radiation from radioactive materials outside the body can interact with the body.
    - Sources include background radiation and procedures such as x-rays.
    - Sources can be from an accidental release of radiation or from intentional acts of aggression.

### 69. What is radioactive contamination?

- Contamination refers to particles of radioactive material settling on a surface - like the way dust settles on a surface.
    - Contamination could be on your body or clothing, including your shoes, on a structure, or on an object like a purse or a car.
    - During a radiological emergency, a person or thing can leave the area of a release of radioactive material and still be contaminated.
- Radioactive contamination can be spread in the same way that dust or mud can be tracked into the home or spread to another person or object.
    - While radioactive contamination can spread through physical contact, radiation is not "infectious" or "contagious" like some diseases.
    - Radioactive contamination can often be easily removed.
    - If you are or were in a contaminated area, listen for public announcements on how to decontaminate (remove the contamination).

### 70. How long does a person have to remove contamination from their body?

- People should remove contamination as soon as possible to reduce the chance of harm by using the following simple steps.
- If you think you have been contaminated, the best thing to do is take a shower.
    - Remove your clothing (being careful not to inhale contamination or get it into your mouth or eyes); put it in a plastic bag and place it outside or in an out-of-the-way area.
    - Shower using lukewarm water and lots of soap and water. Wash your hair with shampoo or soap and water. Do not use conditioner in your hair because it will bind radioactive material to your hair, keeping it from rinsing out easily.
    - Be careful not to scratch the skin.
- If you have water but cannot shower, remove the outer layer of clothing and wash exposed areas.
    - This can remove up to 90% of the contamination.
    - Place the clothing in a plastic bag; leave it outside or in an out-of-the-way area.
    - When dusting off your hair or clothing, stand away from other people and be careful not to breathe in the dust or get it in your mouth or eyes.
    - Wash exposed skin using lots of soap and lukewarm water.
- If you don’t have access to water, use one of the following:
    - It is best to clean off with a moist towelette, wet nap, or baby wipe.
    - Otherwise, clean off with a dry paper towel or cloth.
    - Dispose of the towels with the clothing.

### 71. How is radioactive material spread from person to person? Is “radiation” spread from person to person?

- Radioactive material can be spread in the same way that dust or mud can be tracked into the home or by touching another person or object.
- However, radiation is not "contagious" like some infectious diseases.

## 72. What is decontamination?

- Decontamination is the removal of particles of radioactive material from people, clothing, pets, or objects, usually by simple washing.
    - Decontamination may be necessary after a radiological release.
    - Radioactive particles (fallout) can settle on clothes, skin, hair, buildings and objects.
- Decontaminating yourself will reduce your exposure to harmful radioactive particles.
    - The longer the particles stay on your skin, the more harm they can do.
    - Decontamination may be the only step needed after a radiological emergency.
- Immediate decontamination is recommended if you or your possessions have become contaminated during a radiological emergency.
    - Decontamination centers may be set up to help with decontamination and to prevent the spread of contamination.
    - Follow the directions of the emergency responders to ensure effective decontamination.

## 73. What should people do if they think they may have been contaminated?

- If you think you have been contaminated, the best thing to do is take a shower.
    - Remove your clothing (being careful not to inhale contamination or get it into your mouth or eyes); put it in a plastic bag and place it outside or in an out-of-the-way area.
    - Shower using lukewarm water and lots of soap and water. Wash your hair with shampoo or soap and water. Do not use conditioner in your hair because it will bind radioactive material to your hair, keeping it from rinsing out easily.
    - Be careful not to scratch the skin.
- If you have water but cannot shower, remove the outer layer of clothing and wash exposed areas.
    - This can remove up to 90% of the contamination.
    - Place the clothing in a plastic bag; leave it outside or in an out-of-the-way area.
    - When dusting off your hair or clothing, stand away from other people and be careful not to breathe in the dust or get it in your mouth or eyes.
    - Wash exposed skin using lots of soap and lukewarm water.
- If you don’t have access to water, use one of the following:
    - It is best to clean off with a moist towelette, wet nap, or baby wipe.
    - Otherwise, clean off with a dry paper towel or cloth.
    - Dispose of the towels with the clothing.

### *74.* How should people decontaminate their pets?

- Radioactive fallout is particulate and could contaminate people and pets as dust particles.
- Contact with and movement of contaminated animals might expose individuals and items in the pathway to the contaminant.
- Seek advice from local response authorities.
- If you must decontaminate your pet, the suggested method is to:
    - Bathe your pet thoroughly with shampoo and water and rinse completely.
    - Wear waterproof gloves, an apron, and, if possible, a dust mask to protect yourself from (further) contamination, including inhaling fallout dust.
    - Follow local jurisdictional guidance on the disposal of bath water and items coming into contact with contaminants.

### 75. How should people decontaminate their homes?

- You need to get information from emergency responders or local officials on whether you need to decontaminate your home.
- If you need to decontaminate your home, get guidance from emergency responders or local officials.
    - This will likely contain information on wearing protective clothing when cleaning.
    - There are likely to be special instructions for cleaning the inside of your home
    - There are likely to be instructions for cleaning the outside of your home.

# Health Effects of Radiation Exposure

### 76. Radioactive material has been detected outside the areas where protective actions have been recommended or taken. What is the health impact of this contamination?

- Radiation, from natural and man-made sources, is always around us.
    - This is called background radiation.
- We are monitoring and sampling to find areas where background radiation levels have been exceeded, requiring that actions be taken to protect individuals from immediate health effects, such as radiation sickness, and limit potential long-term health effects, such as cancer.
    - It takes a very large dose of radiation to cause immediate health effects, such as radiation sickness.
- If you have been asked to take a protective action, it is for your safety.

### 77. Does exposure to radiation present some risk?

- Radiation, from natural and man-made sources, is always around us. This is called background radiation.
- It is reasonable to assume that less radiation exposure is better.
- There are steps you can take to limit exposure.
    - In general, to limit exposure from a radioactive source decrease time around and increase distance and shielding from a radioactive source.
    - During an emergency, listen to state and local officials and responders for instructions.
    - Advice given during emergencies is meant to limit exposure.

### 78. Who sets radiation exposure limits?

- It takes a very large dose of radiation to cause immediate health effects, such as radiation sickness.
- Federal agencies like the Environmental Protection Agency and the Food and Drug Administration, and others, define levels of radiation that warrant protective actions.
    - Radiation specialists from these and other agencies are advising state and local officials and emergency responders accordingly.
- Please listen and heed the safety instruction of state and local officials and emergency responders.

### 79. What are the health effects of radiation exposure?

- The health effects of radiation depend on the amount of radiation, type of radiation, type of radioactive material, and length of time a person is exposed to radiation.
- Seek medical attention immediately if you have these symptoms: skin burns, nausea, and vomiting.
- There are some treatments available for people exposed to certain types of radioactive material.
    - Local emergency workers and medical professionals will determine if medical treatments are needed and what kind of medical treatment to provide.

### 80. Does radiation cause cancer?

- Cancer has been attributed to a number of causes, including:
    - Radiation exposure.
    - Exposure to chemicals, including some pesticides.
    - Genetic disposition.
    - Smoking.
    - Even diet.
- Radiation from background and other routine sources is a minor contributor to our overall cancer risk.
- Cancer has been associated with high doses of radiation received over very short periods of time.
- The risk of radiation causing cancer increases with the level of exposure.
    - During an emergency listen to local officials for instructions.
    - Advice given during emergencies is meant to limit unnecessary exposure.
    - Follow instructions to minimize exposure.

### 81. What type of radiation is most harmful?

- Radioactive materials that emit alpha and beta particles are most harmful when swallowed, inhaled, absorbed, or injected.
- Alpha particles cannot penetrate intact skin; beta particles can penetrate skin only partially.
- Gamma and x-rays can pass through a person damaging cells in their path.
- Neutron radiation present during nuclear reactions is as penetrating as gamma rays.

### 82. Are certain populations more vulnerable to the effects of radiation than others?

- For all populations, we assume that less radiation is better.
- Radiation vulnerability is difficult to determine.
    - Pregnant women**,** infants, and young children are assumed to be more susceptible to the health effects of radiation exposure
    - The steps for reducing radiation exposure are the same for all populations.

### 83. How will people know if they have been exposed to radiation and what happens if they are exposed?

- If you are near an incident, you may have been exposed to radiation and you may also be contaminated by radioactive material.
    - You may not experience any immediate health effects.
- A very large dose of radiation may cause skin burns, nausea, and vomiting.
    - If you have these symptoms, seek medical attention immediately.

### 84. How is radiation exposure treated?

- Low-level radiation exposure may not cause symptoms or health effects, or require treatment.
- The Centers for Disease Control and Prevention and the Radiation Emergency Assessment Center/Training Site are the federal leads on treatment of radiation exposure.
- Seek medical attention if you think that you were exposed to high levels of radiation.

### 85. Are there any treatments for radiation sickness and removal of radioactive contamination?

- There are limited treatments available for people with radiation sickness.
- There are limited medical treatments available for internal (inside the body) radioactive contamination, such as potassium iodide (KI) and Prussian Blue.
- Local emergency workers and medical professionals will monitor (evaluate, check) the situation to determine if medical treatments are needed and what kind of medical treatment to provide.
- You can reduce external radioactive contamination by washing with soap and water.
- Seek medical attention immediately if you have these symptoms: skin burns, nausea, and/or vomiting.

### 86. Are people at risk for radiation poisoning or sickness?

- Radiation sickness only occurs when a person is exposed to very high levels of radiation.
    - If you were in the immediate area of a major incident, follow the directions of emergency responders.
- If you experience skin burns, nausea, and/or vomiting, seek medical attention immediately.

### 87. What is Acute Radiation Syndrome/Sickness (ARS)?

- ARS is an illness from short-term exposure to a large amount of radiation.
    - You cannot get ARS from chronic long-term exposure to small amounts of radiation.
    - The radiation must reach internal organs.
    - Symptoms appear within minutes or days.
- It is important to know the signs and symptoms.
    - Signs of ARS include skin burns, nausea, and/or vomiting.
    - The symptoms may subside and come back.
    - ARS can lead to death.
- Seek medical attention immediately if you think you are suffering from ARS.

### 88. What are the symptoms of Acute Radiation Syndrome/Sickness (ARS)?

- You can only get Acute Radiation Syndrome (ARS) from short-term exposure to a large amount of radiation.
    - ARS occurs when most of the body was exposed to high levels of radiation.
    - The radiation must reach internal organs.
    - ARS only occurs in extreme circumstances.
- Initial symptoms may begin from minutes to days after exposure.
    - Symptoms include skin burns, nausea, and/or vomiting.
    - These symptoms may come and go in the first few days.
    - Symptoms may completely go away and the person may feel healthy.
- Additional symptoms can occur weeks and months after exposure.
    - Loss of appetite, fatigue, fever, nausea, vomiting, diarrhea, seizures, and/or a coma.
    - There may also be skin damage.
    - This stage of serious illness can last for months.

### 89. Are there specific protective actions for pregnant women?

- Tell emergency workers that you are pregnant so that they can check your health and the health of your baby.
- Call or visit your doctor or OB/GYN as soon as possible.

### 90. Should nursing mothers continue to breastfeed?

- Some harmful substances can be passed through breast milk. If you are near an incident, you may have been exposed to radiation or radioactive contamination.
- If you think you have been contaminated by radioactive fallout, medical workers may tell you to use formula.
- Tell emergency workers that you are breastfeeding so they can tell you if it is safe to continue to breastfeed.

# International Interest

### 91. How will the nuclear detonation impact our import/export relationships with other countries?

- Right now we are focusing on saving lives.
- We will not know the impact on commerce until we fully assess the radioactive contamination and the extent of damage caused by the nuclear detonation.

### 92. Are we tracking the radioactive material as it moves around the Earth?

- We are monitoring the path of the radioactive material in the atmosphere and the radioactive fallout from the explosion.
- Right now we are concerned about identifying areas of concern for potential harmful radiation exposures and contaminated areas.
- As the radioactive material moves through the atmosphere and radioactive material falls to the ground, the air becomes less hazardous.

### 93. Will this impact air travel?

- Until we have more information, expect air travel to be restricted.
- This is to keep pilots and passengers safe.
- It also keeps the airspace free for air monitoring and the continued investigation.

### 94. Will this impact use of navigable waterways?

- Until we have more information, expect the use of navigable waterways to be restricted.
- This is to keep mariners, other waterway users, and passengers safe.
- It also keeps the waterways free for response and recovery activities and the continued investigation.

### 95. Where did the bomb come from? Are you working with other countries to track down those responsible for the attack?

- The FBI is leading a coordinated criminal investigation with the support of its law enforcement partners and other federal, state and local agencies.
    - The investigation is in its early stages and the information we can provide now is limited.
- Early indications are that this was a deliberate attack using an improvised nuclear device.
- The United States Government is using all available means, including law enforcement, intelligence, and technical nuclear forensics, to determine who is responsible for this attack.

### 96. What are the potential economic impacts?

- This attack has affected both the area impacted by the explosion as well as people across the nation and across the world.
    - We know that there has been extreme damage to buildings and infrastructure in the blast area.
- We are working to gather more information to understand the full impact.

# Roles and Responsibilities

### 97. What federal agency is in charge of the response?

- The federal government is dedicating its assets to support the state and local governments and responders who are at the forefront of the response.
    - The Department of Homeland Security is coordinating the federal response.
    - The FBI is leading the coordinated criminal investigation.
- The federal, state and local responders are coordinating closely to respond as effectively as possible.
- Safety instructions have been given by state and local officials and responders.
    - We are asking people to follow these instructions and stay tuned.
    - Instructions may change as we get more information.
    - These instructions are for your safety.

### 98. How are you coordinating the response?

- We are using our existing emergency response plans to coordinate the response and keep communication flowing among all parties.
- The state and local governments are at the forefront of the response.
- The federal government is dedicating its assets to support the state and local governments and responders.

# Appendix 1: Federal Jurisdiction for Nuclear Incidents

### Incident Lead
- DHS
- White House

### Federal Law Enforcement
- DOJ: FBI (if incident site is classified as a crime scene, DOJ/FBI is the incident lead)

### Public Messaging
- DHS (has lead with support from all other players)

### Public Health and Medical Services
- HHS

### National Disaster Medical System Coordination
- HHS

### Nuclear/Radiological Assets
- DOE: NNSA
- DHS

### Environmental Decontamination and Clean up
- EPA

### Defense Support to Civil Authorities
- DoD

### Food Safety
- USDA (is responsible for ensuring the health and care of animals and plants on the farm as well as ensuring the safety for meat, poultry and processed egg products at slaughter and processing facilities, and in commerce.)
- HHS/FDA (has the lead for enforcing food safety laws governing domestic and imported food, except for meat, poultry, and processed egg products.)

### Stafford Act Declaration
- FEMA

### International
- DoS

### Evacuation Centers and Shelters
- American Red Cross

# Appendix 2: Volunteer Organizations

*This is not a comprehensive list of volunteer and donation organizations.*
*With the exception of the American Red Cross, the organizations listed below are programs run by the federal government.*

| | | |
|---|---|---|
| American Red Cross | Blood donations, Financial donations | www.redcross.org |
| Serve.gov | Find and create volunteer opportunities in your community | www.serve.gov |
| FEMA Helping Others | Provides links to donation and volunteer opportunities | http://www.fema.gov/rebuild/recover/howtohelp.shtm |
| Citizen Corps | Provides and helps coordinate volunteer opportunities | www.citizencorps.gov |
| Volunteers for Prosperity | Links skilled volunteers (doctors, nurses, teachers…) with opportunities overseas | www.volunteersforprosperity.gov |
| USAID | Provides support overseas | www.usaid.gov |
| Medical Reserve Corps | Supplements existing local emergency and public health resources | http://www.medicalreservecorps.gov/HomePage |

# Appendix 3: Nuclear Detonation Response Communications Working Group Members

Chair: Tammy Taylor (Office of Science and Technology Policy)

| | |
|---|---|
| U.S. Department of Agriculture (USDA) | Angela Harless, Ruth Lodder, Jack Patterson |
| Department of Defense (DOD) | Dustin Hart, Matthew Kawas, Eric Mazzacone, Eugene McFeely, Donald Miles, John Robinson |
| Department of Energy (DOE) | Casey Ruberg |
| Department of Health and Human Services (HHS) | Elleen Kane, Carol McCurley, Rita Chappelle |
| Department of Homeland Security (DHS) | Lisa Bajusz, Kevin Briggs, Robert Davis, Jeffrey Glick, Michael Gresalfi, Stanley Heath, Charles Hoffman, Michael Kangior, Jeff Karonis, Chad Wood |
| Department of Transportation (DOT) | Jeffrey Vanness |
| Director of National Intelligence (DNI) | Paul Clausen |
| Environmental Protection Agency (EPA) | Jessica Wieder |
| National Oceanic and Atmospheric Administration (NOAA) | Albert Mongeon |
| Office of Science and Technology Policy | William Belote, Mark LeBlanc |
| American Red Cross | Catherine Kane |
| Veterans Affairs | James Lacey |

Please refer questions and comments to Jessica Wieder at:

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