

## Playbook 9: Monitoring People for Contamination at Public Reception Centers

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**Activity:** Conduct monitoring for contamination at public reception centers.

**Resources:** The following agencies are the primary, secondary, tertiary, etc., resources that have a reasonable incident response time and should perform the activity.

1. Los Angeles County, Department of Public Health, Radiation Management
2. Fire Department Hazmat Teams
3. Fire Departments
4. Los Angeles County, Department of Public Health
5. United States Environmental Protection Agency, Emergency Response Section and Radiological Emergency Response Team
6. United States Department of Energy, Radiological Assistance Program

**What to Do:** See Section 3.8 in Volume II of the Multi-Agency Radiological Response Plan for more details. One method of how to accomplish the activities in this Playbook is provided below.

The primary objectives when receiving people at a reception center are:

Provide medical treatment for individuals.

Evaluate contamination levels on individuals and, as practicable, personal property.

Provide for decontamination, if necessary.

Recommend ways to minimize future health consequences resulting from radiation exposure.

Register potentially affected individuals.

This section assumes a large number of people will visit the reception centers, but the instructions are scalable. Try to allocate the public to a specific reception center to reduce massive influx; assign a geographic area to a reception center based on its design capacity.

### **Set-Up Considerations:**

- Special populations will require additional accommodations at the center or special off-site assistance if they are not able to visit a center; special populations include children, pregnant women, the elderly, and those who are immuno-compromised, disabled, homeless, or institutionalized.
- People who bring their pets, farm animals, and property can create a bottleneck if not managed appropriately. A separate pet decontamination area should be established for owners to decontaminate their pets; provide a copy of *Instructions No. 3: Instructions to Public on How to Perform Decontamination of Pets*.
- Potential reception centers are gymnasiums at universities, colleges, or public schools; National Guard armories; health clubs; sports arenas; convention centers; parks; beaches; and parking lots. See Volume II, Section 3.8, for reception center features.

**Never separate family members from each other.**

To process approximately 1,000 people per hour see Table 15 for minimum staffing requirements. Approximately 135 people are needed to staff one reception center. Staffing requires both technical and non-technical personnel of sufficient numbers to maintain operations for days to weeks. The technical staffing requirements are:

- Radiation Technical Specialists to operate hand-held detection instruments and portal monitors
- Radiation Technical Specialists to evaluate survey results, provide advice to individuals on radiological issues, answer questions, and provide general radiation related advice and consultation
- Clinicians to administer medical services and provide general health advice and consultation (i.e., Nurses, Counselors, etc.).
- Public health staff or others to fulfill general staff positions

## **Operations**

Efficient flow of people through the reception center is necessary to avoid long lines and delays. Operations need to be flexible and scaleable. The term “monitoring” in this context is used generically to mean conducting a radiation scanning survey of the person’s clothing, body, personal property, and includes decontamination, if necessary. Volume II, Attachment 6 provides example flow diagrams for the design of public reception centers that handle people only and designs that include handling people with pets.

### **Step 1: Greeting Station**

A greeter will meet people as they arrive at the reception center to explain procedures, answer questions, and provide comfort to those who may be stressed and worried. Greeters who speak the various languages of the community are extremely helpful. Depending on the number of people, several or more greeters may be required to prevent long lines.

### **Step 2: Medical Triage Station**

A clinician posted at the entrance or walking the line of public waiting to be decontaminated can observe people for signs and symptoms of medical conditions that require immediate attention. If identified, the individual should be directed to the medical station for examination, potential treatment, and disposition. The two dispositions are to send the patient to a hospital or to fast track the patient through the monitoring line.

### **Step 3: Registry Station**

Begin the registration process before monitoring and decontamination, if possible. Do not delay monitoring and decontamination for registration. Register victims, responders, health care workers, volunteers, and others who were or may have been contaminated or exposed to radiation. Registration of individuals is important for tracking health concerns post incident. Collecting the following information can assist in the tracking process:

- Name
- Address
- Phone number
- Contact information
- Gender
- Age
- Status; i.e., responder, health care worker, person at the scene, person affected by plume, person who believes they were affected as defined in a public announcements, or volunteer
- Location at time of incident. The distance from the person to the release of radioactive materials is very important information. Attempt to obtain the address, street intersection, visual landmark, etc., to document the location as closely as possible.
- If possible, categorize based on radiological exposure
  - External and internal contamination
  - External contamination only
  - Uncontaminated

Prioritization of individuals is critical if a large population is affected. A contamination triage process should identify and prioritize people according to the following guidelines in order of priority:

- Life-threatening conditions (do not delay medical attention in order to decontaminate)
- Contaminated (confirmed or suspected)
- Less likely contaminated
- Unlikely contaminated (including people who have performed self-decontamination)

The contamination triage is based on responses obtained in the registry process and a quick radiation scan.

**Do NOT delay medical treatment for victims with life- or limb-threatening injuries to conduct decontamination!**

Before proceeding to a Waiting Line, each individual or family should be provided a copy of *Instructions No.1: Public Waiting for Decontamination*.

#### **Step 4: Waiting Lines**

A Radiation Technical Specialist or a worker who has received just-in-time training, should walk the line of those waiting to be monitored with a radiation detection instrument (the best choice is a Pancake Geiger-Mueller, microR meter, or gamma (sodium iodide) meter) to determine if anyone waiting in line has contamination levels on their person more than Level 1 are of an immediate concern (see Table 12). These individuals should be removed from the line and more quickly decontaminated. If there are too many individuals showing these contamination levels, the readings could be adjusted to Level 3 (see Table 12). Note that the Radiation Technical Specialist may adjust the above values based on the identity of the radionuclide(s); therefore, verify before using the above contamination levels.

If an individual is suspected of having a high level of contamination (Level 3), send the person and his/her family directly to decontamination. This reduces the chance of cross contamination and gives priority to the most contaminated victims, decreasing their dose as quickly as possible.

#### **Step 5: Radiation Screening Survey Stations**

Radiation screening surveys are designed to identify contamination above a specific release level. The public contamination release levels (see Tables 12 and 13) should be developed based on the specific radionuclide (assumed to have been identified prior to the commencement of survey operations at reception centers).

A survey station can consist of a Pancake Geiger-Mueller detector, gamma detector, microR meter, portal monitor, or radiation specific meter, like an alpha or beta scintillator. Hand-held surveys should be performed in accordance with *Standard Operating Guide No. 1: Procedure for Performing a Radiation Contamination Survey. Form No. 1: Contamination Survey* and *Form No. 2: Public Property Contamination Survey* should be completed and included in the registry for each individual.

A general staff person will help to control the flow of the public through the stations. Radiation Technical Specialists can oversee several general staff performing monitoring who have received just-in-time training. If an individual is contaminated, he/she should proceed to the decontamination area; otherwise, he/she should be released to go home or to an American Red Cross shelter facility.

**Step 6: Decontamination Station**

Individuals who are contaminated should be sent to the Self Decontamination Station, if applicable. The configuration of the reception center will dictate the setup of decontamination stations. Provide a copy of *Instructions No. 2: Instructions to Public on How to Perform Decontamination at Home* as an example of how they should perform self-decontamination, a copy of *Instructions No.3: Instructions to Public on How to Perform Decontamination of Pets*, if applicable. After decontamination, individuals will need to be surveyed for remaining contamination.

**Step 7: Checkout Station**

After each person has completed the monitoring process, they should proceed to a Checkout Station to complete registry. They should be provided with information and instructions including the following:

- Basic information about radiation and its effects on human health
- Actions that they can take to protect their health
- Public health contact information for questions and additional information

If the individual is going into an American Red Cross shelter located adjacent to the reception center or by controlled transport, they should receive a wrist band or other identifier indicating completion of the monitoring process. The American Red Cross will not allow any persons to enter their shelter without an indication that the person has been monitored and released.

**Recommendations for monitoring:**

- If there is a large number of people, prioritize hand-held surveys to focus on only the head, face, shoulders, and hands.
- Do not take an individual's identification, money, credit cards, jewelry, or other valuables; give these items to the owner. Provide instructions on how to decontaminate them (*Instructions No. 2: Instructions to Public on How to Perform Decontamination at Home*) and provide a bag for storage until the items can be decontaminated and surveyed later.

**Other considerations**

- Provide transportation services to assist victims at the scene and to reduce the influx of vehicles at the reception centers.
- Following Universal Precautions will likely provide sufficient protection.
- Counseling services may be needed due to the public's perception or fear of radiation.
- Attempt to reduce and maintain contamination levels at decontamination stations as low as possible.
- Experts predict that the number of worried well could be 10 times more than the number of individuals who were actually exposed or contaminated.
- For portal monitors that alarm at a set standard deviation ( $\sigma$ ) above background, set the monitor to alarm at four standard deviations above background.

**Table 12: Victim and Public Contamination Release Levels**

Radiation Type	Existing Contamination Level	Maximum Background Levels	Decontamination Instructions / Release Levels
<b>Level 1 (Third Priority)</b>			
Beta <sup>1</sup>	100 to 10,000 cpm	10 % of Release Level	Decontaminate to 1,000 cpm beta and 100 cpm alpha, but only if doing so does not preclude decontamination of others with higher contamination levels. Provide a copy of <i>Instructions No. 2: Instructions to Public on How to Perform Decontamination at Home</i> before release for self-decontamination.
Gamma <sup>2</sup>	(Gamma instruments not usable at these levels)		
Alpha <sup>3</sup>	10 to 1,000 cpm		
<b>Level 2 (Second Priority)</b>			
Beta <sup>1</sup> or Gamma <sup>2</sup>	10,000 to 100,000 cpm or 50 <sup>(4)</sup> to 100 µR/hr (i.e., 0.01 to 0.1 mR/hr)	10 % of Release Level	Decontaminate to Level 2 lower values, then release for home decontamination in accordance with <i>Instructions No. 2: Instructions to Public on How to Perform Decontamination at Home</i> . <sup>4,5</sup>
Alpha <sup>3</sup>	1,000 to 10,000 cpm		
<b>Level 3 (First Priority)</b>			
Beta <sup>1</sup> or Gamma <sup>2</sup>	Greater than 100,000 cpm (Use gamma above 200,000 cpm) or Greater than 100 µR/hr (i.e., Greater than 0.1 mR/hr)	10 % of Release Level	Decontaminate without delay to achieve Level 2 values. <sup>5</sup> If respiratory protection was not used, responder needs to be evaluated to determine if internal contamination bioassay is needed.
Alpha <sup>3</sup>	Greater than 10,000 cpm		

Note: Except as noted in the table, either beta or gamma measurements can be used as release criteria. In addition alpha criteria must be met if alpha radionuclides are present.

- <sup>1</sup> Measured with a Pancake Geiger-Mueller (PGM) probe at approximately 1-inch from the surface. **Caution:** Do not use PGM above 200,000 cpm. Due to instrument dead-time loss above this value, PGM will significantly under-respond to radiation levels (e.g., a 500,000 cpm reading is actually 1,500,000 cpm).
- <sup>2</sup> Gamma radiation measured with ion chamber, energy compensated Geiger-Mueller detector, or if necessary, sodium iodide or Pancake Geiger-Mueller (PGM). If PGM is used for gamma, face backside of probe towards contamination and if feasible cover front side of probe to shield beta; then read mR/hr or calculate mR/hr using relationship 1 mR/hr = 3,000 cpm (for Cs-137 only). The table mR/hr values are based on a distance of 5-6 inches from the surface to the centerline of the detector. The mR/hr values can be increased by a factor of 5 (e.g., 500 µR/hr = 100,000 cpm) using a 1-inch surface-to-centerline distance. Consult a Radiation Technical Specialist if gamma emitter other than Cs-137 is present or if contamination is in a very small area (e.g., less than the PGM probe area).
- <sup>3</sup> Measured with an alpha specific detector at approximately ½ inch from a relatively smooth surface. **Caution:** alpha radiation is very difficult to measure accurately. Presence of moisture, oil, dust, or dirt may shield all alpha. Seek Radiation Technical Specialist assistance if alpha contamination is detected.
- <sup>4</sup> Normal gamma background is 5-10 µR/hr; therefore, 50 µR/hr is the lowest practicable gamma level for determining contamination presence while allowing reasonable speed scans. If local background level exceeds 5 µR/hr, the lowest practicable gamma level for determining contamination presence will increase (remember that background needs to be approximately 10% or less than the contamination release level to allow reasonable speed surveying).
- <sup>5</sup> Contamination levels above 10,000 cpm (or even above 100,000 cpm) may be acceptable for release upon consultation with the Radiation Technical Specialist.

cpm counts per minute  
 mR/hr milliroentgen per hour  
 µR/hr microroentgen per hour

Reference CRCPD 2006, NCRP 2005, and NCRP 2001 (see Volume II for specific citation)

**Table 13: Victim and Public Property Contamination Release Levels**

Radiation Type	Existing Contamination Level	Maximum Background Levels	Decontamination Instructions / Release Levels
<b>Level 1 (Third Priority)</b>			
Beta <sup>1</sup>	100 to 10,000 cpm	10 % of Release Level	Decontaminate to lowest level practicable using routine field decontamination methods (wiping and washing) and release without restriction if less than 1,000 cpm beta and 100 cpm alpha.
Gamma <sup>2</sup>	(Gamma instruments not usable at these levels)		
Alpha <sup>3</sup>	10 to 1,000 cpm		
<b>Level 2 (Second Priority)</b>			
Beta <sup>1</sup> or	10,000 to 100,000 cpm or	10 % of Release Level	Control large items, bag smaller items, and retain until evaluated by a Radiation Technical Specialist. <sup>5</sup>
Gamma <sup>2</sup>	50 <sup>(4)</sup> to 100 µR/hr (i.e., 0.01 to 0.1 mR/hr)		
Alpha <sup>3</sup>	1,000 to 10,000 cpm		
<b>Level 3 (First Priority)</b>			
Beta <sup>1</sup> or	Greater than 100,000 cpm (Use gamma above 200,000 cpm) or	10 % of Release Level	Do not release. Contact a Radiation Technical Specialist for determination of disposition. <sup>6</sup>
Gamma <sup>2</sup>	Greater than 100 µR/hr (i.e., Greater than 0.1 mR/hr)		
Alpha <sup>3</sup>	Greater than 10,000 cpm		

Note: Except as noted in the table, either beta or gamma measurements can be used as release criteria. In addition alpha criteria must be met if alpha radionuclides are present.

<sup>1</sup> Measured with a Pancake Geiger-Mueller (PGM) probe at approximately 1-inch from the surface. **Caution:** Do not use PGM above 200,000 cpm. Due to instrument dead-time loss above this value, PGM will significantly under-respond to radiation levels (e.g., a 500,000 cpm reading is actually 1,500,000 cpm).

<sup>2</sup> Gamma radiation measured with ion chamber, energy compensated Geiger-Mueller detector, or if necessary, sodium iodide or Pancake Geiger-Mueller (PGM). If PGM is used for gamma, face backside of probe towards contamination and if feasible cover front side of probe to shield beta; then read mR/hr or calculate mR/hr using relationship 1 mR/hr = 3,000 cpm (for Cs-137 only). The table mR/hr values are based on a distance of 5-6 inches from the surface to the centerline of the detector. The mR/hr values can be increased by a factor of 5 (e.g., 500 µR/hr = 100,000 cpm) using a 1-inch surface-to-centerline distance. Consult a Radiation Technical Specialist if gamma emitter other than Cs-137 is present or if contamination is in a very small area (e.g., less than the PGM probe area).

<sup>3</sup> Measured with an alpha specific detector at approximately ½ inch from a relatively smooth surface. **Caution:** alpha radiation is very difficult to measure accurately. Presence of moisture, oil, dust, or dirt may shield all alpha. Seek Radiation Technical Specialist assistance if alpha contamination is detected.

<sup>4</sup> Normal gamma background is 5-10 µR/hr; therefore, 50 µR/hr is the lowest practicable gamma level for determining contamination presence while allowing reasonable speed scans. If local background level exceeds 5 µR/hr, the lowest practicable gamma level for determining contamination presence will increase (remember that background needs to be approximately 10% or less than the contamination release level to allow reasonable speed surveying).

<sup>5</sup> Valuables should be returned to the owner, including credit cards, identification, money, jewelry, medicines, et. Bag items and notify owner that further evaluation will be required at a later time.

<sup>6</sup> Contamination levels above 10,000 cpm (or even above 100,000 cpm) may be acceptable for release upon consultation with the Radiation Technical Specialist.

cpm counts per minute  
mR/hr milliroentgen per hour  
µR/hr microroentgen per hour

Reference CRCPD 2006, NCRP 2005, and NCRP 2001 (see Volume II for specific citation)

**Table 15: Staffing Requirements for 1,000 Persons per Hour Reception Center**

<b>Minimum Number</b>	<b>Position</b>	<b>Considerations</b>
1	Facility Group Director	
1	Assistant Facility Group Director	
2 <sup>(1)</sup>	Greeter	Additional needed for various languages
As needed	Uniformed security officers	Police and National Guard
As needed	Media relations staff	Coordinate with Joint Information Center
5	Crisis counselors	
20	Line attendant	2 per hand-held monitoring station
20	Radiation monitoring technicians	2 per hand-held monitoring station
10	Escort attendant	1 per hand-held monitoring station
10	Line attendant	1 per portal monitor station
20	Radiation monitoring technicians	2 per portal monitor station
10	Escort attendant	1 per portal monitor station
25	Registry staff	
10	Clinicians	Nurses/doctors as needed
1	Emergency Medical Services (EMS)/ambulance	

<sup>(1)</sup>May need more to reduce fatigue

Reference: CDC 2006 (see Volume II for specific citation)

## **Standard Operating Guide No. 1: Procedure for Performing a Radiation Contamination Survey**

In performing a contamination survey with a hand-held instrument, first check to make sure the instrument is functioning properly. It is advisable to wrap the meter probe with plastic wrap to protect the probe from contamination (except if you are surveying for alpha contamination; see Playbook 7 to determine if alpha is present).

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***Make sure that the instruments have batteries and that they work. To do this, turn your instrument to battery check. If the batteries are acceptable, turn the dial to a measurement mode and use a radiation check source to verify the instrument is operating properly.***

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### **Screening Survey**

*If a large population must be surveyed, it is acceptable to perform only a screening survey of the head, face, hands, and shoulders, rather than a more detailed survey, since these are the most likely locations to become contaminated. You may also consider using portal monitors.*

If only performing a screening survey, it is acceptable to hold the survey meter probe about 1 to 2 inches away from the body (instead of ½ inch), and move it twice as fast as the normal 1 to 2 inches per second. (If the probe is moved too quickly, its detection capability may be reduced.) If surveying for alpha radiation, hold the survey meter probe ½ inch away from the body and move it at 1 inch per second. Check with state/local radiation control personnel to determine the extent of contamination survey required.

Public that are not familiar with radiological instruments may become alarmed when they hear the “clicks” from the meter. Consider using head phones to listen to the “clicks” or turn the sound off. However, if the sound is turned off, the surveyor must look at the meter reading and watch the probe position at the same time. This will result in the surveyor taking a significantly longer time to survey an individual.

Return the probe to its holder on the meter when finished. *Do not set the probe down on the ground.* The probe should be placed in the holder with the sensitive side of the probe facing to the side or facing down so that the next person to use the meter can monitor his/her hands without handling the probe or allowing contamination to fall onto the probe surface.

### **Complete Whole Body Survey**

If feasible, perform a complete, whole body contamination survey and record the findings on *Form No 1: Contamination Survey*. To begin a body survey, the individual should stand with their legs spread and arms extended. First holding the probe about a ½ inch away from the surface to be surveyed, slowly (1 to 2 inches per second) move the probe over the head, and proceed to survey the shoulders, arms, and bottoms of the feet. Care must be taken not to permit the detector probe to touch any potentially contaminated surfaces.

It is not necessary to perform the personnel contamination survey in exactly the order listed below, but a consistent procedure should be followed to help prevent accidentally skipping an area of the body. Pause the probe for about five seconds at locations most likely to be contaminated.

1. Top and sides of head, face (pause at mouth and nose for approximately five seconds; high readings may indicate internal contamination)
2. Front of the neck and shoulders
3. Down one arm (pausing at elbow), turn arm over
4. Backside of hands, turn over (pause at palms for about five seconds)
5. Up the other arm (pausing at elbow), turn arm over
6. Shoe tops and inside ankle area
7. Shoe bottoms (pause at sole and heel)



### Standard Operating Guide No. 1 (continued)

As with the screening survey, return the probe to its holder on the meter when finished. *Do not set the probe down on the ground.* The probe should be placed in the holder with the sensitive side of the probe facing to the side or facing down so that the next person to use the meter can monitor his/her hands without handling the probe or allowing contamination to fall onto the probe surface.

#### **The most common mistakes made during the survey:**

Holding the probe too far away from the surface (should be about 1 to 2 inches away for a screening survey or about ½ inch or less for a detailed survey).

Moving the probe too fast (should be about 2 to 4 inches per second for a screening survey or about 1 to 2 inches per second for a detailed survey.)

Contaminating the probe. Probe background should be observed and compared to initial background. If within a factor of 2, it is acceptable to continue to use the probe. Otherwise, check with radiation control personnel. Wrapping the probe in plastic wrap will help prevent surface contamination.

#### **Recommended procedures for on-scene responders:**

1. On-scene responders should wear gloves and a gown or other protective clothing. Each responder should be provided with a personal dosimetry device.
2. Medically unstable patients should be transported to a hospital immediately.
3. A radiological survey, decontamination procedures, or steps taken to contain the contamination may be performed in the ambulance provided these actions do not interfere with more immediate medical requirements of the patient.
4. If the patient is medically stable and conditions at the site permit, limit any further exposure to radiation by moving the patient to an area of low background. The outer clothing of the individual should be removed and the patient should be wrapped in a cloth sheet or blanket to permit handling. The wrapping should be loose to avoid hyperthermia and to allow easy access to the patient by medical personnel.
5. Treat the patient's injuries (i.e., burns, cuts, etc.) sustained in the incident and, if needed, provide symptomatic treatment for the radiation illness (e.g., the use of anti-emetics).
6. If an open wound is involved, cover the wound with a clean dressing.
7. Do not release a medically stable patient to ambulance personnel before a radiological survey has been performed. If contamination is confirmed, a preliminary decontamination should be performed. Record the results of the radiological survey and proceed to decontaminate the patient.
8. Decontaminate the medically stable patient by washing the individual with tepid water to remove any radioactive contamination, beginning with the areas of highest levels of contamination. Proceed gently, mindful that this is a preliminary decontamination and that a more thorough decontamination process will be performed at a medical facility. When finished, repeat the radiation survey of the patient and record the final results. Save all clothing and bedding and all metal objects (e.g., jewelry, coins, belt buckles, etc.). A nasal swab is also recommended to detect inhalation of radioactive contaminants. However, it may be more practicable for medical personnel to perform the nasal swab.
9. Tag each item with the patient's name, location, time, and date. Save each in appropriate containers; mark containers clearly with: "RADIOACTIVE—DO NOT DISCARD."
10. Transport patient to a medical facility for further treatment. The medical facility should be given advanced warning if they are going to receive patients exposed to radiation so that the facility can institute the appropriate medical protocols. Remember, individuals suffering from radiation injury may not be radioactive, but their skin and clothing could be contaminated with radioactive material. Protection of first responders should be focused on the source of the radiation.

(NCRP 2005, Adapted from the 1998 FBI Contingency Plan for Weapons of Mass Destruction FBI, 1998).

## Instructions No. 1: Public Waiting for Decontamination

You may have been exposed to radioactive materials (“dust”). The dust from the explosion may have gotten on your clothes or body. To protect your health, you may be asked to go to a place at the incident called a decontamination station at a place called a reception center to clean off. Do not panic; your health is not in immediate danger. Follow these directions to prepare for the reception center:

Step 1: Go to the designated decontamination area or reception center, as directed.

Step 2: Do not touch your face or put anything into your mouth.

Step 3: Enter the decontamination area or reception center and follow the instructions from the staff. You will likely be asked to stand for a screening (survey) of yourself with clothing. Workers will ask you questions about necessary personal information; please provide answers as best as you can.

Step 4: After you are screened, you will be directed to leave if minimal or no radioactive dust is present. If radioactive dust is found, you will be directed to the wash area or you may be sent home with instructions on how to clean yourself. This is called decontamination.

Step 5: If you are directed to enter the wash area, you will be segregated with individuals of the same gender. To the extent possible, families will be kept together through the decontamination process. Prepare to remove your outer clothes behind a privacy curtain. If radioactive dust is on your clothes, removing them will reduce the dust and decrease the chance that you breathe in or ingest the dust. Quick removal of outer clothing will also reduce the length of time that you are exposed to radiation. When removing the clothing be careful of any clothing that has to be pulled over the head. Try to either cut the clothing off or prevent the outside from coming in contact with the nose and mouth area. You may also hold your breath while carefully pulling the clothing over your head.

Step 6: You will be provided with plastic bags. Place all of your clothing in one bag. You can wash most valuables. Anything that is plastic (including credit cards) or metal, identification, jewelry, and keys are easily washed off. Other types of materials can be wiped off carefully, like money, wallets, and purses. If something cannot be washed then place them in a separate plastic bag from your clothes and seal it. You may be asked to double bag your belongings to minimize the potential for bag breakage. You will be instructed on how to handle these items at a later time when more is known about the hazards of the radioactive dust.

Step 7: Pass through the wash area.

Step 8: When you reach the end of the wash station you will be given clothing to put on and directed to the final staging area. Do not leave without your valuables, even if they are not clean.

(Adapted from CRCPD 2006; see Volume II for specific citation)

## **Instructions No. 2: Instructions to Public on How to Perform Decontamination at Home**

You may have been exposed to low levels of radioactive materials (“dust”). The dust may have gotten on your hair, skin, clothing, and personal property. Depending on your location, the radioactive dust could be on your vehicle, home, yard, lawn furniture, BBQ grill, or anything outside. The dust may have gotten on your jewelry, wallet or purse, or other personal belongings if you were near the incident. You are not in immediate danger from this radioactive dust; however, you need to go home or to another designated area to remove the dust, which is called decontamination. Because radiation cannot be seen, smelled, felt, or tasted, people at the site of an incident will not immediately know if they have been exposed to radioactive materials. Follow these instructions to limit your contamination.

Get out of the immediate area quickly. Go directly home, inside the nearest safe building, or to an area to which you are directed by law enforcement or health officials. *Do not go to a hospital unless you have a medical condition that requires treatment.*

If radioactive dust is on your clothes, removing them as quickly as possible will remove up to 90% of the dust, while helping to prevent you from breathing in or ingesting the dust and will also reduce the length of time that you are exposed to radiation. When removing the clothing be careful of any clothing that has to be pulled over the head. Try to either cut it off or prevent the outer layer from coming in contact with the nose and mouth area. You may also hold your breath while carefully pulling clothing over the head. Removal of clothes should be done in a garage or outside storage area if available, where the ground can be washed off easily. If an outside area is not available, the removal of clothing should take place in a room where the floor can be easily cleaned, such as a tub or shower area. Swiffer® pads are good for decontaminating smooth surfaces including the floor. Clothing should be rolled up with the outside “in” to minimize spreading the dust.

If possible, place the clothing in a plastic bag (double bagging is best to reduce the chances of it breaking), and leave it in an out-of-the-way area, such as the corner of a room or garage. Keep people away from it to reduce their exposure to radiation. You may be asked to bring this bag for follow-up tests or for disposal at a later time.

Keep cuts and abrasions covered when handling anything you think has the radioactive dust on it to avoid getting radioactive material in the wound.

Shower and wash all of the exposed parts of your body and hair using lots of soap and lukewarm water to remove the dust. Simple washing will remove most of the radioactive dust. Do not use abrasive cleaners, or scrub too hard. Do not use hair conditioners in your hair because it could trap the radioactive dust onto your hair.

You can also wash your valuables and other personal property. You can wash off valuables and small items at the same time that you wash yourself. If an outside area is not available or if the items are small, the decontamination should take place in a room where the floor can be easily cleaned, such as a tub or shower area. Swiffer® pads are good for decontaminating smooth surfaces including the floor. Wash the items with lots of water and soap. A scrub brush can be used to reach small spaces. Only decontaminate items that you can easily move to this location as other larger items can be washed off in place.

## Instructions No. 2 (Continued)

For large items, decontamination should take place where the ground can be washed easily, like a sidewalk or driveway. Using a hose, wash off the roof of your home, hard surfaces (driveways, sidewalks, decks, patios), lawn furniture, grills, toys, and any other surface or item outside. You should NOT attempt to wash your lawn, gardens, or bare soil areas.

Clothes may be washed in your washing machine or at a commercial laundry mat. Any item that is water resistant can easily be washed by hand with water and soap, like jewelry, coins, paper money, credit cards, plastic identification cards, etc. Rinse all dust down the drain with lots of water.

Do not contain the used wash water; instead it should be flushed down the drain or if outside into the stormwater/sewer system. If the wash water pools outside, it should be swept into drainage areas.

If you are going to a reception center to be monitored for the radioactive dust, it is best to change clothes and shower *before* being monitored. Do not bring your valuables or personal property to the reception center.

Listen to the news for additional information and guidance.

(Adapted from CRCPD 2006; see Volume II for specific citation)

### **Instructions No. 3: Instructions to Public on How to Perform Decontamination of Pets**

Your pet(s) may have been exposed to low amounts of radioactive materials (“dust”). The process of removing radioactive dust, which is called decontamination, from pets is similar to the decontamination process for people. Radioactive dust may be located on your pet’s skin and in their fur. Your pet is not in immediate danger but should be decontaminated to minimize spread of the radioactive dust. In order to protect your health and safety as well as your pets, please follow these instructions:

Decontamination should take place where the ground can be washed with a hose. If an outside area is not available, the decontamination should take place in a room where the floor can be easily cleaned, such as the tub or shower areas. Swiffer® pads are good for decontaminating smooth surfaces including the floor.

Keep cuts and abrasions (both yours and your pet’s) covered when washing the pet to avoid getting radioactive material in the wound.

If available, wear rubber dishwashing gloves and an apron. Shower and wash all of the exposed parts of your pet using mild dish soap and lots of lukewarm water. Simple washing will remove most of the radioactive dust. Do not use abrasive cleaners or scrub too hard. Do not use hair conditioners because it can trap the radioactive dust onto the hair.

After decontamination of your pet, remove your clothes and wash them separately from other clothes. Wash yourself thoroughly, and do not use conditioner in your hair because it could trap the radioactive dust onto your hair. This will remove any radioactive dust that may have gotten on you.

**Form No. 1: Contamination Survey**

First Name: \_\_\_\_\_ Middle Initial: \_\_\_\_\_ Last Name: \_\_\_\_\_

Date of Birth: \_\_\_\_\_ Home Phone: \_\_\_\_\_ Mobile Phone: \_\_\_\_\_

Address: \_\_\_\_\_

Date/Time: \_\_\_\_\_ Drivers License No./State: \_\_\_\_\_

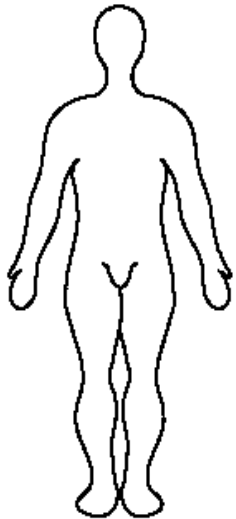
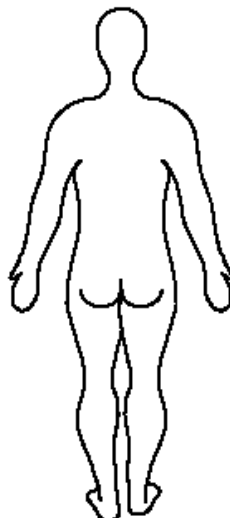
Location at Time of Incident: \_\_\_\_\_

Medical Radionuclides Received: \_\_\_\_\_

Survey Location: \_\_\_\_\_

Parent or Guardian (if child): \_\_\_\_\_

*Mark contamination locations and survey reading on the diagrams below.*

	Measurements:		Measurements:
	1. _____		1. _____
	2. _____		2. _____
	3. _____		3. _____
	4. _____		4. _____
	5. _____		5. _____
	6. _____		6. _____
	7. _____		7. _____
	8. _____		8. _____
9. _____	9. _____		

Survey results  before  after decontamination  
< \_\_\_\_\_ ; <10,000 cpm \_\_\_\_ or <0.1 mR/hr \_\_\_\_; <100,000 cpm \_\_\_\_ or <1 mR/hr \_\_\_\_  
(fill in value) (fill in units)

Survey results  before  after decontamination (see next page)  
< \_\_\_\_\_ ; <10,000 cpm \_\_\_\_ or <0.1 mR/hr \_\_\_\_; <100,000 cpm \_\_\_\_ or <1 mR/hr \_\_\_\_  
(fill in value) (fill in units)

Survey results  before  after decontamination (see next page)  
< \_\_\_\_\_ ; <10,000 cpm \_\_\_\_ or <0.1 mR/hr \_\_\_\_; <100,000 cpm \_\_\_\_ or <1 mR/hr \_\_\_\_  
(fill in value) (fill in units)

Instrument Make and Model: \_\_\_\_\_ Serial Number: \_\_\_\_\_

Comments: \_\_\_\_\_

Monitored by (print name): \_\_\_\_\_ Agency: \_\_\_\_\_

**Person sent to decontamination area:** \_\_\_\_ Yes \_\_\_\_ No Clothing bag number: \_\_\_\_\_

Nasal area reading of 100,000 cpm or 10 mR/hr: \_\_\_\_ Yes \_\_\_\_ No If Yes, refer to medical facility

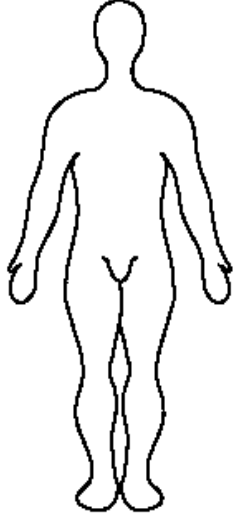
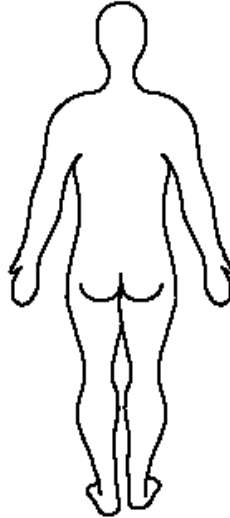
Person sent to medical facility: \_\_\_\_ Yes \_\_\_\_ No

(Adapted from CRCPD 2006; see Volume II for specific citation)

### Form No. 1: Contamination Survey (Continued)

Survey results  before  after decontamination

*Circle if readings are in: cpm mR/hr μR/hr*

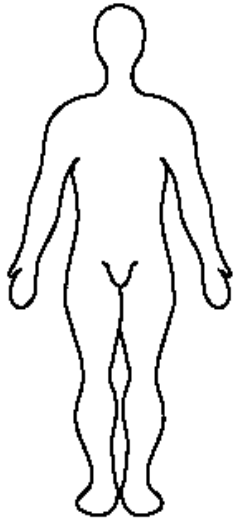
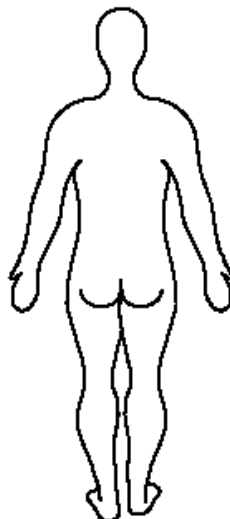
	Measurements:		Measurements:
	1. _____		1. _____
	2. _____		2. _____
	3. _____		3. _____
	4. _____		4. _____
	5. _____		5. _____
	6. _____		6. _____
	7. _____		7. _____
	8. _____		8. _____
9. _____	9. _____		

Monitored by (print name): \_\_\_\_\_ Agency: \_\_\_\_\_

Instrument Make and Model: \_\_\_\_\_ Serial Number: \_\_\_\_\_

Survey results  before  after decontamination

*Circle if readings are in: cpm mR/hr μR/hr*

	Measurements:		Measurements:
	1. _____		1. _____
	2. _____		2. _____
	3. _____		3. _____
	4. _____		4. _____
	5. _____		5. _____
	6. _____		6. _____
	7. _____		7. _____
	8. _____		8. _____
9. _____	9. _____		

Monitored by (print name): \_\_\_\_\_ Agency: \_\_\_\_\_

Instrument Make and Model: \_\_\_\_\_ Serial Number: \_\_\_\_\_

**Form No. 2: Public Property Contamination Survey**

First Name: \_\_\_\_\_ Middle Initial: \_\_\_\_\_ Last Name: \_\_\_\_\_

Date of Birth: \_\_\_\_\_ Home Phone: \_\_\_\_\_ Mobile Phone: \_\_\_\_\_

Address: \_\_\_\_\_

Date/Time: \_\_\_\_\_ Drivers License No./State: \_\_\_\_\_

Location at Time of Incident: \_\_\_\_\_

Survey Location: \_\_\_\_\_

Description of Property: \_\_\_\_\_

*Draw diagram of property and mark contamination locations and survey reading.*

Survey results  before  after decontamination

< \_\_\_\_\_ ; <10,000 cpm \_\_\_\_ or <0.1 mR/hr \_\_\_\_; <100,000 cpm \_\_\_\_ or <1 mR/hr \_\_\_\_  
(fill in value) (fill in units)

Survey results  before  after decontamination (see next page)

< \_\_\_\_\_ ; <10,000 cpm \_\_\_\_ or <0.1 mR/hr \_\_\_\_; <100,000 cpm \_\_\_\_ or <1 mR/hr \_\_\_\_  
(fill in value) (fill in units)

Survey results  before  after decontamination (see next page)

< \_\_\_\_\_ ; <10,000 cpm \_\_\_\_ or <0.1 mR/hr \_\_\_\_; <100,000 cpm \_\_\_\_ or <1 mR/hr \_\_\_\_  
(fill in value) (fill in units)

Instrument Make and Model: \_\_\_\_\_ Serial Number: \_\_\_\_\_

Comments: \_\_\_\_\_

Monitored by (print name): \_\_\_\_\_ Agency: \_\_\_\_\_