

Transportation Emergency Preparedness Program (TEPP) Update

The Council of State Governments (CSG)
Midwestern Radioactive Materials Transportation Committee
Fall Meeting – Minneapolis, MN

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Transportation Emergency Preparedness Program (TEPP)

Exactly who is my TEPP Coordinator?

- **Kansas – Celeste Cusack**

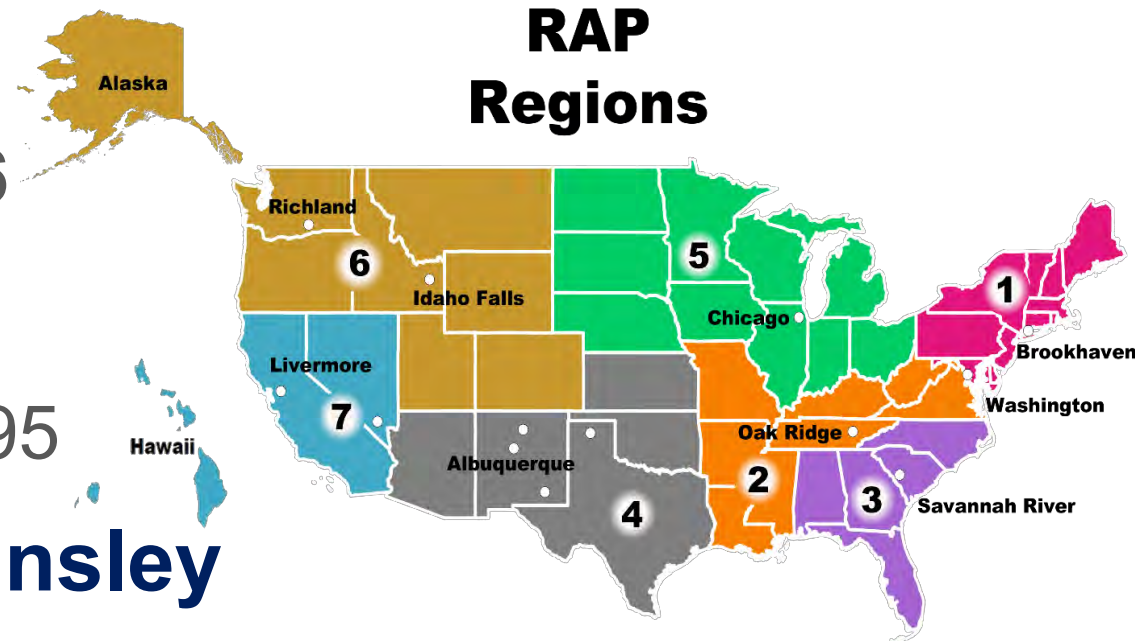
- cc@trgroupinc.com or 208-534-8026

- **Missouri – Dan Mills**

- dan@trgroupinc.com or 252-269-6395

- **The rest of the MRMTC – Mark Linsley**

- mark@trgroupinc.com or 814-404-9668



Our Mission

TEPP is an integral part of the Department of Energy's efforts to ensure the safe transportation of radioactive materials, supporting the requirements outlined in [DOE Order 460.2B, Departmental Materials Transportation and Packaging Management](#).

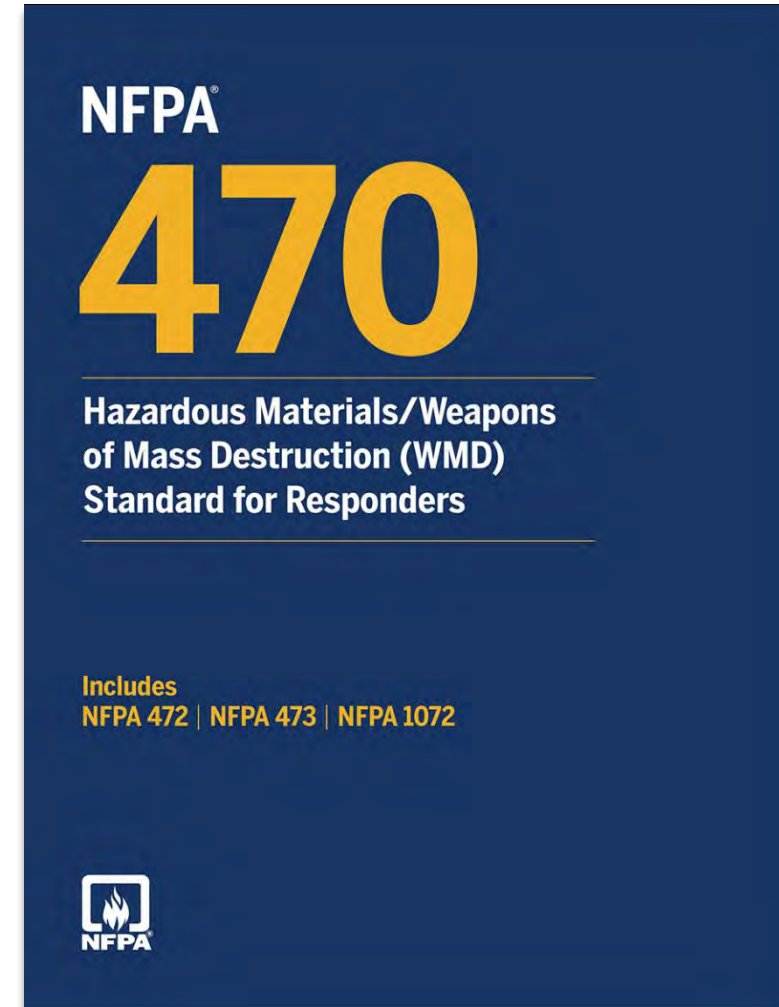
TEPP provides a unified approach to transportation emergency preparedness by equipping federal, state, tribal, and local responders with the training, tools, and resources necessary to respond promptly, efficiently, and safely to transportation incidents involving DOE-owned radioactive materials.

The program is designed to ensure that initial responders to a radiological transportation accident have the knowledge and skills needed to effectively manage and mitigate hazards. To support this mission, TEPP offers a comprehensive suite of planning tools, training curricula, and technical assistance tailored to the needs of response organizations across the United States.

TEPP Training

Training Programs

- All TEPP training programs are aligned with National Fire Protection Association (NFPA) Standards 470
- NFPA 470 defines competency requirements for personnel, ranging from initial awareness and operations to technician-level response, as well as specialized roles like Hazardous Materials/WMD Technicians with a Radiological Hazard Specialty



TEPP Training

- MERRTT
- CMERRTT
- TMERRTT
- Radiation Specialist
- Hospital Care Provider
- Coroner Medical Examiner
- Online MERRTT
- Customized Sessions for Workshops or Conferences





- Dashboard
- Analytics
- Add/Search Events
- Search Students
- Add Students
- Users
- Radiological
Transportation
Emergency Contacts
- Advanced Notification
List
- Tribal Radiological
Transportation
Emergency Contacts
- Search Non-Emergency
Tribal Contacts

Search MERRTT Events

Begin

9/1/2026

End

9/30/2026

Class

Class

Search

Class Compressed MERRTT

Yakima, WA

Wednesday 09/09/2026

Class Compressed MERRTT

Pasco, WA

Thursday 09/10/2026

Class Compressed MERRTT

Hurricane, UT

Monday 09/14/2026

Class Compressed MERRTT State Lead

Albuquerque, NM

Tuesday 09/15/2026

Class Full MERRTT

Hurricane, UT

Tuesday 09/15/2026 - Wednesday 09/16/2026

Conference Awareness

Virginia Beach, VA

October 2026

TODAY

<

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Sun	Mon	Tue	Wed	Thu	Fri	Sat
27	28	29	30	1	2	3
		Train the Trainer MERRTT: Holly Springs,		Train the Trainer MERRTT: Madisonville, KY		Full MERRTT: Wade
4	5	6	7	8	9	10
Full MERRTT: Wade		Compressed MERRTT: Sweetwater, TX		Full MERRTT: Wadesboro, NC		
11	12	13	14	15	16	17
		Compressed MERR	Compressed MERR		Compressed MERR	
18	19	20	21	22	23	24
	Full MERRTT: Greeley, CO		Full MERRTT: Denver, CO		Compressed MERR	
	Compressed MERR	Full MERRTT: Schnecksville, PA		T-MERRTT: Schnecksville, PA		
		Compressed MERR	Compressed MERR			
25	26	27	28	29	30	31
	Full MERRTT: Golden, CO		Full MERRTT: Limon, CO		Full MERRTT: Disputanta, VA	
1	2	3	4	5	6	7
	T-MERRTT: Meridian, MS					Full MERRTT: McCa
	Full MERRTT: Banning, CA			Full MERRTT: Lewisburg, PA		

[Dashboard](#)[Analytics](#)[Add/Search Events](#)[Search Students](#)[Add Students](#)[Users](#)[Radiological
Transportation
Emergency Contacts](#)[Advanced Notification
List](#)[Tribal Radiological
Transportation
Emergency Contacts](#)[Search Non-Emergency
Tribal Contacts](#)

Ludlum Model 2241-2 Overview



CD V-700 Survey Instrument Overview



Alpha, Beta, and Gamma Radiation Demonstrated



Overview of the Ludlum Model 44-9 GM Detector



Phone number:

Message:

Captcha:

[Send Message](#)



Dashboard

Analytics

Add/Search Events

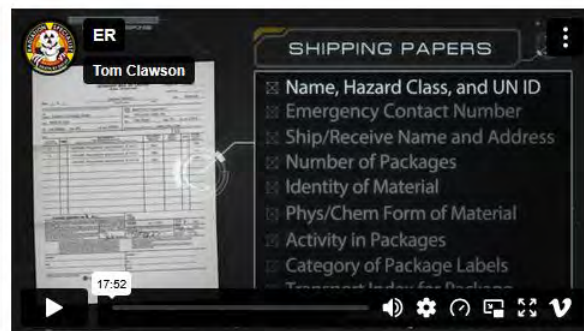
Search Students

Add Students

Users

Radiological
Transportation
Emergency ContactsAdvanced Notification
ListTribal Radiological
Transportation
Emergency ContactsSearch Non-Emergency
Tribal Contacts

Emergency Response to a Transportation Accident Involving Radioactive Material



The video will demonstrate basic response techniques to a transportation accident involving radioactive material. Starting with the initial 9-1-1 call, the video will show responders' arrival, size-up, initial response actions, scene entry, victim rescue and treatment, decontamination techniques, and transport to a medical facility. The video emphasizes the importance of using the Emergency Response Guidebook (ERG) to determine responder actions for response to a transportation accident involving radioactive material. Video length is approximately 18 minutes.

Pre-hospital Practices for Handling a Radiologically Contaminated Patient



This training video will demonstrate generic medical practices on how to properly handle and manage patients contaminated with radioactive material. The techniques demonstrated in this video are generic in nature and are in no way intended to replace your local response procedures. Understanding these techniques will help you, as a responder, function with confidence during incidents that involve radioactive material. Video length is approximately 12 minutes.

Decontamination DRESSDOWN at a Transportation Accident Involving Radioactive Material



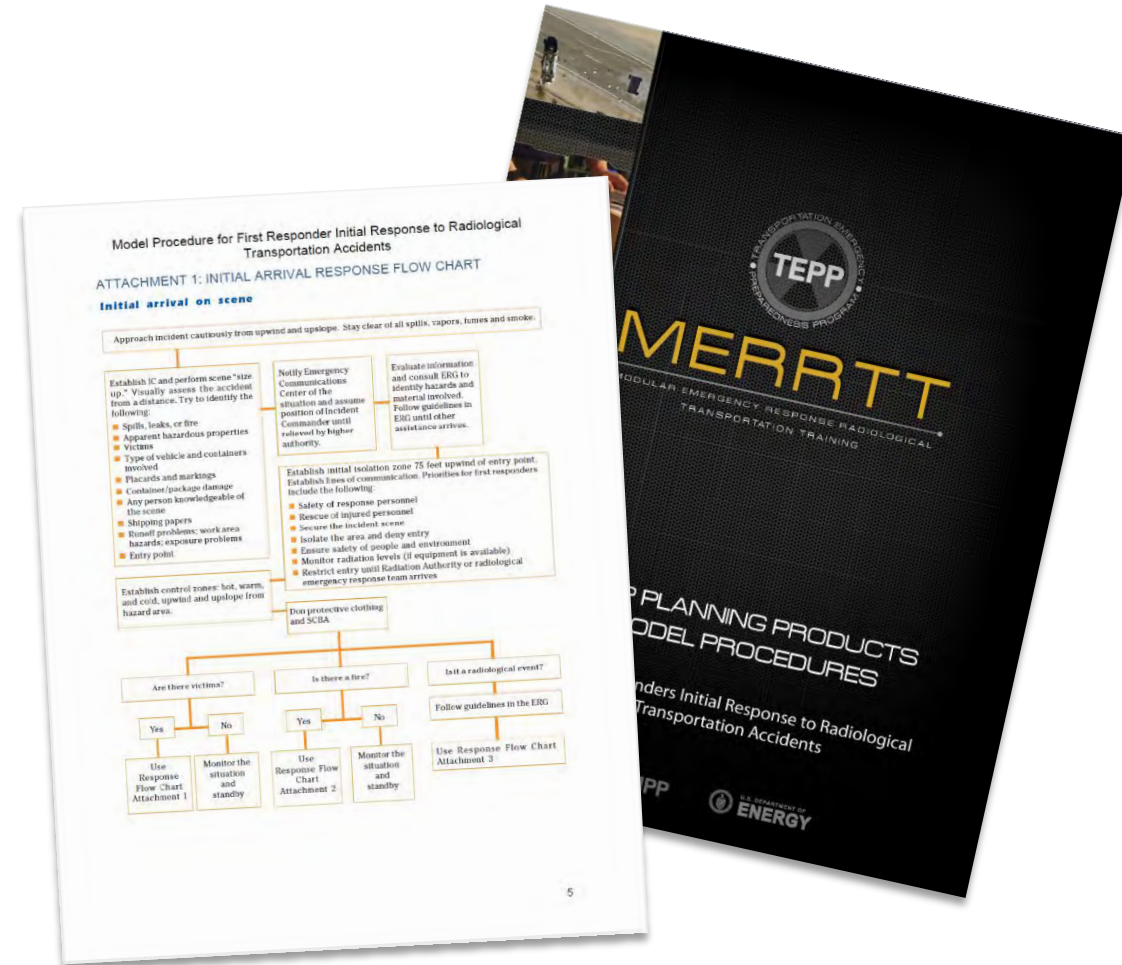
This training video was designed to supplement the MERRTT program and has been produced to demonstrate techniques used to conduct the decontamination dressdown of responders who have entered the hot zone and are contaminated with radioactive material. Video length is approximately 15 minutes.

Law Enforcement Decontamination Dressdown



TEPP Model Procedures

- First Responder
- Hazardous Materials Team
- EMS Responder Procedure for Handling a Radiologically Contaminated Patient
- Medical Examiner/Coroner Guide for Handling a Radiologically Contaminated Remains
- Radioactive Material or Hazardous Materials Decontamination
- Law Enforcement Responder Decontamination
- Recovery Planning



FileEditViewHistoryBookmarksProfilesToolsHelp

Transportation Accident Exercise X

teppinfo.com/tepp/exercise-scenarios

80%

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TEPP

TRANSPORTATION EMERGENCY PREPAREDNESS PROGRAM

Dashboard

Analytics

Add/Search Events

Search Students

Add Students

Users

Radiological Transportation Emergency Contacts

Advanced Notification List

Tribal Radiological Transportation Emergency Contacts

Search Non-Emergency Tribal Contacts

HomeMERRTT Training ProgramScheduled EventsTEPP ToolsContacts

Tabletop Exercise Supporting Forms

Download the Supporting Forms Manual

Tabletop Exercise Observer Manual

Download the Observer Manual

Tabletop Exercise Participant Manual

Download the Participant Manual

Medical Messages Index

The medical message index was developed to provide exercise/drill developers a selection of medical injury and messages that can be used during exercises/drills. The medical messages index offers 40 varying types and seriousness of injuries. The medical messages are formatted for easy use, have a patient complaint, symptom timelines table, and expected responder actions as part of the formatted medical message.

Download the Medical Messages

Spent Nuclear Fuel Transportation Accident Exercise Scenario

This scenario provides the planning instructions, guidance, and evaluation forms necessary to conduct an exercise involving a highway shipment of spent nuclear fuel. This exercise manual is one in a series of five scenarios developed by the Department of Energy Transportation Emergency Preparedness Program. Responding agencies may include several or more of the following: local municipal and county fire, police, sheriff, and Emergency Medical Services (EMS) personnel; state, local, and federal emergency response teams; emergency response contractors; and other emergency response resources that could potentially be provided by the carrier and the originating facility (shipper).

This scenario provides the guidance for conducting the exercise in a safe, efficient, coordinated manner, and provides a historical record of the exercise.

Download the Spent Nuclear Fuel Transportation Accident Exercise Scenario

Low Specific Activity (LSA) Transportation Accident Exercise Scenario

This scenario provides the planning instructions, guidance, and evaluation forms necessary to conduct an exercise involving a highway shipment of Low Specific Activity (LSA) material. This exercise manual is one in a series of five scenarios developed by the Department of Energy Transportation Emergency Preparedness Program. Responding agencies may include several or more of the following: local municipal and county fire, police, sheriff, and Emergency Medical Services (EMS) personnel; state, local, and federal emergency response teams; emergency response contractors; and other emergency response resources that could potentially be provided by the carrier and the originating facility (shipper).

This scenario provides the guidance for conducting the exercise in a safe, efficient, coordinated manner, and provides a historical record of the exercise.

Download the Low Specific Activity (LSA) Transportation Accident Exercise Scenario

Radiopharmaceuticals Transportation Accident Exercise Scenario

This scenario provides the planning instructions, guidance and evaluation forms necessary to conduct an exercise involving a highway shipment of radiopharmaceuticals (Class 7 - Radioactive). This exercise manual is one in a series of five scenarios developed by the Department of Energy Transportation Emergency Preparedness Program (TEPP). Responding agencies may include several or more of the following: local municipal and county fire, police, sheriff, and Emergency Medical Services (EMS) personnel; state, local, and federal emergency response teams; emergency response contractors; and other emergency response resources that could potentially be provided by the carrier and the originating facility (shipper).

This scenario provides guidance for conducting the exercise in a safe, efficient, coordinated manner, and provides a historical record of the

10



- Dashboard
- Analytics
- Add/Search Events
- Search Students
- Add Students
- Users
- Radiological Transportation Emergency Contacts
- Advanced Notification List
- Tribal Radiological Transportation Emergency Contacts
- Search Non-Emergency Tribal Contacts

Radiological Transportation Emergency Contacts

Last updated in August 2026

Florida	▼
Georgia	▼
Hawaii	▼
Iowa	▲
Duty Officer Iowa Emergency Management Division 7900 Hickman Rd, Suite 500 Windsor Heights, IA 50274 (515) 725-3231 hsemdduty@iowa.gov Option 0. After hours, use Opt. 3; open M-F 8-4, closed holidays.	
Idaho	▼
Illinois	▼
Indiana	▼





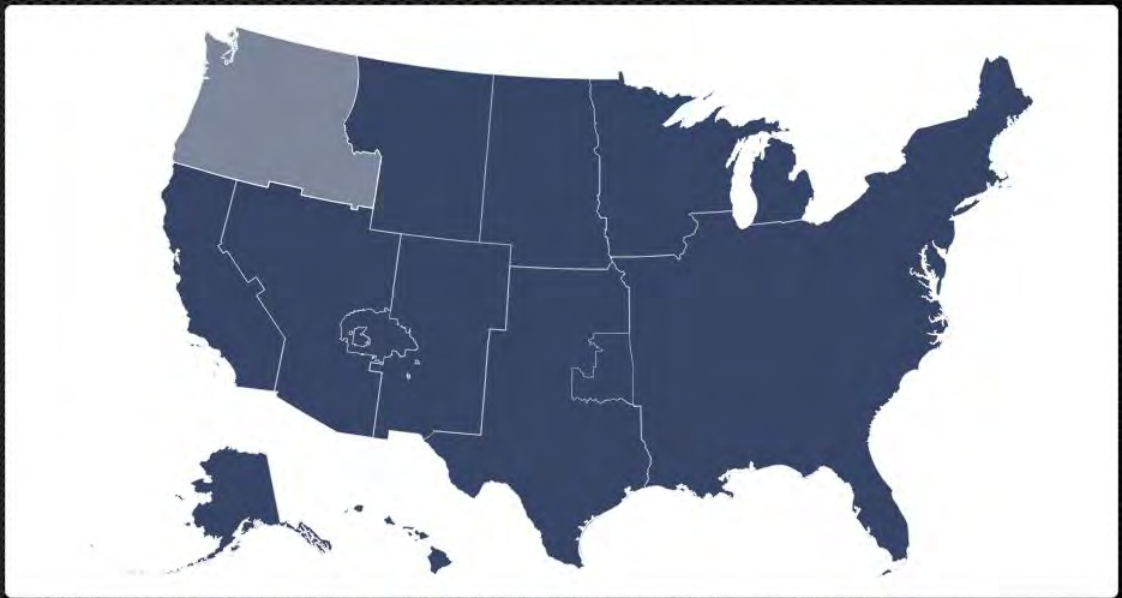
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Tribal Radiological Transportation Emergency Contacts

[Click here to add a tribal contact](#)

Last updated in September 2026

Eastern	▼
Great Plains	▼
Midwest	▼
Navajo	▼
Northwest	▲
Nez Pearce	
Anthony Smith	
(208) 621-4710	
anthony@nezpearce.org	
ERWM Director	
Nez Pearce	
John Wheaton	
(208) 621-3760	
(208) 790-3516	
jwheaton@nezpearce.org	
Emergency Response Director	





Our Mission

TEPP is an integral part of the Department of Energy's effort materials, supporting the requirements outlined in [DOE Order on Packaging Management](#).

TEPP provides a unified approach to transportation emergency tribal, and local responders with the training, tools, and resources and safely to transportation incidents involving DOE-owned radioactive materials.

[Training Programs](#)[Model Procedures](#)[Transportation Accident Exercise Scenarios](#)[Job Aid - RAM Flatsheet](#)[Job Aid - Decon Corridor](#)[Job Aid - Hospital Flatsheet](#)[Job Aid - Patient Handling Flatsheet](#)[Job Aid - LEO Flatsheet](#)

Transportation Emergency Preparedness Program

Emergency Responder Radioactive Material Quick Reference Sheet

Initial Response/Scene Size Up

From a distance, try to identify the following:

- Spills, leaks, or fire
- Any victims needing rescue
- Type of vehicle and packages involved
- Placards, labels, or package markings
- Container/package damage
- Any person knowledgeable of the scene
- Location of shipping papers
- Proper protective clothing needed for entry

For radioactive materials, establish an initial isolation zone of 75 feet in all directions. Priorities for rescue, life-saving, first aid, fire control and other hazards are higher than the priority for measuring radiation levels. Attempt to detain uninjured personnel who may be contaminated until they can be surveyed by local Radiation Authority.

Vehicle Placards

Standard Placard



Vehicle placarding is required when transporting:

- One or more packages with a Yellow-III label
- Exclusive use shipments of LSA/SCO materials
- HRCQ shipments (see placard below)

Highway Route Controlled Quantity (HRCQ) Placard



HRCQ is a high activity shipment transported in a Type B package. The package will always have a Yellow-III label regardless of radiation level. HRCQ shipments by highway will require the standard placard on a white square background with a black border as shown at left.



Package Labels

Radioactive White-I
Expect up to 0.5 mrem/hr at surface of package.

No Transport Index associated with this label.



Radioactive Yellow-II
Expect > 0.5 mrem/hr up to 50 mrem/hr at surface of package.

Maximum Transport Index is 1 or 1 mrem/hr at 1 meter.



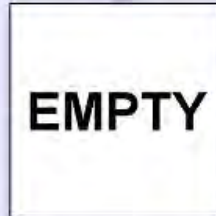
Radioactive Yellow-III
Expect > 50 mrem/hr up to 200 mrem/hr* at surface of package.

Maximum Transport Index is 10 or 10 mrem/hr at 1 meter.*



Fissile Label

For packages containing fissile material, this label will appear with one of the three labels shown above. Criticality Safety Index on label is used by shipper to limit the number of packages on a conveyance.



EMPTY Label

For packages that previously contained radioactive material (e.g., Type B Packages) and have been emptied of their contents. Package may still contain internal contamination. Expect < 0.5 mrem/hr at surface of package.

* May read up to 1,000 mrem/hr at package surface and up to 10 mrem/hr at 2 meters (6.6 feet) if package is transported in a closed transport vehicle under exclusive use provisions. Shipping papers will denote "exclusive use."

Shipping Paper Information

Look for the following information on shipping papers for radioactive material:

- Emergency response telephone number
- Proper Shipping Name and UN ID
- Name of radionuclide(s) (e.g., Cs-137)
- Radioactivity level per package in MBq, GBq, etc. (will be listed as "activity")
- Category of label applied (i.e., White-I, Yellow-II, Yellow-III)
- Transport Index (for Yellow-II and Yellow-III labeled cargo only)
- The letters "RQ" if material is a Reportable Quantity of hazardous material
- Package Type (e.g., IP, Type A, Type B)
- Physical & chemical form of material (if not special form)
- "Fissile Excepted" or Criticality Safety Index (for fissile materials only)
- "Exclusive use" if shipment is being made under exclusive use provisions
- Highway Route Controlled Quantity or "HRCQ" (if shipment is HRCQ)

Common Prefixes

The activity level shown on shipping papers and on the radioactive label is required to be listed in becquerel. The becquerel (Bq) is a quantity of radioactivity. The Bq is a very small amount of activity; equal to 1 nuclear disintegration per second. Because a becquerel is such a small amount of activity, prefixes are often used to change the size of the unit. For example 2.2 MBq denotes 2.2 million Bq or 2.2 million disintegrations per second. Many of the commonly used prefixes are shown in the table below.

Symbol	Prefix Value
k	kilo = 1 thousand
M	Mega = 1 million
G	Giga = 1 billion
T	Tera = 1 trillion
P	Peta = 1 quadrillion

Transportation Emergency Preparedness Program

Emergency Responder Radioactive Material Quick Reference Sheet

Radiological Protection Principles

Radiation is energy and cannot be detected by the human senses. A radiological survey conducted with specialized equipment is the only way to confirm the presence of radiation. Radiation survey instruments typically measure in units of $\mu\text{R}/\text{hour}$, mR/hour , or R/hour .

Contamination is radioactive material in an unwanted location (e.g., deposited on surfaces, skin, or clothing). Internal contamination can occur when radioactive material is inhaled, ingested, or lodged in an open wound. Contamination should not be suspected unless radioactive material packages are damaged and/or you suspect they have been breached. Contamination survey instruments typically measure in units of counts per minute (CPM) or kilo counts per minute (kCPM).

Decontamination involves removing radioactive material contamination from personnel or equipment. Remember that patient treatment takes priority over radiological controls.

For life-threatening injuries, decontamination is not a priority. Implement contamination controls as the situation allows but do not delay patient care or treatment. Attempt to contain contamination on patient using a blanket or sheet and notify the hospital of possible contamination as soon as possible.

For non life-threatening injuries where you suspect the patient may be contaminated:

- Carefully cut away and remove patient's outer clothing
- Treat injuries as necessary
- Package patient using double blanket method to help contain any possible contamination
- Notify hospital of possible contamination as soon as possible

Responder Safety involves wearing proper PPE and minimizing radiation exposure:

- Minimize time in radiological area
- Maximize distance from radiation sources
- Place shielding between you and source of radiation (e.g., vehicle)

Guidelines for Control of Emergency Exposures

Adapted from:
EPA-400/R-17/001

Dose Limit	Activity Performed	Condition
5 rem	All occupational exposures	All reasonably achievable actions have been taken to minimize dose
10 rem	Protecting critical infrastructure	Exceeding 5 rem unavoidable and all appropriate actions taken to reduce dose. Monitoring available to project or measure dose.
25 rem	Lifesaving or protection of large populations	Exceeding 5 rem unavoidable and all appropriate actions taken to reduce dose. Monitoring available to project or measure dose.
>25 rem	Lifesaving or protection of large populations	All conditions above and only for people fully aware of the risks involved

Fissile Material: Except for natural/depleted uranium, any material containing U-233, U-235, Pu-239 or Pu-241. Fissile material packages requiring criticality controls will have the fissile label.

Industrial package: Designed for shipments of low activity material and contaminated objects, which are usually categorized as radioactive waste. They contain non life-endangering amounts of radioactive material. There are three categories of industrial packages: IP-1, IP-2, and IP-3.

LSA/SCO: Low Specific Activity (LSA) material means the radioactive material is distributed throughout a substance to such an extent that it poses little hazard if released in an accident. Surface Contaminated Object (SCO) means a solid object which is not itself radioactive but has radioactive material distributed on its surface. Examples include contaminated tools/equipment.

Rem: A measurement unit of radiation dose. Rem measures the amount of damage to human tissue from ionizing radiation. 1 rem is one-millionth of a rem; 1 mrem is one-thousandth of a rem. The average member of the general population receives about 620 mrem (0.62 rem) annually.

Special Form: Radioactive material in an accident-tested, non-dispersible form.

Transport Index (TI): Determined by taking the maximum radiation level (as measured in mrem/hr) at one meter (3.3 feet) from an undamaged package. The TI will be found on Yellow II and Yellow III labels, and shipping papers when required.

Type A package: Designed to survive normal transport conditions (minor mishaps and rough handling). Type A packages contain non life-endangering amounts of radioactive material.

Type B package: Designed to survive severe accidents conditions. Life threatening conditions may exist only if contents are released or if package shielding fails. The designations "(U)" or "(M)" (e.g., Type B (U) or Type B (M) Package) refer to unilateral (U) or multilateral (M) approval of the package design.

Gamma Dose Rate	Stay Time Table				
	Stay time to receive this dose				
	1 rem	5 rem	10 rem	25 rem	100 rem
1 mR/hour	6 weeks	30 weeks	1 year	–	–
5 mR/hour	200 hours	6 weeks	12 weeks	30 weeks	2 years
100 mR/hour	10 hours	50 hours	100 hours	250 hours	6 weeks
1 R/hour	1 hour	5 hours	10 hours	25 hours	100 hours
10 R/hour	6 minutes	30 minutes	1 hour	2.5 hours	10 hours
100 R/hour	36 seconds	3 minutes	6 minutes	15 minutes	1 hour



This Quick Reference Sheet was produced by the
U.S. Department of Energy
Transportation Emergency Preparedness Program
For additional information, visit the TEPP website at:
www.em.doe.gov/otem
or phone (208) 528-8895



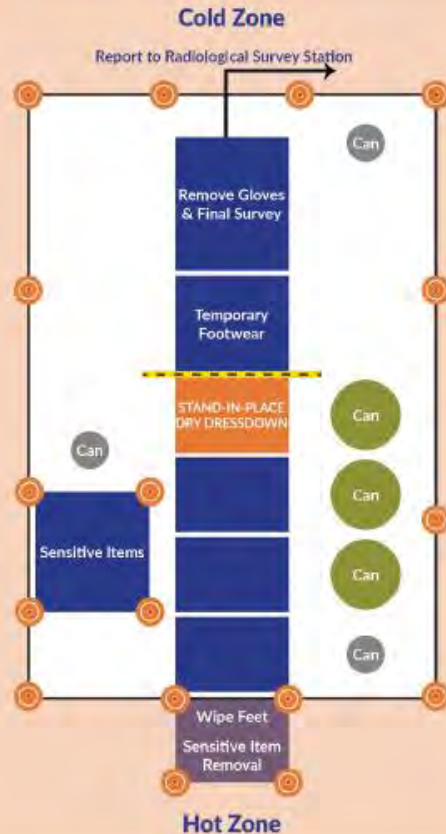
BUNKER GEAR

Decontamination Corridor Set Up

Select a location that is uphill, upwind, and upstream from the incident scene

Prior to setting up the decontamination corridor, survey the selected location to verify that the area is free of radioactive contamination and that radiation levels are at natural background levels

Position elements: tarp, waste cans, pads, cones/anchors, and tool drop area as indicated in the graphic below:

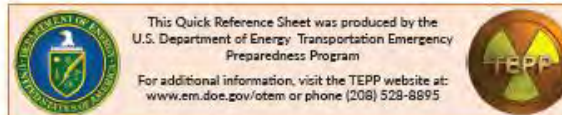


Dressing Up in Bunker Gear

Wear typical firefighting bunker gear, which includes, helmet, hood, coat, pants, boots, and gloves

1. Put on respiratory protection (SCBA backplate and mask or APR)
2. Put on communication equipment and wear dosimetry as available and conduct entry operations

Responder is now ready to conduct entry operations



Decontamination Corridor 1

Set Up, Dress Up, and Dressdown Job Aid

Dressing Down in Bunker Gear

Wipe feet at the entrance and step into the decontamination corridor

Decontamination workers will dressdown the responder by doing the following:

1. Remove the responder's firefighting gloves and place in waste collection container. Release wristlet

Decontamination Worker Changes Gloves

2. Put medical exam gloves on responder's hands and have them step forward
3. Remove communication devices, dosimetry, then helmet and hood and place in the waste container. Responder steps forward
4. Remove the responder's SCBA harness/backplate. DO NOT REMOVE FACEPIECE OR TURN OFF AIR SUPPLY - MAINTAIN RESPIRATORY PROTECTION
5. Remove the firefighting coat and place in the waste container. Responder steps forward
6. Pull the pants down to the top of the boots. Have the responder step forward while stepping out of their firefighting boots. While stepping forward, as available, put temporary footwear (shoe covers, sandals, etc.) on the responder. Place boots/pants in the waste container
7. Have responder remove their facepiece and hand it to the decontamination worker. Responder steps forward

Decontamination Worker Changes Gloves

8. Remove remaining pair of medical exam gloves and conduct final contamination survey

Decontamination workers will conduct a self-decontamination using the steps above

DISPOSABLE COVERALLS

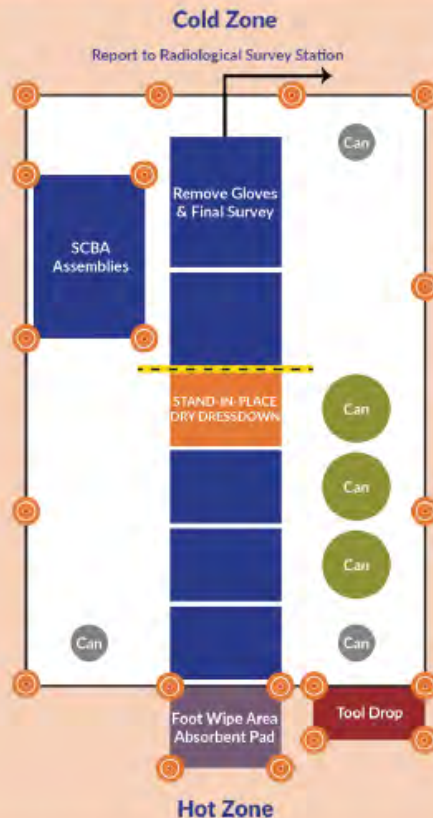
Decontamination Corridor Set Up, Dress Up, and Dressdown Job Aid 2

Decontamination Corridor Set Up

Select a location that is uphill, upwind, and upstream from the incident scene

Prior to setting up the decontamination corridor, survey the selected location to verify that the area is free of radioactive contamination and that radiation levels are at natural background levels

Position elements: tarp, waste cans, pads, cones/anchors, and tool drop area as indicated in the graphic below:



Dressing Up in Disposable Coveralls

1. Select the type of disposable protective clothing to be worn by entry team members
2. Put on at least two pair of medical exam gloves. Alternate colors if possible
3. Step into the selected disposable coveralls
4. Put on boots, loosely tape top of boots to the coveralls
5. Continue to dress up by placing arms into coveralls and zip up. Put on an outer pair of gloves using glove rings, if available. If glove rings are not available, make sure to tape the gloves loose enough to allow for removal of coveralls with gloves still attached
6. Put on respiratory protection (SCBA backplate and mask or APR)
7. Pull hood over head and tape around mask and over zipper as needed
8. Put on communication equipment and dosimetry, as available
9. Put on head protection
10. Responder is ready to go on air (SCBA) and conduct entry operations



Dressing Down from Disposable Coveralls

Wipe feet at the entrance to the decontamination corridor and step forward into a bag designated for stand-in-place dressdown

Decontamination workers will dressdown the responder by doing the following:

1. Remove head protection, communication equipment, and dosimetry; place in the appropriate collection container
2. If wearing an SCBA, remove backplate, and ensure responder remains on air
3. Remove tape from the hood and zipper. Place tape waste into appropriate waste container
4. Remove the hood off the responder's head
5. Unzip or cut the responder's disposable coverall
6. Grasp the fingertips and have the responder free their hands from the outer gloves

Decontamination Worker Changes Gloves

7. Gently remove the coveralls, starting at the shoulders, rolling the garment inside-out down the back to the top of the boots

Decontamination Worker Changes Gloves

8. Have responder step out of their boots and the bag into available footwear
9. Decontamination worker will roll up the bag and place in the appropriate waste container

Decontamination Worker Changes Gloves

Responder will:

1. Remove remaining pair of medical gloves and place in appropriate waste container
2. Remove SCBA facepiece or APR and then remove remaining gloves
3. Report to final contamination survey area

LAW ENFORCEMENT

Decontamination Corridor

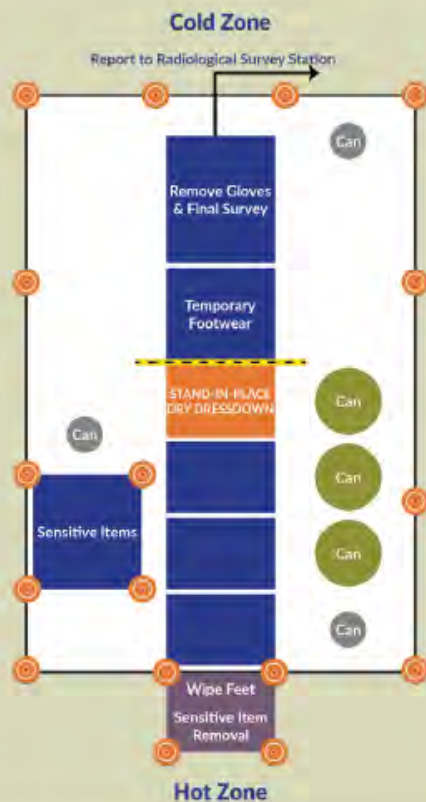
Set Up, Dress Up, and Dressdown Job Aid

1

Decontamination Corridor Set Up

When the officer enters the incident scene (hot zone) to perform lifesaving actions, they may be potentially contaminated from the release of radioactive material.

Responders will establish a decontamination corridor/process that uses a tarp, barricades, cones, or other identifying features to ensure that the decontamination corridor is obvious to responders. The officer will be surveyed and decontaminated if necessary.



Decontamination Considerations

- Officers who entered the hot zone and are potentially contaminated should implement self-protection measures to control potential spread of contamination. Officers should not eat, drink, smoke or chew, and limit activities/movement until they can be processed through the decontamination corridor.
- When the officer arrives at the entrance to the decontamination corridor and if radiological survey equipment is on scene, a qualified person should conduct a full-body radiological survey of the officer, monitoring for radioactive material contamination.
- If no radiological contamination is detected on the officer, vehicle, and equipment, they may be released by the Radiation Authority to continue normal response activities.
- If radiological survey equipment is not available or contamination is detected, the officer will proceed with the remaining steps of this job aid to complete the decontamination process.

Options for Securing Officer's Sensitive Items

Option 1: If the officer's vehicle is located inside the hot zone, they can secure their sensitive items (firearms, Taser, ammunition, radios, body camera, department issued phone, and hard badges) in their vehicle. After securing the vehicle the officer can prepare to exit the incident scene through the decontamination corridor.

Option 2: The officer will proceed to the decontamination corridor wearing their sensitive items.

Law Enforcement Sensitive Items Custody

Ensure that a second law enforcement officer that did not enter the hot zone, can act as the equipment custodian, and is available to observe, monitor, and take possession of the law enforcement officer's sensitive and personal items.



Proper Handling of Law Enforcement Sensitive Items at the Decontamination Corridor

1. At the corridor entrance the officer will wipe feet, put on medical exam gloves, and prepare to remove personal and sensitive items.
2. The equipment custodian will observe the decontamination workers as they remove the officer's personal effects (e.g. wallet, keys, cell phone) and placing them in a bag separate from their sensitive items.
3. Next the officer will remove the holstered duty belt with all weapons and ballistic vest, handing them to the decontamination workers who places them in a bag.
4. Decontamination workers will double-bag the personal effects and sensitive items while being observed by the equipment custodian.

LAW ENFORCEMENT

Decontamination Corridor 2

Set Up, Dress Up, and Dressdown Job Aid

Stand-in-Place Decontamination Dressdown

After all personal and sensitive items have been removed, the decontamination workers will assist the officer into the decontamination corridor. An oversized trash bag, with the sides rolled down, will be placed on the ground. With the assistance of the decontamination workers, the officer will be dressed down while standing inside the bag:

1. Shirt (unbutton, unzip, or cut away)
2. Ballistic vest (if worn under shirt)
3. Untie or unzip shoes/boots to make it easier for removal (leave on at this time)
4. Slide pants to the ankles, rolling them outwards
5. With pants at ankles, the officer will step out of their pants and footwear while stepping out of the trash bag. As available, some type of temporary footwear (sandals, flops, booties) will be provided

Once the officer is outside of the oversized trash bag, their medical exam gloves can be removed.

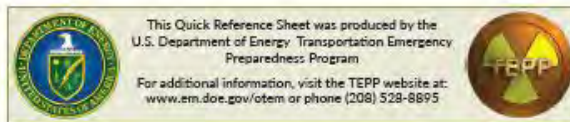


Radiological Survey and Return to Duty

The officer will be escorted to the Radiological Survey Station where a full-body contamination survey will be conducted and documented by the Radiation Authority or other qualified personnel. If no contamination is found, the officer will be provided modesty clothing and returned to duty.

If the officer is contaminated, the Radiation Authority or qualified personnel will document location and levels of contamination. They will then determine the appropriate decontamination procedures to ensure the officer is properly decontaminated while minimizing the spread of contamination.

Upon completion of the decontamination process, the officer will be provided modesty clothing. The Radiation Authority or qualified personnel and the Incident Commander will decide if the officer can be released back to normal duty.



Release of Personal and Sensitive Items

The equipment custodian will maintain custody of the bagged items at a designated location near the decontamination corridor. The equipment custodian will brief the Incident Commander on the number, type, and location of items (vehicle keys, weapons, and law enforcement vehicles) needing to be surveyed and possibly decontaminated.

The Incident Commander with Radiation Authority or qualified personnel, will determine the best location for the final contamination survey and decontamination of personal and law enforcement sensitive items. The equipment custodian will maintain control of the items during this process.



ARRIVAL & ASSESSMENT

Radioactive Material
Contaminated Patient Handling

1

Scene Arrival and Pre-Entry Considerations

If you are the first arriving unit, utilize your procedures and/or the ERG to conduct a scene size-up and establish control zones.

Notify hospital as soon as possible of a potentially radiologically contaminated patient.

If Incident Command has been established, EMS care providers should report to the Incident Commander for a scene size-up briefing.

If response actions are being initiated by EMS and the scene size-up has been completed, care providers should wear PPE and only carry essential medical equipment into the hot zone.

Protective Clothing

- Multiple pairs of disposable gloves
- Respiratory protection if available (such as self-contained breathing apparatus, air purifying respirator, or N95 particulate mask)

Prepare the Rescue Immobilization Device (RID)

- Spread a protective barrier (blanket, sheet, etc.)
- Spread a second protective barrier on top of the first barrier
- Place the RID in the center of the protective barriers
- Roll edges of the protective barriers until only the remaining unrolled portion can be placed on top of the RID
- Place essential medical response equipment on top of the RID. Unless needed, avoid taking ALS equipment into the hot zone
- Place protective barrier covering the gurney that will be used for transport to the patient to the hospital

Entry and Treatment Considerations

Medical treatment always has priority over radiological concerns. Additional decontamination may be necessary if the patient was exposed to additional hazardous materials.

Gross Decontamination

- Enter the hot zone and place the RID adjacent to the patient
- Deploy/unroll the protective barriers adjacent to the patient
- Place the medical equipment on the barrier
- Contact with the patient may result in cross contamination, change gloves as necessary
- Use proper contamination control techniques
- Cut clothing from head to toe and roll outer clothing away from body
- Carefully lay cut clothing open, exposing the patient's body
- To avoid cross-contamination, carefully remove the outer pair of disposable gloves
- Load the patient onto the RID using standard medical protocols and wrap an inner protective barrier around the patient
- Leave all removed items in the hot zone
- Move patient to the hot zone boundary
- Pass the patient across the control line to EMS
- Place patient on gurney that has been covered with a third protective barrier
- Load patient into ambulance for transport
- Notify the hospital that they are receiving a potentially radiologically contaminated patient
- Provide patient report
- Inquire whether the hospital has any special instructions or procedures for receiving contaminated patients
- Keep patient wrapped as much as possible to minimize the spread of contamination
- Avoid exposing covered wounds; only expose the patient's injuries for assessing and treating

Note: The entry team should remain in the hot zone unless also providing transport. If so, consider removing entry PPE and replace with new PPE.



Transport Considerations

If time permits, prepare the ambulance prior to transport to minimize the spread of contamination.

- Avoid using internal/external compartments
- Close all inside ambulance compartments prior to loading the patient
- Cover radio communication microphones
- Cover the floor of ambulance
- Avoid using the compartment exhaust system
- Bag any clothing removed in the ambulance
- EMS care providers will cover the patient with the protective barrier

When necessary/available, air transport of a patient may be an option. As stated in the ERG, radiation presents minimal risk to emergency response personnel and medical problems take priority over radiological concerns.



DECONTAMINATION & TRANSPORT

Radioactive Material Contaminated Patient Handling

2

Life—Threatening Conditions

Initiate ALS care as necessary. Radiation and/or contamination will not affect the operation of ALS equipment. All equipment used must be surveyed for contamination prior to returning to service.

Airway Control and Oxygen Administration

- Administer oxygen via mask, non re-breather preferably
- Put oxygen mask on patient as soon as possible
- Never withhold oxygen regardless of the patient's location

Invasive Airway Treatment

- Realize intubation may result in internal contamination
- Maintain endotracheal tube sterility if possible
- Hospital should be informed if intubation occurred in the hot zone

Bleeding Control

- Control life-threatening hemorrhage immediately
- Cover wounds as quickly as possible to avoid internal contamination
- If irrigation is necessary, irrigate distally and laterally to the wound



Cardiac/Respiratory Arrest

- Initiate CPR if necessary
- To avoid introducing internal hazards, utilize adjunct equipment such as bag-valve mask, pocket mask, or microshield

Spinal Immobilization

- If the medical situation indicates the need, a full spinal immobilization should be incorporated
- Gross decontamination should be performed prior to spinal immobilization
- Immobilized patients may have contaminants trapped between the RID and their skin

Needles (Intravenous Cannulation, EpiPen®, etc.)

- Intravenous cannulation should be avoided in the hot zone
- Cleanse selected IV site
- Change gloves prior to venipuncture

Medications

- Administration should follow local protocol



Non-Life Threatening Conditions

- Conduct a head-to-toe assessment
- As available, to limit inhalation of airborne contamination, consider placing mask over the patient's mouth and nose (e.g., N95, non-rebreather, etc.).
- Perform gross decontamination
- Extricate patient to the cold zone



Hospital Arrival Considerations

Follow hospital's radiological control protocol and instructions for patient transfer to hospital care.

- Provide patient report
- Unless needed back at the incident scene, the ambulance should not be returned to regular service until the care providers, vehicle, and equipment have been surveyed for radiological contamination by qualified radiological personnel: local or state Radiation Authority, hazmat team, radiation safety officer, or the hospital's nuclear medicine department personnel



This Quick Reference Sheet was produced by the
U.S. Department of Energy Transportation Emergency
Preparedness Program

For additional information, visit the TEPP website at:
www.em.doe.gov/otem or phone (208) 528-8895



HOSPITAL PREPARATION

Hospital Care Provider Radiological Exposure and Contamination

1

The hospital staff's incident operations is key to the success of the setup, management, recovery, and public information for the incident. Assigning staff positions to perform the specific tasks needed to care for and treat the patient is the primary goal. Listed below are three assignment functions that can be used as guidance for the preparation, setup, and management of a radiologically contaminated patient. The hospital support staff from any or all of the following departments can be assigned the preparation, setup, and patient management tasks (Maintenance, Engineering, Nuclear Medicine, Security, Housekeeping, Administration, Physicians, Nurses, Radiation Safety Officer, and Public Information Officer).

Preparing the Radiation Emergency Area (REA)

As needed, initiate an Emergency Department Information System (EDIS).

The steps listed below are suggested to minimize the spread of contamination:

Outside REA

- Provide bullhorn or megaphone
- Setup portable structure and establish a water supply
- Ensure the following equipment is available to receive the patient(s):
 1. Gurney(s) with multiple sheets
 2. Emesis basins/collection containers
 3. Survey meter(s) and, as available, dosimetry
 4. Waste container(s) lined with plastic bags

Inside REA

- Identify the location of treatment room(s)
- Protect the floor surfaces with paper covering along the patient receiving area and pathway to treatment
- Remove unnecessary equipment/carts from the treatment room(s)
- Cover wall/ceiling mounted equipment with plastic sheeting or butcher type wrapping paper
- Cover light switch(es) with plastic sheeting/tape
- Cover floor and wall for splash protection
- Establish a water supply and a drainage system. A morgue/embalming type table for containment and easy draining is a good option
- If room is not designed for negative air pressure, consider HVAC operations as a possible spread of contamination; close or seal off conditioned air supplies
- Provide additional lighting in the treatment room as needed

Preparing the Primary Care Provider to Treat the Patient

The steps listed below should be used to select, stage, and dress up/dressdown in the necessary personal protective clothing.

Establish a clean area for the personal protective equipment (PPE) staging area and care provider dress up area. The clean area should be marked and easily identifiable.

Select/inspect and dress up in the appropriate PPE:

- Disposable coveralls with headcover/hood
- Eye protection/face shield
- Respiratory protection
- Various colors and sizes of medical exam gloves
- Foot protection (boots or shoe covers)
- Masking type tape

Establish a decontamination dressdown area where care providers leaving the treatment room can stand and conduct a stand-in-place self-decontamination.

Dressdown from head to toe, carefully placing removed protective clothing in appropriate waste container(s).

Once all PPE has been removed, use a contamination survey meter to conduct a whole-body survey.



Preparing the Needed Supplies to Treat the Patient

Select and stage necessary supplies for treating/decontaminating contaminated patient(s).

Supplies needed include:

- Cotton tipped applicators
- Sterile saline/water
- Bleach
- Iodine solution or other surgical soap
- Hydrogen peroxide
- Soft scrub brushes
- Medical equipment (suction, oxygen, IV solutions, airway intubation)
- Sharpie type pens
- Various sized plastic bags
- Sheets, blankets, towels, patient gowns
- Gauze of various sizes
- Masking/medical tape
- Five gallon bucket



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Rev. 8 2026

CONTAMINATED PATIENT CARE

Hospital Care Provider Radiological Exposure and Contamination 2

Radiation Survey Techniques

Select and protect the appropriate instrument/probe/detector.

- Contamination survey instrument typically read out in CPM
- Hold the probe ½ inch from the surface being surveyed and move the probe slowly, approximately 1 - 2 inches per second.
- If the count rate increases while surveying, pause for 5 - 10 seconds over the area to provide adequate time for instrument response.
- If contamination is found, note the location and continue surveying.
- Become familiar with the jurisdiction's or state's guidelines for when an individual or object is considered contaminated. Often, an individual or material is considered contaminated if it reads 100 CPM or more above background.

For radiation surveys remember exposure rate survey instruments usually measure radiation in terms of milliroentgen per hour (mR/hr) or roentgen per hour (R/hr).

Cutaneous Radiation Injury (CRI) - CRI is injury the skin from acute exposure to a large external dose of radiation. Presentation of CRI can include itching, tingling, or a transient erythema or edema without history of exposure to heat or caustic chemicals. Damage to the basal cell layer of the skin will result in inflammation, erythema, and dry or moist desquamation. In addition, radiation damage to hair follicles can cause epilation. Transient and inconsistent erythema (associated with itching) can occur within a few hours of exposure and be followed by a latent, symptom free phase lasting from a few days to several weeks.

Dose	Effect
300 Rem	Epilation (loss of hair)
600 Rem	Erythema (redness of skin)
1,200 Rem	Dry desquamation
3,000 Rem	Blistering or wet desquamation
5,500 Rem	Chronic Radionecrosis (long term)

Generalized Acute Dose-Response Effects - The doses and effects listed are generalizations and a great deal of variability exists among people.

Dose	Effect
50 Rem	Blood count changes
100 Rem	Vomiting threshold
150 Rem	Mortality threshold
320 - 360 Rem	LD 50/60 (with minimal supportive care)
480 - 540 Rem	LD 50/60 (with supportive care)
800 Rem	100% mortality (with treatment)

Patient Decontamination Considerations

Removing radioactive material (contamination) from locations on the patient. Survey the patient to determine the locations and levels of contamination, the isotope(s) involved, and provide documentation regarding the contaminant.

Patient contamination can be presented to the medical staff in different ways. Save all solutions, foreign bodies, and swabs for analysis.

- **External Contamination** is contamination that is deposited on the surface of the patient, such as on their skin, hair or clothing.
- **Internal Contamination** occurs when radioactive material is ingested, inhaled, injected (impaled), or absorbed.
- **Incorporation** contamination is taken into the cells, tissues and organs. Specific organs such as liver, bone and thyroid can be involved, depending on the material absorbed.

To prevent internalization/incorporation, the portals of entry (wounds, mouth, eyes, nose, and ears) should be addressed before intact skin.

Wound—Survey the wound with an appropriate instrument, and survey dressings, exudate, and/or debride tissue for radioactivity.

Lacerations—Gentle irrigation will remove most of the contamination. Sometimes hydrogen peroxide or betadine surgical scrubs will be necessary. Often

residual contamination will be found on the jagged edges of a wound and debridement may remove it.

Puncture Wounds—Scrub the opening surrounding the wound. If that is not effective, a tourniquet or incision may be used to induce bleeding. Then scrub and cleanse.

Foreign Bodies—Treat as usual, locate and remove appropriately. Survey for radioactivity.

Thermal and Chemical Burns—In most cases, normal burn care in the Emergency Department will remove most of the radioactive material.

Orifices—Remove foreign bodies, swab, and irrigate.

Intact Skin—Wipe or irrigate the skin and gently scrub the skin with warm soapy water using a soft brush, such as a surgical scrub.

Medical Countermeasures for Internally Contaminated Patients

The most effective method of treatment is to prevent the internalization of the radioactive material. The method of treatment depends, in part, on the isotope and its chemical nature.

- **Decrease absorption from gut**—By decreasing the solubility of the radioisotope, the absorption of ingested radioactive material can be reduced and the material passed with the stool.
- **Isotopic dilution**—Administering large amounts of the stable isotope of the same element as the radioisotope will increase excretion of the radioactive isotope.
- **Block incorporation**—Saturate the target tissue/organ with the stable isotope to reduce uptake of the radioisotope.
- **Mobilizing agents**—Chemicals that enhance elimination of the radioisotope from the body.

More specific information about patient assessment and treatment can be found at: teppinfo.com/hospitalcare

High Burnup Research Cask Project (HBURC) Job Aid

What is the HBURC?

The HBURC is a heavily shielded storage and transportation cask. The U.S. Department of Energy is using the HBURC to study high burnup used nuclear fuel (UNF)—fuel that has been used in a reactor longer to produce more electricity. While in storage, the cask safely contains the UNF while also collecting data to improve long-term storage safety. External data collection instruments will be removed prior to transport.

This Shipment Involves

One cask of UNF loaded on a specially designed 12-axle railcar. The shipment will be moving from a commercial nuclear power plant in Virginia to a DOE National Laboratory in Idaho.



ERG Classification

- UN3328 Radioactive material, Type B(U) package, fissile
- ERG Guide 165

Key Message for Responders

- The material inside the cask is not dispersible like a "dirty bomb"
- The UNF is solid. It is not liquid, combustible, flammable, or explosive
- The cask is heavily shielded to reduce the radiation levels
- Severe structural damage to the package does NOT automatically mean radioactive release
- Priorities for rescue, life-saving, first aid, fire control and other hazards are higher than the priority for measuring radiation levels

Cask Integrity Check

If available, use a radiation survey meter to:

- Measure radiation level at surface
- Measure radiation level at 1 meter
- Compare to radiation warning label limits or shipping papers

If radiation levels measured at 1 meter and on contact are consistent with the package's radiation warning label, the package is likely intact; no release is indicated based on radiological conditions.

If radiation readings at 1 meter or on contact are significantly higher than those indicated on the label, establish an initial isolation perimeter of at least 75 feet in accordance with the ERG and request radiological response support.



Other Important Hazards

In most rail accidents, primary hazards are:

- Locomotive diesel fuel spill
- Hydraulic fluids
- Railcar batteries
- Mechanical crush hazards

⚠ The radioactive material inside the Type B cask is solid fuel rods. They are not liquid, combustible, flammable, or explosive.

Responder Priorities

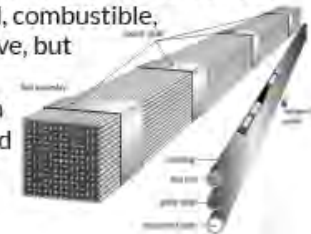
1. Life saving
2. Control fire
3. Secure scene
4. Establish perimeter
5. Meet with security escort team
6. Contact DOE/state radiation control

Cask Construction



What's Being Shipped

Inside the cask are 32 UNF assemblies from a pressurized water reactor (PWR), similar to the fuel bundle shown here. Each assembly is made of solid ceramic uranium oxide pellets sealed inside metal rods and grouped into a rigid structure. The fuel is not a liquid, combustible, flammable, or explosive, but it is radioactive and generates heat, which is why it is transported in a heavily shielded cask.



This Quick Reference Sheet was produced by the U.S. Department of Energy Transportation Emergency Preparedness Program. For additional information, visit the TEPP website at: www.cen.doe.gov/tepp or phone: (208) 528-8895



High Burnup Research Cask Project (HBURC) Job Aid

Shipping Used Nuclear Fuel (UNF)

DOE shipments of UNF by rail will look similar to the graphics below, with the flatdeck buffer railcars providing physical separation from the radioactive materials in the cask-carrying Atlas railcar. A rail escort vehicle (REV) will transport armed escorts along with security and safety monitoring equipment for each shipment.



Atlas Railcar and Cask Information

- 12-axle specialized railcar
- Flat deck railcar with attachment points for UNF transport equipment
- Real-time monitoring
- Weight: ~180 tons (cask, transport equipment-cradle, end stops, etc., and UNF)
- Type B(U)F package
- Shipping cask is a thick forged steel cylinder
- Large "shock absorber" impact limiters on both ends

Rail Escort Vehicle (REV)

The gray-colored REV provides 24/7 monitoring and surveillance and contains specially trained security personnel as well as extensive and redundant communications capabilities. In an emergency, members of the security escort team will meet arriving emergency responders. The REV will transport the security personnel during these shipments, providing a comfortable living and working environment.



About 1-7 Atlas railcar to transport the spent nuclear fuel casks



2 locomotives to power the train.

2 buffer railcars to separate the train crew and security personnel from the Atlas railcars.

1 rail escort vehicle to carry security personnel, surveillance, and train monitoring equipment.

Locomotive

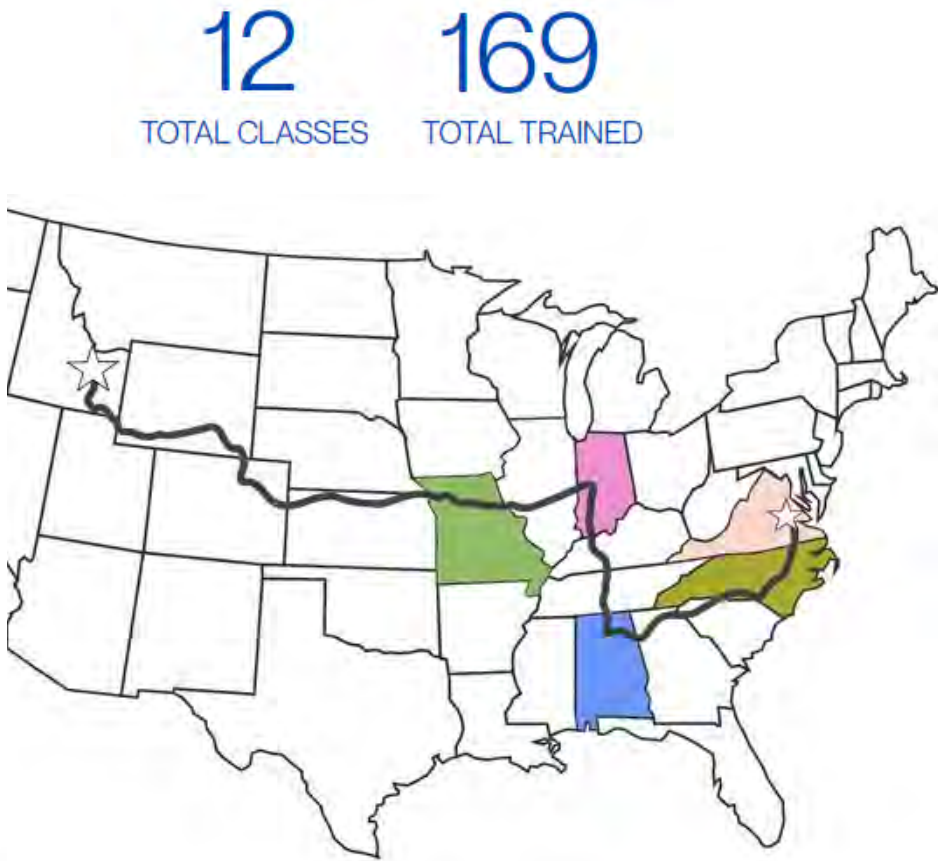
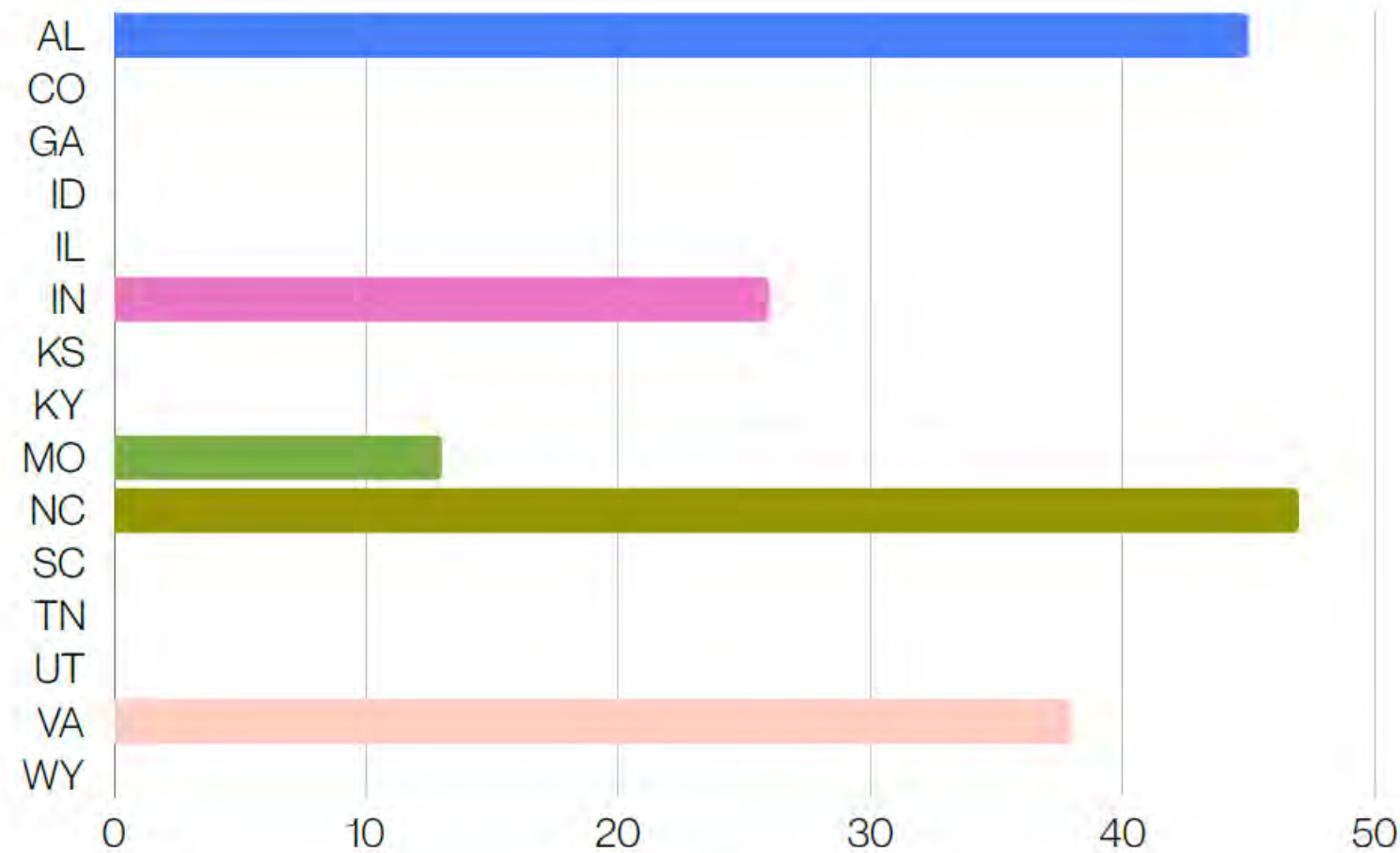
Modern diesel-electric locomotives generate the high voltage (600+ volts) needed to power the drive wheels. They have large batteries, fuel tanks hold ~6,000 gallons of diesel, 300 gallons of coolant, and 250 gallons of lube oil. The trains air braking system pressure operates between 90-100 PSI. If the braking system loses air pressure, expect the train to move. Never go between, under, or climb on railcars without notifying the engineer.

Emergency Phone Numbers

Alabama	205-280-2310	Virginia	804-674-2400
Colorado	303-877-9757	Wyoming	307-630-2767
Georgia	404-635-7200	Shoshone-Bannock Tribes	208-690-8918
Idaho	800-632-8000	Lumbee Tribe	910-474-9041
Illinois	217-782-7860	RAP Region 2 (VA, KY, TN, MO)	865-576-1005
Indiana	317-233-6115	RAP Region 3 (NC, SC, GA, AL)	803-725-3333
Kansas	785-291-3333	RAP Region 4 (KS)	505-845-4667
Kentucky	800-255-2587	RAP Region 5 (IN, IL)	630-252-4800
Missouri	573-526-9100	RAP Region 6 (CO, WY, ID)	208-526-1515
North Carolina	919-733-3300	DOE Watch DC Office	202-586-8100
South Carolina	888-481-0125		
Tennessee	615-741-0001		

HBURC Emergency Response Training to Date

STATE TRAINING TOTALS



Upcoming HBURC Training

- MERRTT – York, SC: September 21 – 22
- CMERRTT – Rock Hill, SC: September 25 – 25
- MERRTT (TtT) – Holly Springs, NC: September 29 – 30
- MERRTT – Wadesboro, NC: October 7 – 8
- CMERRTT – Kansas City, KS: October 16
- CMERRTT – Salina, KS: October 19
- MERRTT – Greeley, CO: October 19 – 20
- CMERRTT – Hays, KS: October 20

Upcoming HBURC Training

- CMERRTT – Topeka, KS: October 21
- MERRTT – Denver, CO: October 21 – 22
- CMERRTT – Golden, CO: October 23
- MERRTT – Golden, CO: October 26 – 27
- MERRTT – Limon, CO: October 28 – 29
- MERRTT – Disputanta, VA: October 29 – 30
- MERRTT – McCammon, ID: November 7 – 8
- MERRTT – Lancaster, SC: January 5 – 6, 2027

Upcoming HBURC Training

- TMERRTT – Rock Hill, SC: January 12 – 14, 2027
- TMERRTT – York, SC: January 15
- MERRTT – Greenwood, SC: January 16 – 17
- CMERRTT – Monroe, NC: January 19
- MERRTT – Monroe, NC: January 20 – 21
- MERRTT – Fayetteville, NC: January 26 – 27
- CMERRTT – Monroe, NC: March 16
- MERRTT – Monroe, NC: March 17 – 18

Questions

