

Madison County Nuclear/Radiological Incident Annex

Coordinating Agencies

Madison County Emergency Management Agency
Madison County Department of Health

Mississippi Department of Agriculture and Commerce
Mississippi Military Department
Mississippi Department of Wildlife, Fisheries & Parks
Mississippi Forestry Commission
Mississippi Department of Finance and Administration

State Support Agencies

Mississippi State Department of Health/Division of Radiological Health
MEMA Office of Radiological Emergency Preparedness
Mississippi Department of Transportation
Mississippi Department of Public Safety/Office of Homeland Security
Mississippi Department of Environmental Quality
Mississippi Attorney General's Office
Mississippi Department of Corrections

Introduction

General

The Nuclear Radiological Annex of the local Comprehensive Emergency Management Plan (CEMP) establishes the strategy for implementing and coordinating the local's proactive response to a nuclear radiological incident at a non-fixed nuclear facility. Homeland Security Presidential Directive 5 (HSPD-5) directs the Secretary of Homeland Security to inform America's citizens about incidents and preparedness measures. This task specifies the federal communications leadership role within the federal government and the implied requirement that the American public receive accurate, consistent, and timely information throughout incidents. The Mississippi Emergency Management Agency (MEMA) will serve as the lead state agency, along with the Mississippi State Department of Health (MSDH) and Mississippi Office of Homeland Security (MOHS), for response during a radiological incident.

In view of the unique challenges of informing the public during incidents, the concept of incident communications is now employed as the key task of the Joint Information Center (JIC). Incident communications outlines specific public information management processes for use during disaster and emergencies. The State of Mississippi utilizes this approach to inform the citizens of Mississippi during incidents within the state or affecting the state.

Purpose

The Nuclear/Radiological Support Annex describes inter-agency response guidelines and procedures for responding to nuclear and/or radiological incidents that do not involve fixed nuclear facilities (FNF). These guidelines and procedures are designed to allow for the rapid deployment of state resources to prepare and deliver a coordinated and sustained response to radiological incidents in Mississippi.

Scope

A nuclear radiological incident may impact local and/or State government and could require prolonged emergency services to be activated, thereby causing interruption of continuity of operations/government.

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During events that require immediate action to protect public health and safety, an incident commander must make decisions to the best of his/her ability. As with all emergency response activities, the incident will be managed using the National Incident Management System (NIMS).

At the scene of any radiological incident, it is unlikely that any first responders will possess the expertise needed to serve as the radiation subject-matter-expert (SME), a component of NIMS. However, the assistance of a radiation SME can be obtained rapidly by contacting the Mississippi Emergency Management Agency's (MEMA) 24-hour hotline at 1-800-222-MEMA (6362).

In the event of an incident that involves radioactive material or radiation, the State Emergency Operations Center (SEOC) will contact the Mississippi State Department of Health/Division of Radiological Health (MSDH/DRH), which is the lead agency for technical knowledge on radiation control and response. MSDH/DRH will then dispatch personnel to contact both the local emergency management agency and the incident commander to serve as the SME.

Using the services of the SME and procedures found in the CEMP and the Mississippi Radiological Emergency Preparedness Plan (MREPP), the incident commander (IC) should be able to protect the health and safety of the public, including emergency response personnel. Although the MREPP serves as the response plan for Fixed Nuclear Facilities (FNFs) that affect the state, the radiological assessment and medical services procedures outlined in the MREPP could potentially be used, as needed, during a radiological emergency.

Policies

- During a radiation emergency, all organizational elements of the state required to accomplish the mission of this plan will be utilized.
- In the event of circumstances that require an immediate action to protect the public health and safety, the incident commander is authorized to order or implement necessary protective actions.
- If possible, the incident commander or designated entity should consult with, and seek the advice of, the radiation SME on any decisions involving radiation prior to taking such actions.
- The radiation emergency response actions shall be coordinated with appropriate local officials following established procedures.

Situation and Assumptions

Situation

A radiological incident may constitute a health hazard for the general population through direct exposure or the release of radioactive materials into the environment. Positive and prompt analysis, coupled with effective decision making, will be required to protect public health and safety in case of such an incident. Radiological incidents may involve transportation accidents, industrial accidents, fires, weather related incidents, and deliberate actions such as the use of a Radiological Dispersal Device (RDD or dirty bomb).

Assumptions

- It is most likely that a radiological incident will develop in an extremely short period of time, as a vehicle accident, a fire, a weather-related incident, an industrial incident, or an RDD. In the case

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where an incident develops in an extremely short time frame, rapid communication and quick decision making to implement actions to protect the public will be necessary.

- An incident could develop slowly, providing sufficient time to institute effective protective measures.
- The IC or designated entity will notify the local emergency management agency (EMA) as quickly as possible. The local EMA will then notify MEMA through the 24-hour warning point.
- Upon advisement of a radiological component to the incident, MEMA will notify the Director of Mississippi State Department of Health/Division of Rad Health (MSDH/DRH) so that a subject matter expert can be dispatched to the incident.
- MSDH/DRH will serve as the technical experts for radiological incidents in the state and is directed by the State Health Officer. Where immediate emergency action is necessary, and on a day-to-day basis, the MSDH/DRH serves as the lead state agency and will implement necessary protective actions to protect the public.

Concept of Operations

A radiological incident at any location in the State of Mississippi may constitute a health hazard for first responders and the populace through direct exposure to the radiation or from the spread of radioactive materials. Positive and immediate analysis, coupled with effective decision-making, will be required to protect the public in case of such an incident.

Response Actions

- For incidents where it is known that radioactive materials are involved (i.e., a transportation accident involving radioactive materials or the use of an Radiological Dispersal Device or an RDD), first responders should use portable radiation detectors (survey meters) to determine if abnormal radiation dose rates are present. The detectors should be turned on prior to arriving at the scene. As responders approach the scene, increases in instrument readings should be observed. Increases indicate abnormal radiation dose rates. This applies to all incidents such as transportation, fire, weather related, industrial accident or any explosion, including RDDs. For a fire or industrial incident at a non-fixed nuclear facility, staff should be aware of the presence of radioactive material on site. A listing of all sites where radioactive materials is stored and used in Mississippi is available at MSDH/DRH.
- For all transportation accidents, first responders should look for any U.S. Department of Transportation required placards on involved vehicles that indicate the presence of radioactive material. Shipping papers are another source of information for determining contents of a vehicle. It is important to note that many shipments of radioactive material destined for medical use are shipped in vehicles which require no external placards. Words such as “*nuclear pharmacy*”, appearing on the vehicle will be clues to contents of the vehicle. Package labels with the words “*Radioactive*” or “*Radioactive-NOS*” will also alert responders to radioactive material in transit.
- If radiation is detected or suspected because of placards on a vehicle or by other means, the State Emergency Operation Center's 24-hour communications center should be immediately notified of an incident involving radiation or radioactive material.
- Once sufficient information is obtained, staff of MSDH/DRH will notify MEMA of the nature of the incident, and any public health order or recommendations that have been issued. MEMA will

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summon state resources needed in managing the incident, such as law enforcement, military, and transportation.

- The Director of MSDH/DRH or designee will proceed to contact local emergency management agency staff or the on-scene incident commander, or designated entity, and will serve the incident commander as the subject matter expert (SME) for radiation and provide instructions and guidance for managing the radiological incident. This contact will be maintained until staff of MSDH/DRH arrive at the scene and report to the incident commander, or if needed. MSDH/DRH staff will assimilate into a unified command and assume all responsibilities, in coordination with the incident commander, for managing the radiological aspects of the incident.
- The Director of MSDH/DRH or designee will contact and dispatch MSDH/DRH staff to the scene of the incident as appropriate.
- As a member of the unified command, MSDH/DRH staff will determine appropriate actions to be taken in managing all radiological aspects of the incident, through recovery and clean-up operations.

Responsibilities

Madison County Department of Health

- Provide on-scene radiological subject matter experts (SMEs).
- Provide trained personnel to serve as radiological emergency response team members.
- Conduct dose assessment and provide data to senior leadership for decision making.

Madison County Emergency Management Agency

- Assist with initial assessment and provide information recommendations to key local elected officials.
- Coordinate needed resources in the protection of lives and property.
- Gather and disseminate through the Joint Information Center (JIC) information pertinent to the incident.
- Facilitate Statewide Mutual Aid Compact (SMAC) requirements based on the incident.
- All other needs as deemed appropriate.

Mississippi State Department of Health/Division of Radiological Health (MSDH/DRH)

- Provide on-scene radiological subject matter experts
- Provide trained personnel to serve as radiological emergency response team members
- Conduct dose assessment and provide data to senior leadership for decision making

Mississippi Emergency Management Agency (MEMA)

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- Assist with initial assessment and provide information recommendations to key state and local elected officials
- Coordinated needed resources in the protection of lives and property
- Gather and disseminate through the Joint Information Center (JIC) information pertinent to the incident
- Facilitate Statewide Mutual Aid Compact (SMAC) requirements based on the incident
- All other needs as deemed appropriate

Mississippi Department of Public Safety/Office of Homeland Security

- Assist with initial assessment and provide information to key state and local elected officials
- Coordinate needed resources in the protection of lives and property (i.e. - law enforcement, chemical, biological, radiological, nuclear, or explosive technical assistance).
- Request mobilization of Regional Response Team (RRT) resources based on incident and through mission assignment from MEMA.
- All other needs as deemed appropriate.

Radiological Resources and Training Resources

Radiological Detection Instruments

All state organizations with radiological responsibilities use the following instruments for detection of radiation:

- Ludlum 14-C Survey Meter
- CDV-700 Survey Meter
- ArrowTech CD-730 High Range Self-Reading Dosimeter (0-20 R)
- ArrowTech CD-138 Low Range Self-Reading Dosimeter (0-200mR)
- Mirion Technologies Thermo-Luminescent Dosimeter (TLD)

Radiological Training Resources

- Specialized radiological training for fire and law enforcement personnel, emergency medical personnel, and local officials is offered by MEMA. This training provides a basic understanding of radiation and radiation terminology and principles of radiation protections, with emphasis on the use of radiation detection equipment. This training can be tailored for specific needs including training at a site within the jurisdiction.

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- Additional hands-on training is offered through the Center of Domestic Preparedness at the Noble Training Center in Anniston, Alabama. This training is scheduled through the Federal Emergency Management Agency.

Review and Maintenance

As a minimum, the local agency contact will coordinate and conduct an annual review of this annex with all support agencies. Additional reviews may be conducted if experience with an incident or regulatory change indicate a need. Recommendations for change will be submitted to the **Madison** County Board of Supervisors for approval, publication, and distribution.

Appendices

Appendix A - Acronym List

Appendix B – Protective Actions Guide

Appendix C – Personal Protective Guidelines

Appendix D – On-Scene Guidelines

Appendix A- Acronym List

EMA- Emergency Management Agency

FEMA - Federal Emergency Management Agency

FNF- Fixed Nuclear Facilities

IC - Incident Commander

JIC- Joint Information Center

LSA - Low Specific Activity

MDOT - Mississippi Department of Transportation

MEMA- Mississippi Emergency Management Agency

MREPP- Mississippi Radiological Emergency Preparedness Plan

MSDH/DRH- Mississippi State Department of Health/Division of Radiological Health

NIMS- National Incident Management System

RDD- Radiological Dispersal Device

SME- Subject Matter Expert

TEDE - Total Effective Dose Equivalent

TI - Transportation Index

Appendix B

PROTECTIVE ACTIONS GUIDE

This attachment is to provide guidance to an incident commander for the management of a radiological incident.

I. GUIDANCE

- A.** The incident commander will assure that an evaluation has been made to determine if radioactive materials are involved in the incident. The primary means of making such a determination will be by the use of a radiation detector or radiation survey meter. Radiation detectors should be turned on and observed prior to and while approaching the scene, in addition to being used at the scene. Other means for determining if radiation is involved include statements from on-scene persons (i.e., a plant manager), observing placards on vehicles, review of shipping papers, and observing labeling on vehicles involved in the incident (e.g., name of a nuclear pharmacy on a door panel or package).
- B.** Emergency response vehicles and equipment should approach the scene from an upwind direction if possible and stage operations in an area that does not exceed a radiation dose rate of 2 milliroentgens per hour as recorded by the radiation detector. It should be noted that even if operations are staged in a dose rate area less than 2 milliroentgens per hour, equipment and personnel may become contaminated but at no risk for injury to responders. Contamination can simply be removed by washing off at a later time or contained.
- C.** Guidance contained in the *“2014 Emergency Response Guidebook”* (or current edition) shall be used as guidance for determining the use of protective gear needed to be worn by emergency responders, techniques for fighting fires, and evacuation distances from the immediate incident scene, as well as other protective action suggestions. Specific guidance and recommendations can be provided by the radiation subject matter expert.
- D.** If radioactive materials or radiation are suspected or known to be present, the incident commander or designated entity should, as soon as possible, contact the State Emergency Operation Center's 24 hour communication center and advise Mississippi Emergency Management Agency of a radiological incident.
- E.** The incident commander must provide the local emergency management agency (EMA) staff with an on-the-scene contact number. Local EMA will provide that contact number to the Director of the Mississippi State Department of Health Division of Radiological Health (MSDH/DRH) in order to establish communication with the incident commander should lines of communication with the local EMA staff fail. MSDH/DRH staff will communicate with the incident commander through the local EMA staff if possible.
- F.** MSDH/DRH staff will provide, through the local EMA staff, advice and information needed to assist in managing the incident.
- G.** The local EMA should be kept current with conditions at the scene in order to fulfill their role of coordination, communication, and support.

- H. The incident commander or designated entity should maintain an open line of communication with local Emergency Management Agency (EMA) staff. Local EMA should maintain an open line of communication with Mississippi State Department of Health Division of Radiological health (MSDH/DRH) staff. Open lines of communication assure that needed support from both local EMA and the MSDH/DRH can be provided.
- I. The incident commander should follow guidance and instructions provided by the radiation subject matter expert (SME) in managing the radiological aspects of the incident.
- J. The incident commander should consider establishing a zone around the incident site in which only needed and authorized persons are allowed to enter. See Attachment D for guidance.
- K. The first priority for first responders should be the care of persons who may have been injured in the incident. If radiation is present, injured persons should be removed from the scene and transported for medical care as rapidly as possible, irrespective of any contamination on injured persons.
- L. Contamination can be easily managed at the medical facility. Refer to the guidance given in the **“2014 Emergency Response Guidebook”** (or current edition), which substantiates this statement.
- M. Fires may be managed using guidance contained in the **“2014 Emergency Response Guidebook”** (or current edition). The fact that radioactive materials are present does not alter the firefighting methods.
- N. Once injured persons are removed and fires are out, the radiation SME will likely suggest that all nonessential persons be kept outside the restricted or controlled area(s).
- O. Once MSDH/DRH staff arrive at the scene and report to the incident commander, boundaries of the restricted area or controlled area will be reevaluated and adjusted as necessary, such that no person is within a radiation dose rate area that exceeds 2 milliroentgens per hour.
- P. Any emergency response equipment or personnel within a radiation dose rate area exceeding 2 milliroentgens per hour will be required to relocate to areas that do not exceed 2 milliroentgens per hour.
- Q. When staff of the Mississippi State Department of Health Division of Radiological Health arrives at the scene, they will report to the incident commander and assimilate into the unified command and manage the radiological aspects of the incident, in coordination with the incident commander and other local officials, through clean-up operations.
- R. Using information provided from the scene, the radiation SME will make an initial estimate of radiation dose received by first responders and the population. This initial value may be used to determine protective actions until more accurate information is available. As more accurate information becomes available, the projected radiation dose to the responders and radiation dose to the population will be adjusted to reflect the revised calculations.

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- S. If radioactive material has been released from storage containers and dispersed to the atmosphere, there may be radiation dose rates at extended distances from the immediate accident site.
- T. The areas suspected to be affected by a radioactive plume will be estimated by Mississippi State Department of Health Division of Radiological Health (MSDH/DRH) staff. In the absence of definitive information about the size and location of the area subjected to an actual or projected exposure, the area will be assumed to extend 45 degrees on either side of the line extending downwind. A determination of wind direction will be important in managing the event. In the absence of definitive methods of determining wind direction, simple means will be useful.

PROTECTIVE ACTIONS GUIDE

Protective action will be outlined according to the emergency classification. Standard, Extended and Rapidly Progressing Severe Accident Protective Actions, incorporating the recommendations outlined in NUREG-0654 Supplement 3 guidance.

For each PAG there is a corresponding group of protective actions which are necessary for protection of the general public and/or emergency workers. Protective actions range from taking no action to evacuation of affected areas. The appropriate protective actions for the general public, special needs populations and emergency workers will be recommended by MSDH/DRH to MEMA and to local government. Implementation of the protective action is the responsibility of MEMA, other state agencies, and local government.

EPA PROTECTIVE ACTION GUIDES (PAGs)

ACCUMULATED DOSE

	mRem	Rem
<hr/>		
General Population		
TEDE (whole body)	1000	1
CDE to the thyroid	5000	5
<hr/>		
Emergency Worker		
TEDE (whole body)	5000	5
CDE to the thyroid	25000	25
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Protective Action Recommendations

Standard Protective Action Recommendation	Extended Protective Action Recommendation
<p style="text-align: center;">Standard PAR</p> <p>EVACUATE: 2 Miles All Sectors</p> <p style="text-align: center;"><u>And</u></p> <p>EVACUATE: 5 Miles Downwind Sectors</p> <p style="text-align: center;"><u>And</u></p> <p>Monitor and Prepare: Remainder of 10 Mile Emergency Planning Zone (EPZ) with the exception of areas previously evacuated.</p> <p style="text-align: center;"><u>And</u></p> <p>Consider prophylactic use of potassium Iodide in accordance with State Plans</p>	<p style="text-align: center;">Extended PAR</p> <p>EVACUATE: 2 Miles All Sectors</p> <p style="text-align: center;"><u>And</u></p> <p>EVACUATE: 10 Miles Downwind Sectors</p> <p style="text-align: center;"><u>And</u></p> <p>Monitor and Prepare: Remainder of 10 Mile Emergency Planning Zone (EPZ) with the exception of areas previously evacuated.</p> <p style="text-align: center;"><u>And</u></p> <p>Consider prophylactic use of potassium Iodide in accordance with State Plans</p>
<p>Impediments to Evacuation</p> <p>Potential Impediments include:</p> <ol style="list-style-type: none"> 1. Evacuation support not in place 2. Hostile Action 3. Adverse Weather <p>Grand Gulf and the Off-site response organizations will agree in advance which impediments should be considered when issuing PAR's</p>	

Rapidly Progressing Severe Accident PAR

Condition	Protective Action Recommendation
Rapidly Progressing Severe Accident	<p style="text-align: center;">RPSA PAR</p> <p>EVACUATE: 0-2 mile radius</p> <p style="text-align: center;"><u>And</u></p> <p>EVACUATE: 2-10 miles Downwind</p> <p style="text-align: center;"><u>And</u></p> <p>Monitor and Prepare: Remainder of 10 Mile Emergency Planning Zone (EPZ)</p>

Appendix C

PERSONAL PROTECTIVE GUIDELINES

This attachment is to delineate the monitoring and control of external gamma exposure and internal or external radioactive contamination on members of the public and/or emergency workers.

I. First Responders and Emergency Workers Dose

Means for measuring the radiation dose to first responders may not be available initially. However, the objective is to minimize radiation exposure to all persons involved in the incident and to determine their accrued radiation dose.

It is the expressed policy of the State of Mississippi that emergency workers do not exceed radiation doses defined in Volume III of the Mississippi Comprehensive Emergency Management Plan, Mississippi Radiological Emergency Preparedness Plan. The Mississippi State Health Officer may grant exemptions to these radiation dose limits in accordance with life saving procedures.

Dosimetry for emergency workers, although not likely available in the very early phase of the incident, will be provided as quickly as available to all personnel involved in emergency operations. Emergency phase radiation dose limits for emergency workers are listed in the following table:

**RADIATION DOSAGE LIMITS FOR EMERGENCY WORKERS
TEDE (Total Effective Dose Equivalent)**

Activity	Total Dose (TEDE)	Dosimeter Reading
Life Saving	25 rem	5 rem
Evacuating Known Residents	10 rem	2 rem
Fighting Fires	10 rem	2 rem
Protecting Property, Patrolling Evacuated Area, and Manning Check Points	1 rem/day 5 rem max	200 mrem/day 1 rem max
Environmental Monitoring and Locating Airborne Releases	1 rem/day 5 rem max	200 mrem/day 1 rem max

In addition to the above individual dose limits, all emergency workers are advised to make every reasonable effort to limit their dose, while at the same time accomplishing their emergency duties.

II. CONTAMINATION CONTROL

The need to monitor all evacuees and emergency response workers from the evacuated areas is neither anticipated nor deemed practical since many of these individuals may have already departed by the time monitoring teams are available to perform this function. Initial contamination monitoring will be limited to emergency personnel and evacuees near the scene of the incident, and to persons who believe they may have been contaminated.

The magnitude of this monitoring task will be particularly prevalent where radioactivity is

detected beyond the immediate area of the incident where large numbers of the public may be involved.

Screening for the presence of contamination on persons at the scene, including emergency personnel and equipment leaving evacuated areas, will be performed at designated locations outside of contaminated areas and outside of areas having elevated radiation levels.

Equipment which cannot be readily decontaminated will be placed in segregated storage until sufficient time, material, and manpower can be made available to complete the procedure.

Screening of evacuees for contamination will be done in areas of background radiation. Emergency radiation workers and evacuees will be surveyed using appropriate radiation survey instruments, which may include portable "Portal Monitors" supplied by Mississippi Emergency Management Agency (MEMA) or radiological emergency preparedness host counties or by using available hand-held survey meters. Any survey using hand-held meters should be made holding the probe approximately 1 inch from the surface and moving the probe at the speed of no more than 1 inch per second.

Unless otherwise directed by the Mississippi State Department of Health Division of Radiological Health (MSDH/DRH), "**contamination**" is defined as, "an open window reading of twice pre-accident background (2 x background)."

Initial decontamination will consist of first removing contaminated clothing (this should remove approximately 80 percent) then washing body parts with copious quantities of mild soap and water. Careful attention should be paid to the hair. Decontamination will not take place in environments that may be detrimental to public health, such as cold weather or the lack of warm water or lack of privacy.

For screening mass numbers of the public for contamination, MEMA will provide portable radiation monitors capable of monitoring both persons and/or vehicles. Consideration must be given for establishing mass screening locations following a radiological incident. A large area with adequate parking (i.e., a football, soccer, or baseball field) will serve this need. For screening very large numbers of people for real or suspected contamination, the MSDH/DRH may recommend following guidance in National Council on Radiation Protection Report #138, regarding sending persons home with information for self decontamination.

Persons should not be held against their will even if contaminated.

Transport of all persons in need of medical care must take place immediately without regard to radiation or contamination levels. Do not decontaminate persons in need of medical care prior to transport. Decontamination can take place at the medical facility. Wrapping a sheet around a person will confine much of the contamination. If something does get contaminated, it can be easily cleaned up.

III. MEDICAL SERVICES

MISSION

To provide medical care on an uninterrupted basis during a radiological incident.

SITUATION AND ASSUMPTIONS

A radiological incident could result in the evacuation of much of the populace near the scene of the incident.

Protective actions, such as evacuations, may be ordered by the incident commander in coordination with the Mississippi Emergency Management Agency and Mississippi State Department of Health Division of Radiological Health (MSDH/DRH). These protective measures will be taken so as to protect public health and safety of the public.

Medical institutions should be contacted by ambulance operators prior to arrival of patients and informed that a possibly contaminated patient is in transport. Wrapping the possibly contaminated individual in a sheet will minimize the spread of contamination while in transport.

The institution's procedures for controlling radioactive material contamination should be instituted. If guidance is needed by the institution, that guidance can be provided immediately by contacting MSDH/DRH. The nuclear medicine staff of all hospitals should be able to provide assistance in managing possibly contaminated individuals.

Appendix D

ON-SCENE GUIDELINES

I. AT THE SCENE PROCEDURE GUIDELINES

Upon arrival at the scene, first responders should visually survey the surrounding area. If possible, emergency response vehicles should be parked upwind of the incident/accident scene and outside any area where the radiation dose rate exceeds 2 milliroentgens per hour, avoiding smoke from fire or any area of liquid spills or leaks from transport vehicles or containers that may have been broken or ruptured in the incident/accident. It should be noted that vehicles, if parked inside this area, may become contaminated. However, if they become contaminated, they can be cleaned or decontaminated.

A. KEY ITEMS in identifying a potential radiation accident include “RADIOACTIVE” transport placards attached to vehicles. Placards are required on vehicles transporting one or more packages bearing “Radioactive-Yellow III” labels, even if in Type A packages. Low Specific Activity (LSA) radioactive materials transported as full loads or in exclusive use vehicles will require that such vehicles be placarded.

B. LABELS are required on the external surface of packages containing radioactive material. The required label is determined by the external radiation exposure rate. Package labels must specify the radionuclide (kind of radioactive material) contents and quantities (activity expressed in curies or becquerels, or subunits thereof). In addition, Yellow II and Yellow III labels contain the TRANSPORT INDEX, which is equal to the maximum exposure rate (measured in millirems per hour or millisieverts per hour) measured at 1 meter from the package.

C. REQUIREMENTS FOR PACKAGE LABELS

TRANSPORT INDEX (TI) LABEL	MAXIMUM RADIATION LEVEL AT ANY POINT ON EXTERNAL SURFACE	LABEL CATEGORY
“0” (Zero) (if measured TI is not greater than 0.05)	Not more than 0.005 mSv/hr (0.5mrem/hr)	WHITE I
More than “0” but not more than 1	More than 0.005 mSv/hr (0.5 mrem/hr, but not more than 0.5 mSv/hr (50 mrem/hr)	YELLOW II
More than 1, but not more than 10	More than 0.5 mSv/hr (50 mrem/hr) but not more than 2 mSv/hr (200 mrem/hr)	YELLOW III
More than 10	More than 2 mSv/hr (200 mrem/hr), but not more than 10 mSv (1000 mrem/hr)	YELLOW III (must be shipped under EXCLUSIVE USE provisions)

A package which exceeds radiation levels in paragraph C. must be transported in “EXCLUSIVE USE” shipment ONLY and the radiation levels must not exceed the following during transportation:

1. 200 millirem per hour (2 mSv/hr) on the external surface of packages unless the following conditions are met, in which case the limit is 10 mSv/hr (1,000 mrem/hr)
 - The shipment is made in a closed transport vehicle;
 - The package is secured within the vehicle so that its position remains fixed during transportation; and
 - There is no loading or unloading operations between the beginning and end of the transportation
2. Shipment is made in a “CLOSED TRANSPORT VEHICLE” (except aircraft) with radiation limits listed below
3. LSA packages do not require these labels; however, they must be marked as “RADIOACTIVE - LSA” and not exceed:
 - 200 millirem per hour (2 mSv/hr) at any point on the outer surface of vehicle.
 - 10 millirem per hour (0.1 mSv/hr) at any point 2 meters (6.6 feet) from the lateral surface of the vehicle.
 - 2 millirem per hour (0.02 mSv/hr) in any normally occupied space (does not apply to private carrier if their personnel wear dosimetry devices).

D. SHIPPING PAPER information will be of great value in determining initial assessment of the possible consequences of a transportation accident. DOT regulations do not specify a format for shipping papers, but the papers must show the following information:

- Proper shipping name (i.e., “RADIOACTIVE MATERIAL - EMPTY PACKAGES”, “RADIOACTIVE MATERIAL - INSTRUMENTS AND ARTICLES”)
- A four-digit hazardous materials identification number must appear following the shipping name. The identification number provides the key to the emergency action guides in the “**2014 Emergency Response Guide Book**” (or current edition).
- Activity of the radioactive material in curies, millicuries, microcuries, becquerels, etc. “LARGE QUANTITY” must be shown if the quantity meets that definition.

- Name of the radionuclide.
- Description of the physical and chemical form of the material (if the material is not in special form (i.e., sealed sources)).

II. INITIAL MONITORING UPON ARRIVAL AT THE SCENE TO DETERMINE THE EXTENT OF RADIATION LEVELS AND POSSIBLE SPREAD OF CONTAMINATION

This should be done as expeditiously, and as unobtrusively as possible following instructions provided by the radiation SME.

III. ISOLATION OF THE INVOLVED AREA THROUGH THE USE OF BARRICADE, ROPE, OR FENCES

Almost anything that can help provide a visual and/or physical barrier can be utilized - such as police and fire department barricades, barrier tape, or hardware store rope. In placing the barricades, consideration should be given to present and possible future weather and wind conditions. It is better to enclose a large area and reduce the size later than to enclose an area too small and have to enlarge it later. Ideally, the barrier line should be placed so that at any point along it, radiation dose rates do not exceed 2 milliroentgens per hour. The incident commander must use good judgment in establishing such boundaries. Due to the location of the incident, it may not be practical to place the barrier at 2 milliroentgens per hour locations. The incident commander may consider establishing boundaries in excess of 2 milliroentgens per hour as needed in managing the incident scene. Where levels are exceeded, the incident commander should discuss reasons for the departure with the radiation SME. Reasonable efforts should always be made to locate the boundary where radiation levels are as low as reasonably achievable. Boundaries can be established where radiation levels are near background.

IV. HOT LINE PROCEDURES TO CONTROL SPREAD OF CONTAMINATION

Designated entry and exit points through which all traffic (personnel) must flow (a "HOT-LINE"), should be established to avoid and control the unnecessary spread of contamination. The "HOT LINE" entry and exit points should be upwind from the scene of the incident. The incident commander should establish such a line as time permits. The line simply limits the size of the area and the number of persons requiring decontamination at a later time. Personnel entering the area should be logged in and monitored for contamination upon leaving, and have access only after it is determined that the proper protective clothing and equipment are being utilized. Law enforcement personnel may be required to assist with control of personnel entering the area and exiting the area.

Injured persons should be transported without regard for contamination. DO NOT DELAY TRANSPORTATION OF INJURED PERSONS IN NEED OF MEDICAL ATTENTION TO MONITOR FOR CONTAMINATION. A sheet wrapped around an injured person will minimize spread of contamination. Decontamination can take place at the facility where medical care is provided. Contaminated persons do not represent a threat to emergency response workers or medical personnel.

V. RECOVERY AND CLEAN UP

The recovery and cleanup of a spill of radioactive material involve radiological activities that require specialized training and licensure by the MSDH/DRH and must not be attempted by untrained persons.

Radiological accident/incident scenes will be cleaned to appropriate standards as defined by MSDH/DRH guidelines and procedures. Cleanup of radiological contaminated sites must be done by persons authorized by a radioactive material license to perform such services.