

Annex 25, Tab I (Radiological Protection) to the Darlington County Emergency Operations Plan

I. Introduction:

- A. South Carolina government at all levels must maintain the means to protect the populace from radiological exposure regardless of origin. To this end, state and local emergency preparedness agencies have developed emergency procedures and exposure guidelines necessary to protect emergency workers and citizens.
- B. Darlington County is subject to the effects of a radiological incident at any time. The incident may occur as a result of an industrial accident (fixed nuclear facility, steel industry, gas line survey, etc), a transportation accident (rail or highway) or as a result of a deliberate act of a subversive organization or activity. Residents of Darlington County could be exposed to radiation as a result of a release from a transportation accident, industrial accident or as a result of a deliberate act of a subversive organization or activity involving radioactive materials.
- C. This annex provides specific guidelines necessary to protect first responders and local citizens should a radiological incident/accident occur. Much of the information in this annex is taken from the fixed nuclear facility (FNF) annex. Radiological incidents or accidents are not strictly an FNF event. The Robinson Plant is a valuable source of assistance in a radiological event. Not only can they provide technical assistance, but are an excellent resource for trained personnel. This annex may be implemented with Annex I (Terrorism), Annex P (Hazardous Materials), Annex Q (Fixed Nuclear Facility) or any annex in the EOP necessary to insure the safety of first responders and citizens.

II. Mission:

- A. To provide a well-organized and effective radiological protection system in the event an incident or accident which may occur with or without warning involving radioactive materials.
- B. To specify the responsibilities for incident assessment, plume monitoring, incident management, protective action measures, monitoring of the general public and emergency workers for radioactive contamination to include clothing and equipment and for the disposal of radioactively contaminated waste.
- C. To provide the coordination necessary to ensure an effective radiological protection program within Darlington County in order to minimize the effects

of radiation hazards from a radiological accident, regardless of origin, in terms of injury and loss of life.

III. Concept of Operations:

- A. In the event of a release or threat of release of radionuclides, regardless of origin, DHEC will assess the need for and recommend to the SCEMD to initiate radiological exposure control activities. SCEMD will instruct the county to commence radiological exposure control operations (monitoring, decontamination, recording, etc.), and to take the recommended protective action measures. The general public and emergency workers need not be monitored for radionuclides, or decontaminated, until there is an order to do so. That order will be the result of a deliberate decision at the state level. The decision will be relayed to the county in the form of an instruction from the SEOC to implement radiological exposure control response.
- B. Upon receipt of the order, Darlington County will implement the county's radiological protection system. In a fast moving event, Darlington County will implement this annex as soon as it is determined that radiological exposure control is necessary.
 1. Should a nuclear accident occur it will be the responsibility of Darlington County Emergency Services Director to provide for an effective radiological protection service.
 2. Radiological service will be comprised of a Radiological Protection staff functioning from the EOC, a shelter monitoring capability in each shelter, and a monitoring capability for emergency service organizations and critical facilities. Radiological exposure control efforts will be coordinated and directed by the Radiological Protection Officer.
 3. Radiological operations will be time phased in the following categories:
 - a. Pre-Disaster - Which is the time for planning, training and developing the Radiological Exposure Control program.
 - b. Disaster - When an accident occurs during this phase survival, shelter and exposure control are the prime counter-measures.
 - c. Recovery - The time when re-establishment of vital facilities may begin.
 4. The Radiological Protection Officer will be responsible for training of radiological personnel.
 5. Radiation Detection instruments will be stored and distributed in accordance with Appendix 3.

6. State support of this Annex will be in accordance with the South Carolina Emergency Operations Plan and SC Operational Radiological Emergency Response Plan.
- C. Exposure levels have been established by both the EPA and State to protect emergency workers. The levels established by the State are 1/5 of the EPA levels. These levels have been published in a document called the Protective Action Guide (PAG). Emergency workers are not allowed to exceed the PAG except for situations that involve life saving activities and the protection of valuable property. Emergency workers must volunteer to return to the hot zone and exceed the PAG. However, emergency workers must be completely informed of any and all hazards they may face when exceeding the PAG. Once DHEC has established the higher exposure levels only the Emergency Services Director (or his designated representative) can direct emergency workers to return to the hot zone.
 - D. SRD's and PRD's will be distributed in accordance with Appendix 3 this annex.
 - E. The objectives of radiological protection in Darlington County are to:
 1. Minimize the effects of nuclear radiation on the people and their resources.
 2. Provide a system for analyzing and reporting dose and dose rates for exposure guidance.
 3. Provide the means for the protection of both the residents of Darlington County and those persons who may be relocated during crisis relocation.
 4. Provide for the decontamination and restoration of vital facilities and for recovery.
 - F. Organization:
 1. Radiological protection is unique because a day to day requirement for protection does not exist. Additionally, no single government agency is responsible for radiological protection. When required, radiological protection becomes a multi-agency responsibility between Emergency Management, EMS, Fire, Law Enforcement, the Pee Dee Health District, DHEC and the hospitals.
 2. See Organization Chart, Appendix 1.

IV. Responsibilities:

- A. The State of SC carries the overall responsibility for incident assessment,

field monitoring, representation at the utility EOF in an FNF event and for providing COBRA personnel in terrorist events. However County Emergency Services must be prepared to implement radiological protective measures until the State and DHEC can get teams in the field. State activities will be directed from the SEOC and specific recommendations will be communicated to the county EOC. Upon receipt of the recommended actions the county will take the necessary steps to implement these actions. Specific actions to be conducted by state agencies or activities are as follows:

1. SCEMD:

- a. Coordinates with DHEC, the utility, other state agencies, federal government agencies, and risk and host counties to determine protective actions to be taken by the general public and emergency workers.
- b. Provides periodic information to counties during the emergency.
- c. Specifies procedures for decontamination of the general public and emergency personnel clothing, vehicles and equipment.
- d. Distributes dosimetry and coordinates emergency distribution of dosimeters to risk and host counties.
- e. Collects PRDs, personnel and equipment monitoring records from the affected county after each incident .
- f. Assists DHEC with pre-distribution of Potassium Iodide (KI) to counties and emergency distribution of KI to state agencies, hospitals, prisons, and nursing homes.
- g. Provide guidance in the development of emergency plans.
- h. Provide guidance and support in the training of personnel.
- i. Provide radiation detection equipment.
- j. Provide guidance and assistance in the development and conduct of tests and exercises.
- k. Provide radiological data when appropriate.
- l. Provide technical assistance in matters pertaining to exposure control and decontamination.

2. DHEC:

- a. Calculates projected Total Effective Dose Equivalent (TEDE) to the whole body and Committed Dose Equivalent (CDE) to the thyroid and reports these projections as well as actual radiation exposure rates and total doses received by affected areas to SCEMD.
 - b. Maintains emergency worker and general public radiation exposure records.
 - c. In coordination with the Department of Agriculture and Clemson University Cooperative Extension Service (CUCES), conducts environmental, agricultural and food stuff sampling.
 - d. Reports its findings to SCEMD and recommends protective actions.
 - e. Provides pre-distribution of adequate quantities of KI to counties, the general population within 10 miles of a nuclear power plant (NPP) and maintains adequate quantities of KI for emergency issue to state government emergency workers, hospitals, prisons and nursing homes.
 - f. Provides technical guidance during evacuee monitoring and decontamination activities at mass care centers and public health support for evaluation, treatment and medical referral of excessively contaminated, contaminated injured, and/or sick evacuees.
 - g. Maintains close communication with the utility Emergency Operations Facility (EOF).
- d. South Carolina Department of Highways and Public Transportation:
 - 1. Provide Radiological monitoring support.
 - 2. Assist in decontamination.
 - e. South Carolina Forestry Commission:
 - 1. Provide radiological monitoring support.
 - 2. Assist in decontamination.
 - f. The Civil Air Patrol will provide aerial monitoring support through coordination with South Carolina Emergency Management Division.
- B. Darlington County: Darlington County will implement radiological protective actions, regardless of the event origin, as necessary to protect emergency workers and citizens. Specific responsibilities and functions for radiological protection are as follows:

1. Darlington County Emergency Services Director:
 - a. Appoint a qualified Radiological Officer (RO) and staff for radiological protective operations.
 - b. Recruit personnel from EMS, Fire, Law Enforcement, hospitals, Rescue Squads and industry to serve as staff for radiological protection operations.
 - c. Establish and maintain an effective radiological monitoring system for a variety of situations and incidents.
 - d. Develop and maintain radiological protection plans in coordination with local, state and federal agencies and/or departments.
 - e. Provide periodic testing and exercising of the radiological protection system.
 - f. Acquire the necessary radiation detection equipment necessary to implement radiological protection.
 - g. Prepares radiological protection information for release to the public through appropriate channels.
 - h. Coordinate radiological protection functions of other services within the county.
 - i. Provide annual training, dosimetry and KI to all county emergency workers, (including SCHP, SLED and DNR officers) supporting the county radiological protective actions.
 - j. Provide for monitoring and decontamination of the general public and emergency workers.
 - k. Provide for monitoring of pertinent personal items including vehicles and emergency equipment and decontaminates them as necessary.
 - l. Make appropriate medical referrals for further monitoring, decontamination, and treatment.
 - m. Maintain dosimetry, KI, and related record-keeping forms in a central location for emergency distribution to hospitals, nursing homes and prisons.
 - n. Maintain a radiological exposure record system.

- o. Certify farmers with livestock and necessary industrial workers as emergency workers for access to the plume exposure pathway EPZ.
 - p. Coordinate issuance of dosimetry.
 - q. Designate access control points where emergency workers can enter the EPZ or the hot zone.
2. Special Programs Coordinator:
- a. Assist in the development and maintenance of radiological protection plans in coordination with local, state and federal agencies and departments.
 - b. Assist in the coordination of radiological protection functions of all public safety agencies within the county.
 - c. Conduct annual radiological training, for all county emergency workers, (including SChP, SLED and DNR officers) supporting the county radiological protective actions.
 - d. Assist in the coordination and issuance of dosimetry and KI for all emergency workers.
 - e. Serves as Assistant RO during Disaster and Recovery Phases.
 - f. Develop and implement scheduled operational checks and annual calibration of radiological equipment.
3. Radiological Officer:
- a. Assist the Director in developing and maintaining a radiological protection system that will operate effectively to minimize the effects of radiation.
 - b. During disaster and recovery phases, manage the radiological protection system from the Emergency Operations Center to include analyzing radiological data, preparing reports and providing recommendations on permissible activities in a radiological environment.
 - c. Serve as a staff person and technical advisor to the Emergency Services Director.
 - d. Provide information and direction to all monitoring activities regarding exposure control.
 - e. Make recommendations and provide guidance in decontamination

activities.

- f. The following is a list of the responsibilities for the Radiological Officer during an FNF event. The responsibilities are established according to each phase of the emergency. However, these responsibilities or actions can be easily adapted to a non-FNF event. In non-FNF events they are intended to be used to guide the RDO thru the emergency. Steps or procedures may be eliminated or bypassed as necessary to adequately manage the emergency.

1. NOTIFICATION OF UNUSUAL EVENT (NOUE):

- A. Review the Darlington County Emergency Plan, Annex Q, Annex S and SCOREP, Annex F.
- B. Review Emergency Action Messages (EAM's) from the HBRSEP.
- C. Review requirements for staffing the RDO desk in the EOC.
- D. Escalate response to a more severe class if required.

2. ALERT:

- A. Staff RDO desk in the EOC on order from the Emergency Services Director.
- B. Review EAM's and insure appropriate weather data is available for posting to EAM chart in the EOC. Using 10-mile EPZ map, align hazard zone with current wind direction at plant site.
- C. Request permission from Emergency Services Director to initiate the dosimetry distribution plan.
- D. Insure sufficient copies of the following forms are available for emergency workers:
 - 1. KI User Information Sheet (Annex S, Appendix 5, DARCO EOP)
 - 2. Hand held Individual Monitoring/Decontamination Report Form.
 - 3. Vehicle Monitoring Form
 - 4. Emergency Worker Radiation Exposure Record , Appendix 2.
- E. Prepare the County's radiological equipment for distribution, maintaining the appropriate audit trail at all times.

- F. Prepare the Ludlum Model 3 (LM 3) meters for distribution.
 - 1. Record the serial numbers of all LM 3 meters.
 - 2. Verify calibration date (One (1) year for LM 3)
 - 3. Insure each instrument has a legible check source.
 - 4. Wrap each probe with Saran wrap, except for the probe screen where the plastic wrap would block the LM3 ability to detect Alpha particles. (Note: LM3's are not calibrated for Alpha particles.)
 - 5. Insure a supply of D cell batteries are available for LM 3's.
- G. Prepare Permanent Record Dosimeter's (PRD) for issue.
 - 1. Prepare PRD serial number list.
 - 2. Inspect each PRD for visible operational use.
- H. Prepare self-reading dosimeters (SRD) for issue.
 - 1. Prepare SRD serial number list.
 - 2. Verify leak test date (One (1) year for commercial SRD's; four (4) years for CDV-730's) Zero each SRD prior to issue to emergency workers.
- I. Prepare CDV-750, Model 6 chargers for issue; serial number issue is not required.
- J. Insure the appropriate PPE for emergency workers is available.
- K. Advise EPD of any additional equipment requirements.
- L. Prepare all requests for assistance, insuring these requests are approved by the EPD and submitted through IRIS to the SEOC.
- M. Be prepared to receive additional equipment from other agencies.
- N. Coordinate with the Robinson Plant, SC DHEC and SCEMD to insure appropriate protective actions are taken.
- O. Be prepared to brief the EOC staff and emergency workers on current and anticipated protective actions.

- P. Escalate response to more severe class if required.
3. SITE AREA EMERGENCY (SAE):
- A. Activate RDO desk in EOC.
 - B. Issue LM 3's to EMS Radiological Team and County Decontamination Team Leader.
 - C. Issue SRD's and PRD's to all emergency workers that will operate in the 10 mile EPZ (including SCHP and SC DOT).
 - D. Coordinate with the County Health Officer and SC DHEC on possible issue of KI tablets to emergency workers.
 - E. Maintain audit trail of all issued equipment.
 - F. Review EAM's and insure the EOC staff and emergency workers are advised of appropriate protective actions.
 - G. Be prepared to receive additional equipment from other agencies and issue the equipment as necessary.
 - H. Coordinate with the Robinson Plant and DHEC on the projected Plume path should a release occur.
 - I. If a release from the plant or escalation to a General Emergency is anticipated, recommend establishment of the County Decontamination Station.
 - J. Escalate to a more severe response class if necessary.
4. GENERAL EMERGENCY (GE):
- A. Continue to issue equipment and maintain audit trail.
 - B. Prepare for 24 hour operations, including exchanges of radiological equipment by emergency workers.
 - C. Monitor projected plume path and be prepared to make recommendations concerning the civilian population safety, emergency worker safety and emergency decontamination point operations.
 - D. Coordinate with County Health Officer and SC DHEC on issuance of KI tablets to deployed emergency workers.

- E. Monitor the evacuation process as it relates to the release at the plant and the projected plume path.

5. INGESTION PATHWAY:

- A. Develop dosimetry instructions for issue with SRD's and PRD's to civilian personnel unfamiliar with radiological instrumentation that may be issued by the EOC.
- B. Develop dosimetry issue plan for civilian personnel that must enter the 10-mile EPZ.
- C. Review emergency worker Radiation Exposure Records to insure the Protective Action Guides (PAGs) are not exceeded.
- D. Continue coordination with H.B. Robinson Plant and SC DHEC to insure the appropriate levels of protection are maintained.
- E. Spot check correct usage of radiological equipment within the county.
- F. Maintain 24 hour operation.
- G. Reproduce county passes for issue to civilians and other agencies that must enter the 10 mile EPZ.
- H. Continue to brief the EOC staff and emergency workers of appropriate protective actions that must be taken.
- I. Maintain audit trail of all issued radiological equipment.

V. ADMINISTRATION AND LOGISTICS:

- A. Administration: When activated, the RO will direct the radiological protection staff of Darlington County.
- B. Logistics: Equipment and supplies for EOC operations will be provided by Darlington County Emergency Services. Each individual organization assigned responsibilities will utilize radiation detection equipment issued to their organization and other supplies and equipment such as vehicles, etc., assigned their organization for normal use.
- C. Direction and Control:
 - 1. Radiological protection activities will be coordinated from the Darlington County EOC by the RO Officer.

2. The Darlington County EOC is located at the EMS Annex, 1625 Harry Byrd Hwy, (adjacent to the Sheriff's Office).

VI. Annex review and maintenance: This annex (ESF) will be reviewed annually by the primary action agency, department or individual with changes submitted to the Emergency Services Department by November 30th of each year for inclusion into the EOP. Following exercises or actual events the annex will be reviewed to determine if changes are required. If no changes are required, the primary action agency, department or individual will certify to the Emergency Services Director that the annex has been reviewed and changes are not required.

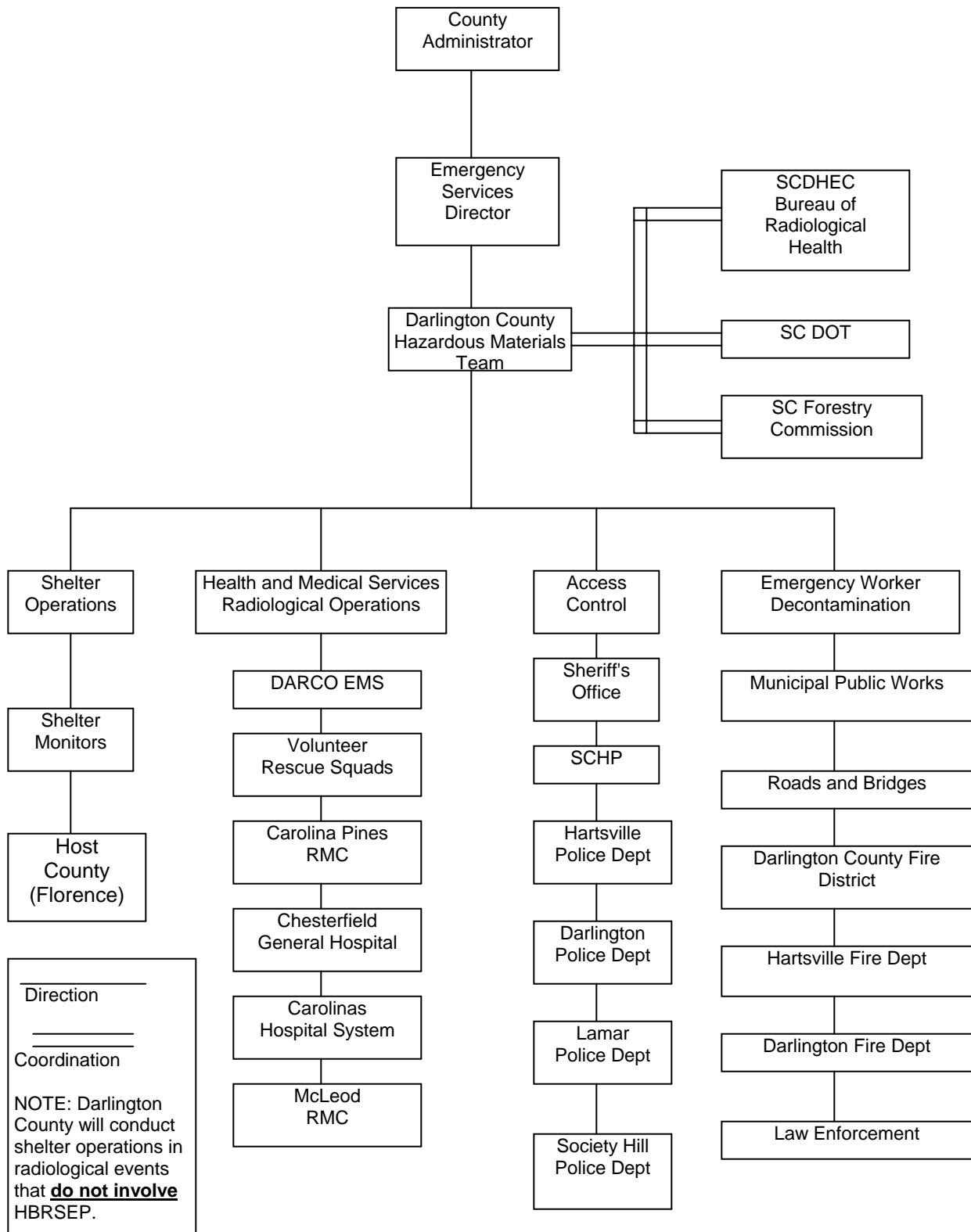
VII. Coordinating Instructions: This annex is effective for planning upon receipt and execution upon order.

APPENDICES:

1. Organization Chart
2. Emergency Worker Dose Limits
3. Darlington County Dosimetry Distribution Plan
4. Decontamination Procedures for Emergency Workers and Civilians
5. Potassium Iodide (KI) Distribution Policy and Procedures
6. Procedures for Treatment and Transport of Radiologically Contaminated Patients

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Appendix 1 (Organization Chart) to Annex 25, Tab I (Radiological Protection)



Appendix 2 (Emergency Worker Dose Guidelines) to Annex 25, Tab I (Radiological Protection)

1. This appendix provides the Emergency Worker Dose Guidelines for Darlington County. These guidelines are established to protect emergency workers, regardless of agency or affiliation. Emergency workers will not be allowed into the radiological plume for any radiological event without the proper radiation detection equipment. Emergency workers will be trained on the use of the appropriate radiological detection equipment. Additionally, any emergency worker entering the radioactive plume will be provided Self-reading Dosimeters (SRDs) and Permanent Record Dosimeters (PRDs). Radiation Exposure Records will be maintained on all personnel (emergency worker or civilian) that enter the radioactive plume. As stated previously, this appendix may be used in any radiological event. Although most of the guidelines are taken from FNF procedures, they equally apply to all radiological events.
2. The Protective Action Guides (PAGs) for protection of the general public and dose limits for workers performing emergency services are derived under different assumptions. PAGs consider the risks to individuals, themselves, from exposure to radiation, and the risks and costs associated with a specific protective action. Unlike members of the general public, emergency workers with assignments within the plume exposure pathway are not always able to take shelter or evacuate the area due to their duties. On the other hand, workers assure the protection of others and of valuable property. The resulting exposures will be justified if the maximum risks permitted to workers are acceptably low, and the risks or costs to others that are avoided by their actions outweigh the risks to which workers are subjected.
3. **Emergency Workers:** Emergency workers are those individuals who, by virtue of their duties, will assist others to avoid radiation exposure and will protect lives and property. All other individuals should be considered members of the general public. Workers who may incur increased levels of exposure under emergency conditions may include those employed in law enforcement, fire fighting, radiation protection, civil defense, traffic control, health services, environmental monitoring, transportation services, and animal care. In addition, selected workers at institutional, utility, and industrial facilities, and at farms and other agribusiness may be required to protect others, or to protect valuable property during an emergency. The above are examples – not designations – of workers that may be exposed to radiation under emergency conditions.
4. **Dose Limits for Emergency Workers:** The EPA issued guidance for emergency worker dose limits, which were provided as TEDE values. These dose limits are the sum of the external, or EDE, and Internal, or CEDE, doses to the emergency workers during the response to the incident. However, during an emergency response, the CEDE portion of the TEDE cannot be measured to ensure that the emergency workers TEDE does not exceed the EPA dose limits. The State of South Carolina has developed administrative dose limits, that are set lower than those recommended by EPA. Emergency workers monitor their external dose using a direct or self-reading dosimetry.

Limiting the emergency workers external dose to these administrative limits provides reasonable assurance that after including the internal dose, the emergency workers TEDE will likely not exceed the relevant dose limit. Table 1 provides the dose limits for the activities being performed.

5. Dosimetry: Prior to dispatch all emergency workers, with assignments inside the plume exposure pathway will be equipped with one self-reading dosimeter (SRD) with a range capable of measuring a radiation exposure of 0.5 R to at least 5 R, a Permanent Record Dosimeter (PRD) and a ten-day supply of Potassium Iodide (KI). The SRD enables the emergency worker to monitor himself/herself during the emergency for total external radiation dose received. The PRD (independently read by the PRD service contractor) provides a more accurate and legal record of the emergency worker's radiation exposure during the duration of the incident response. In situations where emergency worker teams are assigned in close proximity to each other during an entire mission and adequate control of exposure can be affected for all members of the team, one SRD may be worn by the team leader. Emergency workers assigned to low-exposure rate areas outside the plume exposure pathway, e.g. at reception centers, counting laboratories, emergency operations and communications centers will be equipped with a PRD. These workers may also be assigned individual SRDs with a range capable of measuring a radiation exposure of 0-500 mr or they may be monitored by dosimeters strategically placed in the work area.

Table 1 - Guidance on Dose Limits for Emergency Workers			
EPA DOSE LIMIT (rem)	SC ADMINISTRATIVE DOSE LIMIT (R)	ACTIVITY	CONDITION
	0.1R (Note 1)	Call back value	
	1R (Note 2)	Turn back value	
5 rem	1R	All	
10 rem	2R	Protecting valuable property	Lower dose not practicable
25 rem	5R	Lifesaving or protection of large populations	Lower dose not practicable
>25 rem	>5R	Lifesaving or protection of large populations	Only on a voluntary basis to persons fully aware of the risks involved

NOTE 1: All emergency workers will notify the EOC when they encounter 0.1R radiation levels.

NOTE 2: Emergency workers may voluntary turn back and do not have to enter the hot zone or 10 Mile EPZ unless involved in life saving or protecting valuable property activities.

6. Emergency workers that enter the radioactive plume or 10 mile EPZ in an FNF event will be considered radioactively contaminated and referred to the Darlington County Emergency Worker Decontamination Point for screening and/or decontamination. The levels in Table 2 will be used to determine if an employee, their vehicle or equipment will require decontamination. Every effort will be made to decontaminate employees and their equipment. Employees that cannot be decontaminated will be referred to the appropriate medical facility for further medical

evaluation. SC DHEC will also be notified of employees or equipment that cannot be decontaminated. Take note that the Contamination Action Levels are expressed in Counts Per Minute (CPM).

Table 2 - Contamination Action Levels	
Personnel	The contamination action level for personnel is <u>two times greater than background not to exceed a meter reading of 330 CPM</u> measured with a LM3 survey meter. NOTE: <u>Normal background radiation for Darlington County is 60 to 80 CPM, therefore an employee is contaminated at levels greater than 160 CPM.</u>
Vehicles/Equipment	The contamination action level for vehicles and equipment is levels greater than 1650 CPM with a LM3 survey meter.

Table 3 - mr/CPM Conversion Formulas	
To convert CPM to mr on a CDV-700; divide the counts per minute (CPM) by 600.	
To convert CPM to mr on Ludlum Model 3; divide the CPM by 3300.	

NOTE: This information was provided by SC DHEC, John Jesse, November 4, 1999.

7. Emergency Worker Radiation Exposure Records

1. Each emergency worker is responsible for completing a Radiation Exposure Record and for returning it along with issued dosimeter (SRD, PRDs, KI) to his/her parent organization when the incident is over. A copy of a Radiation Exposure Record is on the following page. The RDO can make as many copies as necessary to insure each emergency worker has a form.
2. Darlington County will forward exposure records and PRDs to the SCEMD. SCEMD will deliver PRDs to the service contractor for processing (reading) and will forward individual exposure records to DHEC for analysis, follow-up and record keeping.
3. DHEC will retain original copies of all radiation exposure records and establish individual files/records for inclusion of PRD reports and incident related material. DHEC will establish priorities for expeditious processing of PRDs in cases where exposure records indicate exposures exceeding dose limitations. In these instances, the SCEMD will expedite delivery of PRDs to the service contractor for rapid turn around.
4. Upon completion of PRD processing and comparison with individual exposure records, DHEC will ensure that each emergency worker is informed of his/her accumulated dose.

Darlington County Emergency Worker

RADIATION EXPOSURE RECORD

NAME _____

SSN _____ DOB _____ AGE _____

HOME ADDRESS _____

AGENCY/DEPARTMENT _____

PRD NUMBER _____

CAUTION: RAD EXPOSURE LIMITS

Call Back Value	0.1R
Turn Back Value	1R
Protecting Valuable Property	2R
Life Saving	5R

DATE	DOSIMETER SERIAL NUMBER	INITIAL READING	FINAL READING	TOTAL SHIFT EXPOSURE

<p style="text-align: center;">Dosimetry Instructions</p> <ol style="list-style-type: none"> 1. Charge dosimeter prior to initial use. 2. Keep dosimetry on your person while on duty. 3. Read dosimetry every 15 - 30 minutes. 4. Immediately report any reading greater than 0.1R (100mr) 	<p style="text-align: center;">Record Keeping</p> <ol style="list-style-type: none"> 1. Record initial and final dosimetry reading at the end of each shift. 2. Calculate exposure by subtracting the initial from the final reading. Record exposure. 3. Recharge dosimetry and complete Steps 1 & 2 for each successive shift. Add accumulated exposures and record total. 4. At the end of the incident turn in the Radiation Exposure Record to the EOC RDO for evaluation and forwarding the SCEMD/SCDHEC.
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KI Tablets and Instructions Issued _____
(Person Issuing KI)
Date _____

DATE _____ TOTAL EXPOSURE _____

SIGNATURE _____

Appendix 3 (Darlington County Dosimetry Distribution Plan) to Annex 25, Tab I (Radiological Protection)

1. The purpose of this appendix is to provide for an orderly distribution of all radiological equipment during emergencies. While this appendix was designed for an FNF event, it can easily be adapted to any radiological incident. Priority of distribution will always be to the emergency workers that must enter the radioactive plume or 10-mile EPZ.
2. Because of the limited quantities of available equipment, priority of distribution will be to emergency workers that must operate inside the radioactive plume or 10-mile EPZ in an FNF event. As soon as demands for equipment exceed the available supply, a request for the additional equipment will be prepared and transmitted to the SEOC through the IRIS system.
3. Distribution of equipment will be as follows:

A. EMS Medical Team: The MS-1 Team will be provided the following minimum equipment:

1. Ludlum Model 3 meter: 1
2. SRD: 1 per worker
3. PRD/TLD: 1 per worker
4. CDV-750, Model 6 dosimeter charger: 1

NOTE: Provide 1 LM3, 2 SRD's as back-up. No CDV-750, Model 6 dosimeter chargers or PRD's will be provided as backup.

B. County Decontamination Team: The Decon Team will be provided the following minimum equipment:

1. Ludlum Model 3 meters: 3
2. SRD: 1 per worker
3. PRD/TLD: 1 per worker
4. CDV-750, Model 6 Charger: 1

NOTE: The Decon Team will be provided 1 LM3 (2 LM3's are desired), a minimum of 4 SRD's as backup. No backup CDV-750, Model 6 dosimeter chargers or PRD's will be provided.

C. HAZMAT Entry Team (non-FNF event): Initially, the equipment for this entry team will be the equipment issued to the MS-1 Team. Equipment from the Decon Team will be shifted to the MS-1 team until sufficient quantities of equipment arrive from outside the county.

1. Ludlum Model 3 meter: 1

2. SRD: 1 per worker
3. PRD/TLD: 1 per worker
4. CDV-750, Model 6 dosimeter charger: 1

D. SC Highway Patrol, Darlington County Sheriff's Office, Hartsville Police Department and Darlington Police Department: Each trooper/deputy/officer that must operate inside the 10-mile EPZ will be provided an SRD, a PRD and 1 CDV-750 charger per location. No backup equipment will be provided.

E. Other emergency workers: County, State or School District employees that must enter the 10-mile EPZ will be issued an SRD and a PRD after instruction on the proper use of the equipment.

F. Civilian population: Radiological equipment will not be issued to civilians (farmers, livestock owners, etc.) except in situations that are specifically approved by the Emergency Services Director or his designee.

4. The guidelines in this appendix will be followed at all times. Situations that are not specifically addressed in this attachment will be referred to the Emergency Services Director for resolution.

Appendix 4 (Emergency Worker Decontamination) to Annex 25, Tab I (Radiological Protection)

1. General:

A. This appendix serves three (3) purposes;

1. It provides specific guidelines on the establishment and operation of the Emergency Worker Decontamination Point. The Emergency Worker Decontamination Point will be established at the Darlington County Fire District, Station 2, located at 137 North Center Road, Hartsville, SC. Personnel, equipment and vehicles will be decontaminated at this location.
2. Specific information will be provided on personnel decon, equipment decon and vehicle decon. These guidelines were developed for use in response to an accident at the HBRSEP. These guidelines may be used for any radiological incident, regardless of origin, that may occur in Darlington County.
3. When this appendix is separated from Annex S, it will serve as a "stand-alone" SOP for establishing and operating the Emergency Worker Decontamination Station.

B. Emergency Workers must remember that lifesaving actions take priority over decontamination in a radiological event. However, emergency workers also must remember four (4) basic rules in any radiological incident response;

1. Protect yourself.
2. Protect the public, within your capabilities.
3. Notify and request the appropriate resources.
4. Be prepared to initiate gross decontamination, which may include gross decontamination of mass casualties.

C. For the purposes of this appendix, it is assumed that any person or vehicle operating in the 10-mile EPZ during an event at HBRSEP is contaminated. Therefore, the first action in vehicle decontamination will be a gross decontamination of the vehicle. This serves two purposes; first to minimize the spread of radioactive contaminants and reduce the amount of contamination the vehicle driver may encounter when exiting the vehicle. This assumption may not be true for a radiological event involving transportation or other radiological events. In any radiological event the Incident Commander will implement the most appropriate, practical actions necessary to protect emergency workers and the public.

D. It is desired that the Decontamination Station be setup in a location that

provides drainage access to a flowing water body (i.e., ditch that feeds into a creek or pond) and does not allow the wastewater to stand and soak into the ground. In an emergency, if the Decon Team Chief observes that the wastewater is standing and not flowing, he/she will immediately order that at least 1000 gallons of water be discharged into the ditch in order to establish a flow. If this procedure does not work, the Decon Team Chief will notify the EOC. The EOC will issue a tasking to Road and Bridges to take the appropriate equipment to the decon site and open any ditches necessary to establish a flowing stream of water. Every effort will be made to establish a flowing stream of water at the decon site. **Only**, as a last resort will water be allowed to collect and soak into the ground. Removal of contaminated soil will be handled after the event has ended. Emergency worker decon will not be withheld because a suitable site is not immediately available to the Incident Commander.

2. Emergency Worker Decontamination Station:

- A. The Darlington County Emergency Worker Decontamination will be located at the Darlington County Fire District Station 2. Station 2 is located outside the HBRSEP 10-mile EPZ and provides sufficient space and resources for personnel, vehicle and equipment decontamination. Station 2 will be used for all large scale radiological incidents, regardless of origin. For small-scale radiological incidents, the Decontamination Station can be moved to a more convenient location for the event. The size of the Decon Station can be adjusted based on the size of the radiological event. After monitoring procedures have been placed in effect by SCEMD, and upon completion of his/her mission, each emergency worker will report to the Decontamination Station to be monitored for radiological contamination, and, if necessary, to be decontaminated.
- B. Procedures for Monitoring and Decontamination:
 1. The Emergency Worker Decon Team will organize their areas and traffic flow patterns so that contaminated persons will not mix with the contamination-free individuals already processed. For example, persons will be sent to the decontamination area (shower) by a route that will not place them in contact with contamination-free areas. Showers used for decontamination will not be available for general use until they are decontaminated.
 2. The decon site selected must be free of radiation other than background radiation. Persons waiting to be monitored must be separated from the area so that it will not cause false readings on the person being monitored. Care must also be taken to avoid areas where high voltage electrical lines and electrical equipment such as computers are present. Those items may cause false readings on the survey meter.
 3. Background radiation must be measured prior to starting monitoring

operations. Background readings should be taken at a central location away from evacuees or other potentially contaminated items. In South Carolina the average background radiation is 165 CPM (Darlington County background radiation levels are 60 - 80 CPM) with the Ludlum Model 3 Survey Meter.

4. The Ludlum Model 52 Portal Monitor will be used for the monitoring of emergency workers who may have been exposed to radioactive material. The LM3 survey meters will be used for vehicle and equipment monitoring and for emergency worker monitoring subsequent to decontamination activities. Personnel requirements for LM52's and LM3's are one trained monitor and one recorder for each instrument as a minimum. Each monitor and recorder will be equipped with a PRD. Self-reading dosimeters are not required; but may be issued or strategically placed in the monitoring location. All personnel involved in personnel monitoring and decontamination activities will wear two pair of latex gloves. Protective outer garments, such as tyvek coveralls and shoe covers, are not required but may be worn if desired.
- C. The Decon Station will be established at Station 2, located on North Center Road approximately 150 yards off Harry Byrd Highway. For the purposes of this appendix the equipments bays will be letter designated. Beginning at the wall separating the office area from the bay area, the bays are designated as follows; the first long bay is designated **Bay Alpha**, front and rear; the second long bay is **Bay Bravo**, front and rear and the third long bay is **Bay Charlie**, front and rear. Each bay will be designated for specific purposes. Decon Station workers must ensure that all routes through the station are clearly identified to minimize the potential for cross contamination.
1. **Bay Alpha rear**, will be used to house the three lane Decon tent, providing both water, drainage and power for the tent. The Decon Tent personnel will insure that the drain hose extends along the entire length of the drain to an outside drain. Additionally , Decon tent personnel will insure that the drainage ditch that runs parallel to the east side of the bays is blocked so that the water will not flow toward North Center Road. Inside the bay area(s), there will be no access to open drain water. A line of "step-off" pads, brown paper or plastic will be placed on the bay floor between the three-line Decon Tent and the Medical Quarantine area. This paper or plastic will be surveyed each time a contaminated worker crosses it to check for residual radiation. If contamination is detected, the paper or plastic will be replaced. If a different color coverall is available for emergency workers that cannot be decontaminated, they will be dressed in the odd color. If all coveralls are the same color, "MQ" in large letters will be placed on the back and front of this workers coveralls.
 2. **Bay Alpha front**, will be used as dressing area for workers that have been successfully decontaminated and as an exit from the station. The area will be isolated from the medical quarantine area to preclude inadvertent cross contamination with the medical quarantine area and isolated in such a manner as to preserve modesty between the sexes.

3. **Bay Bravo front**, will be used as a holding area (medical quarantine) for emergency workers that cannot be decontaminated and must be transported for medical evaluation. The single lane Decon tent will be set as the Medical Holding area for workers that cannot be decontaminated. The bay door will be used as an entry and exit point for the EMS crew to pick up these patients.
4. **Bay Bravo rear**, will be used as a holding area for equipment and clothing that must be quarantined. This area must be cordoned off to preclude un-contaminated workers from entering the area. Once an accumulation of contaminated clothing and equipment builds up in Bay Bravo rear, the material will be moved to the grassy area behind the Station where quarantined vehicles and equipment will be stored. The SC Highway Patrol Armorer will set up his workstation in this vicinity to insure that all Highway patrol weapons are properly decontaminated.
5. **Bay Charlie, front and rear**, will be used as pass-thru lane for vehicles that have been decontaminated. Emergency workers will not be allowed to cross bay Alpha or Bravo to get to their vehicles. Workers will use either the clean lane by the Ludlum 52 monitor or exit the front of Bay Alpha and pick up their vehicle at the front of Bay Charlie. A barrier (either plastic, brown paper or a tarp will be suspended along Bay Charlie rear to prevent "clean" Decon worker and uncontaminated employees from inadvertently wandering into the contaminated clothing and equipment.
6. All vehicles reporting to the Decon Station for survey and/or decon will enter from Harry Byrd Highway, turning left onto North Center Road, then turning right into the entrance to Station 2 and proceed to the gross decon point. Gross Decon Point personnel must block the drain tile under the street to stop contaminated water from flowing towards Center Road. At this point, the vehicle will receive a preliminary gross decon and then on direction from the Fireman, proceed to the Survey/Complete Decon Point. The Survey/Complete Decon Point will be directly behind the door to Bay Alpha at the edge of the grass. Once a vehicle enters the Decon Station, all vehicles will be directed to each point by a Decon Station worker. No vehicle will be allowed to move in the Decon Station without being guided by a Decon Station worker.
7. At the Survey/Complete Decon Point, a Monitor equipped with a Ludlum Model 3 Survey meter will survey the vehicle. The Recorder will record the contamination levels determined by the LM3 operator on the Vehicle Survey Form. If the LM3 operator determines that the vehicle still is contaminated above 1650 CPM, the vehicle's exterior will be completely decontaminated. The vehicle operator will remain inside the vehicle until the vehicle has been surveyed. Once the vehicle has been surveyed and it is determined that decontamination is required, the vehicle operator will be asked to step out of the vehicle and be directed to the LM52 Portal Entry monitor. Once the operator has left the vehicle the vehicle will be decontaminated and the inside of the vehicle surveyed for contamination. The interior of the vehicle will be wiped down by workers and the wipes checked for dropping contamination levels. If the vehicle's interior or exterior cannot be decontaminated to less than 1650 CPM, the vehicle will be moved to the grass area behind Station 2 and held in vehicle quarantine. (Do not survey the vehicle

operator quarantine. (Do not survey the vehicle operator at the Survey point.) It will be assumed that the operator is contaminated and referred to the Personnel Decon Point for survey and/or decon. Once the vehicle has been decontaminated, it will be driven through Bay Charlie and parked in front of the station on in the grassy area in front of the parking lot by Center Road.

8. At the Personnel Decon Point, the vehicle operator will be directed to enter the LM52 Portal Entry monitor for screening. The LM52 operator will announce the reading to the Recorder who will record the information on the LM52 Survey Form. If the vehicle operator is determined to not need decontamination, he/she will be given the form for personnel that do not need decontamination and directed to pick up their vehicle and report to their Supervisor for instructions. If the vehicle operator requires decontamination, they will be directed to proceed through the un-dressing steps and take a shower. Employees will be told to pay particular attention to their hair, armpits, groin, hands and feet. Employees will be provided with an individual bar of soap or bottled soap to take their shower. Once the employee has showered, they will be surveyed again with a LM3. If they have successfully completed decontamination, they will be directed to the dressing area. Once dressed, they will pick up their vehicle and report to their Supervisor for instructions. If the employee is still contaminated, they will be directed to take a second shower. If they are still contaminated after a second shower, they will be placed in medical quarantine and held until they are transported by EMS to either Carolina Pines RMC or Carolina's Hospital System for further evaluation by DHEC and medical personnel.

NOTE: A. If a Law Enforcement Officer enters the Personnel Decon Point and the LM52 shows that he/she is contaminated, the Officer will be asked to remove their pistol/equipment belt and go through the LM52 a second time. If the Officer does not show contamination on the second pass, the Officer will be directed to clear his/her weapon. The LM52 operator will then survey the Officer's equipment with a LM3. If the equipment is the source of the contamination, the Officer will be assumed contaminated and directed to field strip his/her weapon and directed to take a shower carrying the weapon with them. The Officer and weapon will be surveyed after showering and if the weapon is clean, the Officer will be directed to perform normal maintenance on the weapon, get dressed, pick up his/her vehicle and return to duty. If the Officer has a service animal, the Officer will be directed to muzzle the animal. The animal will be surveyed just like the officer. If the animal shows contamination, the Officer will be directed to take the animal in the shower with them. After showering, the animal will be resurveyed and if clean, returned to duty. If the animal cannot be decontaminated after two showers, the Officer and animal will be quarantined and referred to DHEC for further evaluation.

B. Employees will be given a receipt for any equipment, clothing or vehicles that cannot be decontaminated and held in quarantine. Use the form provided in this annex. Be sure and record all weapon serial numbers and vehicle Identification numbers on the form.

9. Once the employee has been successfully decontaminated, they will be directed to pick up their vehicle and equipment and report to their Supervisor for instructions. Insure that employees retain their Radiation Exposure Records. Employees that will

be returning to the 10-mile EPZ or hot zone will insure that they have all required dosimetry before re-entry.

3. Procedures for Personnel Monitoring:

A. LM52 Monitoring Procedures:

A. The LM52 monitor is used for beta/gamma personnel monitoring and meets the FEMA standard for emergency Response Portal Monitoring. Each state LM52 monitor has been preset to alarm at 200 CPM above background. The monitoring parameters have been preset at the SCEMD lab to meet state standards.

B. LM52 Monitor Operation:

1. Assemble the monitor. Cover the top and side and detectors with one layer of thin plastic wrap. Place a sheet of thin plastic on the footplate to prevent contamination.
2. Turn the power switch to on (power cord or battery powered). Green Ready light must be lit to use the monitor.
3. Test instrument response by using the beta check source (located in wooden box). Hold the beta check source (gold side towards the detector) and step on the monitor base plate. When the monitor beeps (six seconds or less), it is ready for use.
4. Evacuees to be monitored start at the ready line established three feet from the monitor.
5. Foot pressure on the base plate activates the monitor. Evacuees must stand in the monitor until a green or red light is activated on the display (approximately six seconds).
6. LED Displays:
 - a. Green - Not contaminated, does not exceed state standard.
 - b. Red - Contaminated, exceeds state standard.
 - c. Yellow - Incomplete count. Evacuee did not stay on the base plate for a complete count.
 - d. Orange - Do not use. The machine is performing an automatic background update. Once complete the green light will come on.
7. Complete Portal Monitor form and then wash the area the person walked across to the LM52 with a hose to remove any contamination left by the individual.

C. Hand Held Instrument Monitoring Procedures for People using the Ludlum

Model 3 Survey Meter:

1. Check the operability of the LM3. Place LM3 Survey Meter range switch on X0.1 scale. Turn audio on and wrap the pancake probe with one layer of thin plastic wrap to prevent contamination. For maximum sensitivity, use the open face side of the pancake probe, with the plastic protective shield removed.
2. Determine and record background radiation levels. The monitoring location must be established in a low background area (less than 165 CPM). If the meter reading is above 165 CPM on X0.1 scale, survey additional locations for your monitoring station until you find one that is less than 165 CPM.
3. Put on latex or rubber gloves and monitor the individual as follows:
 - A. Have the individual being monitored stand on paper or plastic sheeting (change sheeting frequently).
 - B. Instruct the person to stand straight, feet spread slightly, arms extended with palms down and fingers straight out.
 - C. Place the survey meter probe approximately one to three inches from the top of the person's head. Move the probe downward approximately two inches per second on one side of the neck, the collar, the shoulder, arm, wrist, hand, underarm, armpit, side of the body, side of the leg, and around the cuff and shoe. Then monitor the inside of the leg from cuff to the groin and continue the procedure on the other side of the body. NOTE: Time required for monitoring one average size person is approximately 90 seconds unless contamination is detected.
 - D. Monitor the chest and stomach area and the middle of the back and buttocks.
 - E. Monitor the shoes and soles of each shoe.
 - F. If no contamination is detected, complete the Individual Monitoring/Decontamination Report Form. Return all original copies of monitoring/decontamination forms to the EOC.
 - G. If any reading exceeds twice background, record that information on the Monitoring/Decontamination Report Form and require the individual to undergo decontamination.
4. Decontamination of Personnel:
 - A. Contaminated persons should wash with mild, non-abrasive soap and warm water, i.e., a thorough shower should be sufficient. Emphasis should be placed on any specific spots found to be contaminated in the

monitoring process. Also, special attention should be given to the hair, hands and fingernails.

- B. After thorough cleansing, the individual will be monitored again. If some contamination still remains, the individual should shower again. If monitoring after the second thorough cleansing indicates that the contamination is still present, DHEC should be notified for referral to the nearest medical facility capable of treating contaminated persons.
- C. Care should be taken that persons who are decontaminated do not become re-contaminated by dressing in contaminated clothing. If an individual does not have contamination free clothing, then clothing should be issued until such time as the clothing can be decontaminated or other suitable arrangements made.
- D. Persons with contaminated wounds will be referred to an appropriate medical facility for radiation decontamination and treatment

5. Clothing Decontamination Procedures:

- A. Articles, which are machine washable, should be laundered with a conventional detergent, line dried in a contamination free area or machine dried, and retained until they can be re-monitored. Water repellent items may be scrubbed with water and detergent, and retained until re-monitored.
- B. Clothing articles, which cannot be decontaminated by laundering, should be packaged in a plastic bag, tied securely at the top and placed in a metal or plastic container with a snug fitting lid (garbage can). Mark the bag and container as "Radioactive." Accumulated contaminated clothing should be secured or isolated and reported to the EOC and DHEC.
- C. Emergency workers that have clothing or equipment items quarantined will be given a receipt listing the items quarantined at the Decon Station. A Contaminated Property Receipt is located at Attachment 6, this appendix.

6. Monitoring Procedures for Vehicles:

- A. Check the operability of the LM3 survey meter.
- B. Turn sound on.
- C. Wrap the probe in one layer of thin plastic material to prevent contamination. Use the open face side of the pancake probe, and set the range switch on X1 scale.
- D. Ensure vehicle motor and all electronic equipment is turned off.
- E. Put on rubber gloves. Hold the probe about two inches from the exterior surface and scan complete vehicle. Record the highest reading.

F. Monitor and record radiation readings at the following locations.

1. L front wheel well
2. Drivers seat and floorboard
3. L rear wheel well
4. R rear wheel well
5. R front wheel well
6. Radiator
7. Air filter intake

G. Consider the vehicle contaminated if any radiation reading is >1650 CPM with a LM3 Survey Meter.

7. Vehicle Decontamination Procedures:

NOTE: All vehicles that were in the 10-mile EPZ or hot zone will receive a gross decon prior to being screened for decontamination. Decontamination of the interior of vehicles is not required. Quarantine any vehicle with an interior dose rate in excess of 1650 CPM.

- A. Use a water spray. Wear a rain suit/coat, rubber boots and latex gloves to keep dry and to avoid contamination.
- B. Work from top to bottom, and upwind to downwind to avert recontamination. Flush entire outside surface of vehicle initially, then;
 - a. Flush specific location previously determined to be contaminated.
 - b. Flush insides of front and rear wheel wells.
 - c. Flush grille/radiator.
 - d. Flush engine compartment.
 - e. Flush tires and wheel wells.

NOTE: Ensure water from decontamination activities runs directly to a storm sewer or other sewer or drain system. Do not allow water to stand in low spots or areas where exposure to individuals may occur.

- C. Re-monitor the vehicle and revise the vehicle decontamination record. Quarantine vehicles that cannot be decontaminated to a dose rate of less than 1650 CPM.
- D. Place vehicle decontamination record in the vehicle and forward the original to the EOC.

8. Gross decontamination corridor: An effective decontamination corridor can be set up quickly by positioning two engines parallel approximately 20 to 25 feet apart. With 21/2-inch

fog nozzles attached to the discharge ports, position the engines so the patterns overlap in the corridor between the engines. It is advisable to position the engines pointed away from the incident and at an angle so the front ends are closer than the tailboards. This does three things; it puts you in position to drive away if needed; it creates a natural funnel point for the patients or vehicles and it will direct the water back towards the storm drain.

NOTE: With down turned discharge ports, you may find that you can get better directional control of the nozzle if you attach a siamese or gated wye versus attaching the nozzle directly to the port. The basic concept that by using large volumes of water at low pressure you will ensure a more complete decontamination. With this type of setup, you may need to provide some sort of cover to address the modesty issue that some of your patients will have. If engines are placed slightly closer, you may be able to bridge ladders over the hose beds and cover with tarps.

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Attachment 1 (Decontamination Station Personnel and Equipment List)) to Appendix 4 (Emergency Worker Decontamination Station)

Emergency Worker Decontamination Station Personnel and Equipment List

1. 20 traffic cones, lane markers or stakes
2. 8 small barrels or trashcans
3. 6 folding chairs
4. 4 tables
5. Towels
6. Face cloths
7. Bottled or bar soap for personnel (Small hotel bars of soap preferred, if available)
8. Soap for vehicles and equipment
9. Soft brushes for personnel showers
10. Paper/Tyvek clothing, coveralls, booties, etc
11. 3 -4 small scrub brushes for vehicles and equipment
12. 120 feet of ¾ inch water hose
13. 50 feet fire hose for the drain
14. 3 - Ludlum Model 3 meters
15. SRD for each worker (0-200MR required, can use 0 - 5R SRD)
16. 1 Permanent Record Dosimeter per worker
17. Masking tape
18. Paper towels for wiping out vehicles
19. Spray bottles (3 - 6)
20. Disposable gloves
21. Plastic sheeting (roll at least 36" wide)
22. Saran wrap (for LM3 probes)
23. Dust mask/paper respiratory mask
24. Safety glasses
25. Yellow/magenta rope or plain yellow rope approx 300 feet
26. Roll of "Caution" tape
27. Plastic bags for contaminated clothing
28. PPE for Decon Station workers (Bunker gear or rain gear acceptable for these workers)
29. Step off pads covers or 36' X 36" squares of material to use as a step off pad or Herculite material to make step off pads
30. 1 - Deputies for traffic control
31. 1 - Pumper for gross decon
32. 2 - Firemen for pumper
33. 1 Team Chief
34. 3 Monitors - minimum of 2, preferably 1 male, 1 female
35. 4 Recorders
36. 3 Assistants (minimum)
37. 1 - EMS crew to transport workers that cannot be decontaminated
38. 2 - Tents
39. Portal Entry Monitor LM52
40. D Cell batteries (2 - LM3, 6 - LM52 and spares)
41. 1 - Vacuum cleaner
42. Sufficient tarps, rolls of plastic or paper to make required barricades.
43. Appropriate forms

**Darlington County Emergency Worker
EVACUEE PORTAL MONITOR FORM**

O SUM

O HEAD		
O L3		O R3
O L2		O R2
O L1		O R1
FEET O		

Portal monitor has been pre-set to automatically subtract area background radiation readings. Any alarming channel will indicate that state contamination limits have been exceeded and decontamination is required.

DIRECTIONS

- 1 Ask evacuee to enter the portal monitor for a six second count. The monitor's "**counting**" green light will illuminate. When the count is complete the monitor's "**check ok**" green light will illuminate. **NOTE:** If the monitor's "**incomplete**" yellow light is illuminated the evacuee must re-enter the monitor until a complete count is obtained.
- 2 **If no channels are alarming** ask evacuee to proceed to the registration desk.
- 3 **If any channels are alarming**, place an "**X**" in the corresponding circle for all alarming monitor channels on the diagram above and direct evacuee to the **decontamination showers**.

NAME: _____

SOCIAL SECURITY NUMBER: _____

EMERGENCY WORKER LM 52 MONITORING/DECONTAMINATION REPORT

1. Advise individual to remove clothes and shower with soap and water, paying close attention to contaminated spots, hair, hands, and fingernails.
2. Contaminated clothing should be disposed of or tagged for decontamination. If the individual does not have contamination free clothing, then clothing should be issued.
3. After thorough cleansing, monitor individual again using a Ludlum-3 monitor. If contamination remains, note on this form and ask the evacuee to shower again if contamination is greater than limits specified below.
4. After the second shower, monitor individual again using a Ludlum-3 monitor. If contamination is still present in excess of the limits below, notify SCDHEC for referral to nearest medical facility capable of treating contaminated persons.

CONTAMINATION SURVEY DATA (INITIAL)		CONTAMINATION SURVEY DATA (FINAL)	
LOCATION	CPM	LOCATION	CPM
HAIR		HAIR	
HEAD		HEAD	
NECK		NECK	
SHOULDER (L/R)		SHOULDER (L/R)	
ARM (L/R)		ARM (L/R)	
HAND (L/R)		HAND (L/R)	
CHEST		CHEST	
BACK		BACK	
LEG (L/R)		LEG (L/R)	
FOOT (L/R)		FOOT (L/R)	
RESULTS GREATER THAN 2X BACKGROUND OR 330 CPM _____ RESHOWER		RESULTS GREATER THAN 2X BACKGROUND OR 330 CP_____ RESHOWER	
RESULTS LESS THAN 2X BACKGROUND OR 330 CPM_____ RELEASE		RESULTS LESS THAN 2X BACKGROUND OR 330 CPM_____ RELEASE	

PORTAL MONITOR SERIAL NUMBER _____

LUDSUM MODEL 3 SERIAL #: _____

PROBE (44-9)SERIAL #: _____

BACKGROUND _____ CPM
CPM

2 X BACKGROUND _____

MONITOR/RECORDER SIGNATURE: _____

MONITORS NAME _____ DATE OF SURVEY ____-____-____

Attachment 2-B (Personnel Survey Form for LM 3) to Appendix 4 (Emergency Worker Decontamination Station)

**Darlington County Emergency Worker
HAND HELD INDIVIDUAL MONITORING/DECONTAMINATION
REPORT FORM**

NOTE: Not to be used with Portal Monitoring Operation.

NAME: _____ SSN: _____ AGE: _____

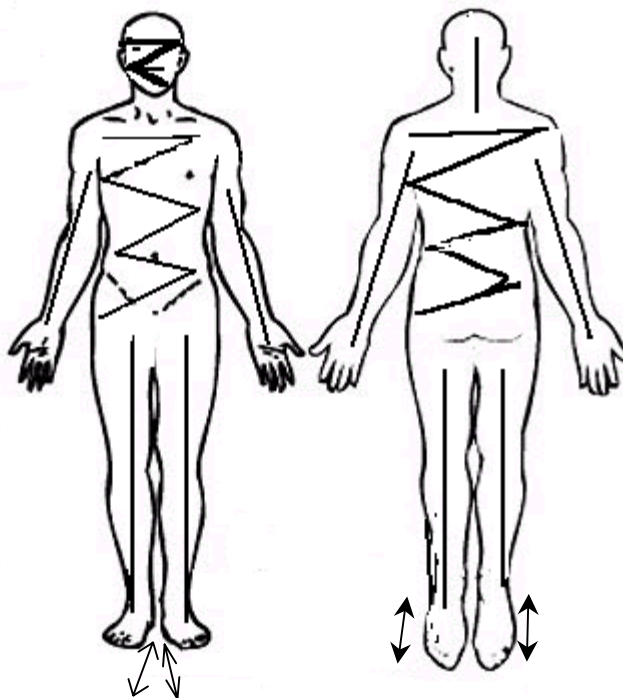
LUDLUM MODEL 3 SERIAL #: _____ PROBE (44-9) SERIAL #: _____

BACKGROUND _____ CPM 2 X BACKGROUND _____ CPM

MONITOR/RECORDER SIGNATURE: _____

DIRECTIONS: Indicate levels of contamination on the corresponding body parts.

NOTE: Contamination Action Level is > 2X background or >330 CPM.



SURVEY RESULTS: Check the appropriate response.

- ___ No contamination found, released to shelter registration.
- ___ Decontamination required (see reverse).
- ___ Notify DHEC if decontamination is unsuccessful after second attempt.

EVACUEE MONITORING/DECONTAMINATION REPORT (Back Side)

1. Advise individual to remove clothes and shower with soap and water, paying close attention to contaminated spots, hair, hands, and fingernails.
2. Contaminated clothing should be disposed of or tagged for decontamination. If the individual does not have contamination free clothing, then clothing should be issued.
3. After thorough cleansing, monitor individual again using a Ludlum-3 monitor. If contamination remains, note on this form and ask the evacuee to shower again if contamination is greater than limits specified below.
4. After the second shower, monitor individual again using a Ludlum-3 monitor. If contamination is still present in excess of the limits below, notify SCDHEC for referral to nearest medical facility capable of treating contaminated persons.

CONTAMINATION SURVEY DATA (INITIAL)		CONTAMINATION SURVEY DATA (FINAL)	
LOCATION	CPM	LOCATION	CPM
HAIR		HAIR	
HEAD		HEAD	
NECK		NECK	
SHOULDER (L/R)		SHOULDER (L/R)	
ARM (L/R)		ARM (L/R)	
HAND (L/R)		HAND (L/R)	
CHEST		CHEST	
BACK		BACK	
LEG (L/R)		LEG (L/R)	
FOOT (L/R)		FOOT (L/R)	
RESULTS GREATER THAN 2X BACKGROUND OR 330 CPM _____ RESHOWER RESULTS LESS THAN 2X BACKGROUND OR 330 CPM _____ RELEASE		RESULTS GREATER THAN 2X BACKGROUND OR 330 CPM _____ RESHOWER RESULTS LESS THAN 2X BACKGROUND OR 330 CPM _____ RELEASE	

Ludlum MODEL 3 SERIAL #: _____ PROBE(44-9)SERIAL#: _____

BACKGROUND _____ CPM 2 X BACKGROUND _____ CPM

MONITOR/RECORDER SIGNATURE: _____

Attachment 3 (Vehicle Survey Form) to Appendix 4 (Emergency Worker Decontamination Station)

**Darlington County
Emergency Worker Decontamination Station**

VEHICLE MONITORING FORM

VEHICLE OWNER: _____ SSN: _____

TAG #: _____ MAKE/MODEL: _____

LUDLUM MODEL 3 SERIAL #: _____ PROBE (44-9) SERIAL #: _____

MONITOR/RECORDER SIGNATURE: _____

EXTERIOR SURVEY DATA

<u>Location</u>	<u>Readings</u>
R Front Tire/Wheel Well	_____
R Rear Tire/Wheel Well	_____
L Front Tire/Wheel Well	_____
L Rear Tire/Wheel Well	_____
Radiator	_____
Air Filter Intake	_____
Other	_____

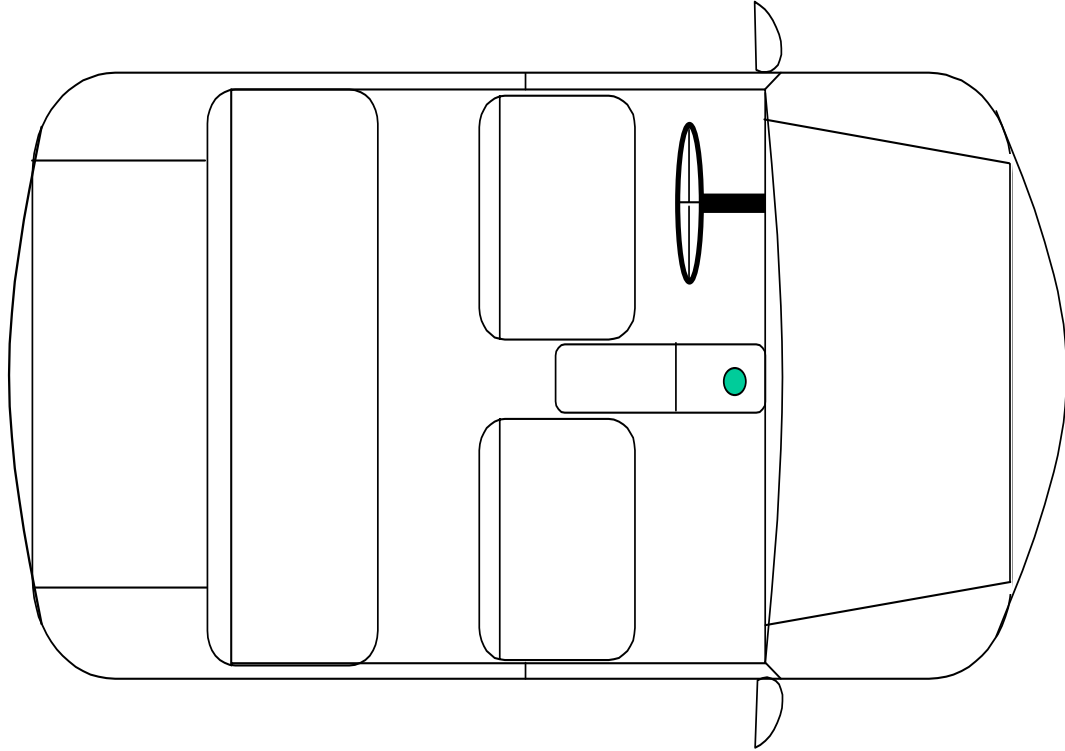
EXTERIOR SURVEY RESULTS: Check the appropriate response.

___ Contamination less than **1650** CPM; released.

___ Contamination >**1650** CPM, decontamination required.

VEHICLE MONITORING FORM (Reverse Side)

Shade in the appropriate locations that correspond to areas of contamination.



INTERIOR SURVEY DATA

Location

Readings

Drivers Seat and Floor Boards

R Front Passenger Seat and Floor Board

L Rear Passenger Seat and Floor Board

R Rear Passenger Seat and Floor Board

Steering Wheel

Other

INTERIOR SURVEY RESULTS: Check the appropriate response.

___ Contamination less than **1650** CPM; released.

___ Contamination **>1650** CPM, quarantined.

STATEMENT FOR EMERGENCY WORKERS THAT DO NOT NEED DECONTAMINATION

As an Emergency Worker, (Law Enforcement, Fire, EMS, bus driver, etc) you have been working inside the 10-mile Emergency Planning Zone (EPZ) for the H.B. Robinson Steam Electric Plant. Due to the nature and location of your duties you have been referred to the Darlington County Decontamination Point for screening and/or decontamination. During the screening survey, you were found to be uncontaminated with radiological material. (**You are not contaminated with radiological material.**) Therefore it is not necessary for you to go through the Decontamination shower. The radiological levels on your clothing and equipment were either at/or below the action level for decontamination or at/or below normal background levels for Darlington County. Normal background radiation levels for Darlington County are 70 – 80 counts per minute (CPM). The action level for decontamination is 160 CPM or 330 CPM which ever is less. You levels were _____ CPM. These levels are significantly below the minimum safe levels established by the Environmental Protection Agency. If you are still concerned about possible contamination you are advised to shower and change clothes.

STATEMENT FOR EMERGENCY WORKERS THAT DO NOT NEED DECONTAMINATION

As an Emergency Worker, (Law Enforcement, Fire, EMS, bus driver, etc) you have been working inside the 10-mile Emergency Planning Zone (EPZ) for the H.B. Robinson Steam Electric Plant. Due to the nature and location of your duties you have been referred to the Darlington County Decontamination Point for screening and/or decontamination. During the screening survey, you were found to be uncontaminated with radiological material. (**You are not contaminated with radiological material.**) Therefore it is not necessary for you to go through the Decontamination shower. The radiological levels on your clothing and equipment were either at/or below the action level for decontamination or at/or below normal background levels for Darlington County. Normal background radiation levels for Darlington County are 70 – 80 counts per minute (CPM). The action level for decontamination is 160 CPM or 330 CPM which ever is less. You levels were _____ CPM. These levels are significantly below the minimum safe levels established by the Environmental Protection Agency. If you are still concerned about possible contamination you are advised to shower and change clothes.

Attachment 5 (Personnel that Can Not Be Decontaminated) to Appendix 4 (Emergency Worker Decontamination Station)

STATEMENT FOR EMERGENCY WORKERS THAT CANNOT BE DECONTAMINATED

As an Emergency Worker, (Law Enforcement, Fire, EMS, bus driver, etc) you have been working inside the 10-mile Emergency Planning Zone (EPZ) for the H.B. Robinson Steam Electric Plant. Due to the nature and location of your duties you have been referred to the Darlington County Decontamination Point for screening and/or decontamination. During the screening survey, you were found contaminated with radiological material. The radiological levels on your body, clothing or equipment were either at/or above the action level for decontamination (160 – 330 CPM). After going through the decontamination shower twice, you are still above safe levels. Your levels are _____ counts per minute (CPM) using a Ludlum Model 3 hand held survey meter. Therefore for your own health and safety you will be transported by EMS to one of the following medical centers for further evaluation; Carolina Pines Regional Medical Center in Hartsville, Carolinas Medical Center in Florence or Chesterfield General Hospital in Cheraw, SC. Copies of your survey form and Radiation Exposure Record will be sent with you to the medical facility. Additionally SC DHEC will be notified so they can monitor you care and treatment.

STATEMENT FOR EMERGENCY WORKERS THAT CANNOT BE DECONTAMINATED

As an Emergency Worker, (Law Enforcement, Fire, EMS, bus driver, etc) you have been working inside the 10-mile Emergency Planning Zone (EPZ) for the H.B. Robinson Steam Electric Plant. Due to the nature and location of your duties you have been referred to the Darlington County screening survey, you were found contaminated with radiological material. The radiological levels on your body, clothing or equipment were either at/or above the action level for decontamination (160 – 330 CPM). After going through the decontamination shower twice, you are still above safe levels. Your levels are _____ counts per minute (CPM) using a Ludlum Model 3 hand held survey meter. Therefore for your own health and safety you will be transported by EMS to one of the following medical centers for further evaluation; Carolina Pines Regional Medical Center in Hartsville, Carolinas Medical Center in Florence or Chesterfield General Hospital in Cheraw, SC. Copies of your survey form and Radiation Exposure Record will be sent with you to the medical facility. Additionally SC DHEC will be notified so they can monitor you care and treatment. Decontamination Point for screening and/or decontamination. During the

Attachment 6 (Contaminated Property Receipt) to Appendix 4 (Emergency Worker Decontamination Station)

**Darlington County
Emergency Worker Decontamination Station
Contaminated Property Receipt**

NAME: _____

DATE: _____

SSN: _____ AGENCY: _____

ADDRESS: _____

The property in this bag has been quarantined for further decontamination. (Check the items)

Ring _____ Necklace _____ Handbag _____ Watch _____ Earrings _____

Currency(amount) _____ Bracelet _____ Wallet _____ Eyeglasses _____

Hearing Aids _____ Weapon/Firearm(s) _____ Handcuffs _____ Baton _____

Mace/Capstun _____ Badge _____ Vehicle _____ Vehicle #(County Shop #) _____

Other(specify) _____

The following clothing has been quarantined for further decontamination and/or disposal. (Check the items)

Male:

Hat _____ Shirt _____ Tie _____ Slacks _____ Coat _____ Jacket _____

Shoes _____ Socks _____ Belt _____ Underwear _____ Other _____

Female:

Hat _____ Shirt _____ Blouse _____ Slacks _____ Dress _____ Coat _____

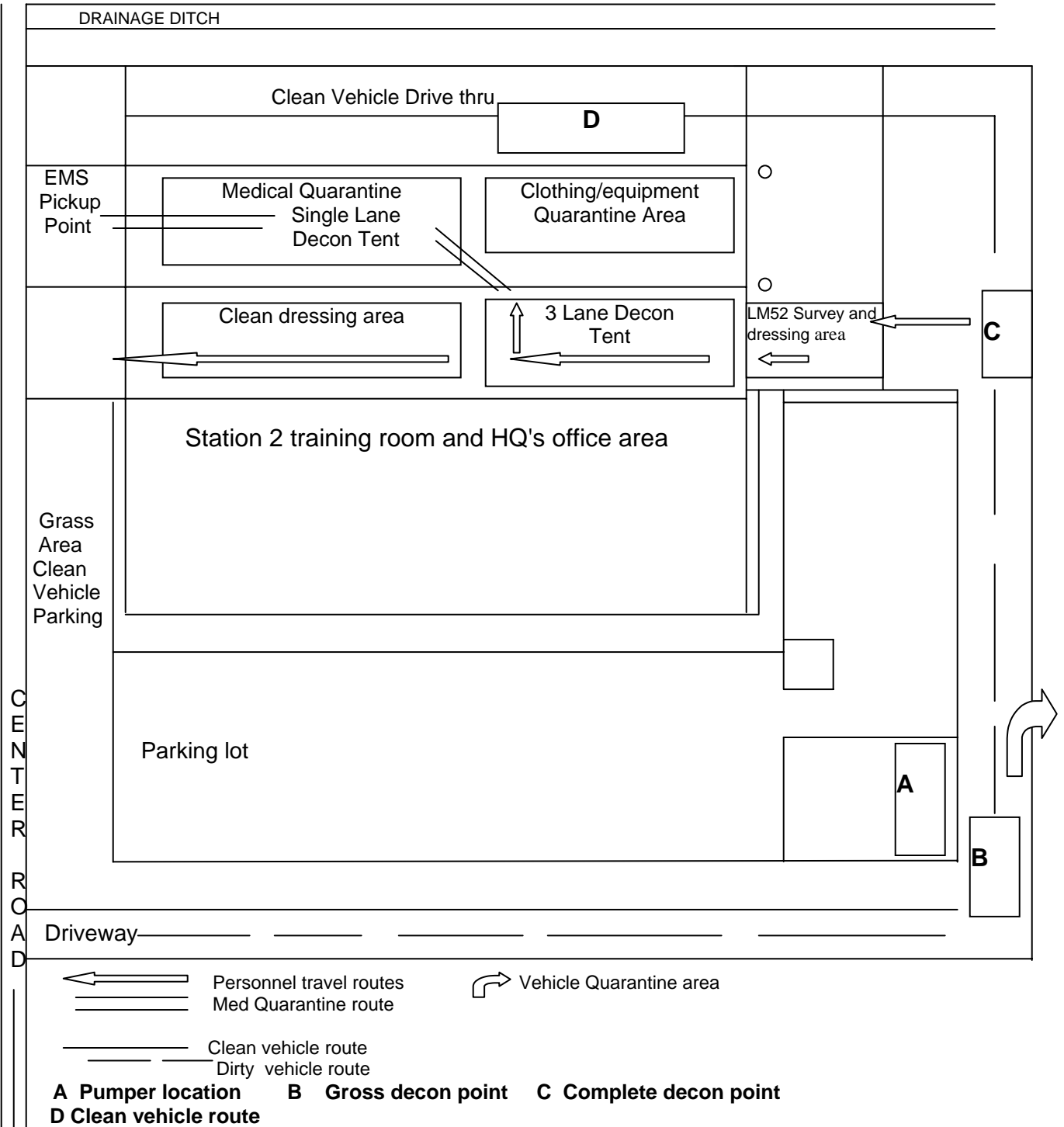
Jacket _____ Shoes _____ Socks/Hose _____ Belt _____ Underwear _____

Other _____

Emergency Worker impounding the property: _____
Signature Print Name

Property Owner: _____
Signature Print Name

Attachment 8 (Decontamination Station Site Layout) to Appendix 4 (Emergency Worker Decontamination Station)



Appendix 5 (Potassium Iodide (KI) Distribution Policy and Procedure)

1. General

- A. Under normal conditions the common element iodine will accumulate in the thyroid gland. During a nuclear power plant incident, radioactive isotopes of iodine may be released into the atmosphere. This form of iodine poses a threat to individuals exposed to a radioactive plume in that it will also accumulate in the thyroid if inhaled or ingested. Taking Potassium Iodide (KI) will have the effects of saturating the thyroid with iodide so that radioactive iodine will be blocked from accumulating there in large quantity.
- B. The toxicity level of KI is very low and dangers in taking this drug are considered to be minimal. Nonetheless, individuals should not take more than the recommended dose. Although side effects to KI are unlikely because of the low dose and the short time period it will be taken, some side effects are possible. The side effects may include: skin rashes, swelling of the salivary glands, and "iodism" (metallic taste, burning mouth and throat, sore teeth and gums, cold symptoms and sometimes gastrointestinal symptoms). A few people may have an allergic reaction with more serious symptoms. These symptoms could be: elevated temperature, joint pains, swelling of the face and body, and at times severe shortness of breath which requires immediate medical attention. Individuals who know they are allergic to iodine or shellfish should not take KI.
- C. The effectiveness of KI as a blocking agent is greatest if administered before the time of exposure to radio iodine, but some exposure saving can be obtained by administration shortly after exposure. A user information sheet on KI is included in Figure 1 to this Attachment.

2. State Policy

- A. The brand of potassium iodide adapted by DHEC for use by emergency workers and institutionalized individuals is "Thyro-Block." One unit of Thyro-Block consists of 14-130 mg tablets. Once advised by DHEC the prescribed dose is one tablet per day for 10 days unless directed otherwise. KI in tablet form will be available in sufficient quantities for:
 - 1. The general population residing within 10 miles of a nuclear power plant (NPP). Public distribution of KI will be handled by the Pee Dee Health District. Distribution Points will be established as necessary to distribute the KI to the general populace.

2. Potential emergency workers (fire, police, medical, farmers keeping livestock and selected industrial workers).
 3. Hospitals, nursing homes and prisons located within the plume exposure pathway EPZ. KI distribution for institutionalized personnel will be coordinated by the Pee Dee Health District.
- B. The State Health Officer (DHEC) or designee is responsible for recommending the order to administer KI to emergency workers and non-mobile institutionalized individuals. This recommended order will be given to the Governor or his designee when the Committed Dose Equivalent to the thyroid is projected to be greater than 5 Rem. The State Health Officer's advice will be disseminated to state agencies and emergency workers through emergency management channels.
3. Darlington County KI Distribution Procedure:
- A. During an event at the HBRSEP, the Darlington County Health Officer will bring the emergency worker KI to the EOC when the Health Officer's desk is activated. Darlington County maintains 2800 doses of 130mg KI "Thyro-Block" tablets. This is sufficient KI for over 200 emergency workers.
 - B. When the DHEC Commissioner orders that KI be issued and taken by emergency workers, the KI will be distributed as follows;
 1. A team consisting of a DHEC Nurse and a Deputy with the appropriate dosimetry will be sent to all emergency worker locations in the 10-mile EPZ. The Nurse will issue the appropriate KI dose to each worker and give each worker specific instructions on the taking of KI. The Nurse will sign and date the emergency worker's Radiation Exposure Record indicating that the proper dosages and instructions were given to the worker. Once all emergency workers in the 10-mile EPZ has been issued the KI, the Nurse and Deputy will report to the Emergency Worker Decon Point, where the Nurse will issue these workers their KI and then proceed through decontamination.
 2. Or, the KI will be issued to each emergency worker when they are issued their dosimetry prior to entering the 10-mile EPZ. Dosage instructions will be issued at the same time as the KI and the Radiation Exposure Record signed. Emergency workers will be given specific orders from the EOC when the DHEC Commissioner orders the KI to be taken.
 3. Unusual situations that are not addressed in this procedure will be addressed as they occur.

Attachment 1 (Potassium Iodide User Information) to Appendix 5 (Potassium Iodide (KI) Distribution Policy and Procedure)

Caution: Potassium Iodide (KI) should be taken only on the advice of the State Health Officer, or designee, South Carolina Department of Health and Environmental Control (DHEC) and as directed by State or Local Public Health or Emergency Preparedness Authorities.

If you are told to take this medicine, take it one time every 24 hours. Do not take it more often. More will not help you and may increase the risk of side effects. Do not take this drug if you know you are allergic to Iodide. (See side effects below.)

1. Directions for Use: Use only as directed by state or local public health authorities in the event of a radiation emergency.
 - A. Tablets: ADULTS AND CHILDREN 1 YEAR OF AGE OR OLDER: One (1) tablet once a day. Crush for small children. BABIES UNDER 1 YEAR OF AGE: One-half (1/2) tablet once a day. Crush first.
 - B. Take for 10 days unless directed otherwise by state or local public health authorities.
 - C. Store at controlled room temperature between 15° and 30°C (59° to 86°F). Keep container tightly closed and protect from light.
2. Warning: Potassium iodide should not be used by people allergic to iodide. Keep out of the reach of children. In case of overdose or allergic reaction, contact a physician or the public health authority.
3. How Potassium Iodide Works: Certain forms of iodine help your thyroid gland work right. Most people get the iodine they need from foods, like iodized salt or fish. The thyroid can “store” or hold only a certain amount of iodine. In a radiation emergency, radioactive iodine may be released in the air. This material may be breathed or swallowed. It may enter the thyroid gland and damage it. The damage would probably not show itself for years. Children are most likely to have thyroid damage. If you take potassium iodide, it will fill up your thyroid gland. This reduces the chance that harmful radioactive iodine will enter the thyroid gland.
4. Who Should Not Take Potassium Iodide: The only people who should not take potassium iodide are people who know they are allergic to iodide. You may take potassium iodide even if you are taking medicines for a thyroid problem (for example, a thyroid hormone or anti-thyroid drug). Pregnant and nursing women and babies and children may also take this drug.
5. How and When to Take Potassium Iodide: Potassium iodide should be taken

as soon as possible after public health officials tell you. You should take one dose every 24 hours. More will not help you because the thyroid can “hold” only limited amounts of iodine. Larger doses will increase the risk of side effects. You will probably be told not to take the drug for more than 10 days.

6. Side Effects:

- A. Usually, side effects of potassium iodide happen when people take higher doses for a long time. You should be careful not to take more than the recommended dose or take it for longer than you are told. Side effects are unlikely because of the low dose and the short time you will be taking the drug.
- B. Possible side effects include skin rashes, swelling of the salivary glands, and “iodism” (metallic taste, burning mouth and throat, sore teeth and gums, symptoms of a head cold, and sometimes stomach upset and diarrhea).
- C. A few people have an allergic reaction with more serious symptoms. These could be fever and joint pains, or swelling of parts of the face and body and at times severe shortness of breath requiring immediate medical attention.
- D. Taking iodide may rarely cause over activity of the thyroid gland, under activity of the thyroid gland, or enlargement of the thyroid gland (goiter).

7. What to do if Side Effects Occur: If the side effects are severe or if you have an allergic reaction, stop taking potassium iodide. Then, if possible, call a doctor or public health authority for instructions.

Appendix 6 (Procedures for the Treatment and Transport of Radiologically Contaminated Patients)

1. General:

- A. This appendix serves three (3) specific purposes:
1. It provides specific guidelines for the safe and effective treatment and transport of radiologically contaminated patients.
 2. Specific instructions on patient packaging, treatment, transport, dosimetry and patient "hand-off" to the hospital Emergency Room staff are included. The guidelines in this appendix will be used for any radiological incident regardless of origin that may occur in Darlington County. Additionally, these guidelines will be used for the conduct of the bi-annual Medical Services Drill (MS-1 Drill).
 3. When this appendix is separated from this annex and the EOP, it may serve as a "stand alone" SOP for the successful management of a radiologically contaminated patient. The information in this appendix serves as the County's SOP for the Medical Services Drill (MS-1) during bi-annual HBRSEP exercises.
- B. EMS workers may be assigned a variety of tasks during a radiological emergency. For missions in the 10-mile EPZ, ambulances will have three (3) crew members on board, providing sufficient personnel are available during the event. In this situation, the ambulance will have a driver and two (2) attendants, with one attendant designated as the radiological monitor. If sufficient personnel are not available, the mission will be performed with a two person crew.
- C. EMS personnel must remember that life-saving treatment is not withheld simply because the patient is radiologically contaminated. Emergency workers must remember these four (4) basic rules during a radiological incident response;
1. Protect yourself and your partner.
 2. Protect the public within your capabilities.
 3. Notify and request the appropriate resources.
 4. Be prepared to conduct gross decontamination. A simple but effective gross decontamination action for the EMS crew is the removal of all clothing. Remember, 90% of all external contamination is removed with

the clothing. For the purposes of this appendix, it will be assumed that any person operating in the 10-mile EPZ during an event at HBRSEP is contaminated until the EMS crew has the opportunity to perform a radiological survey using a Ludlum Model 3 (LM3) survey meter.

- D. Contamination Action Levels/Radiation Exposure Limits: EMS personnel must be knowledgeable on the Contamination Action levels that are used to determine if a person is radiologically contaminated and the Radiation Exposure Limits that the RRT may safely encounter.
1. Contamination Action Levels: A person is considered contaminated when surveyed by a Ludlum Model 3 Survey Meter and radiation levels on a person exceed two times (twice) background or 330 Counts Per Minute (CPM), whichever is less. Normal background radiation for Darlington County is 60 to 80CPM. Therefore, at 160CPM (twice background) a person is considered to be radiologically contaminated.
 2. Radiation Exposure Limits: EMS workers should commit the Radiation Exposure Limits to memory. These limits are administrative limits set by the State of South Carolina. It is important to note that these values are 1/5 of the maximum exposure limits established by the EPA.

Radiation Exposure Limits		
REL Value	Action	Explanation
0.1R	Call-Back	EMS personnel will be equipped with a 0-5R Self-Reading-Dosimeter (SRD). When the dosimeter indicates that the crew is encountering radiation levels of 0.1R, the crew will notify the EOC by radio, but continue their mission.
1 R	Turn Back	EMS personnel that encounter radiation at 1 R, may voluntarily turn back without orders from the EOC. They will notify the EOC that they are turning back. <u>However, if assigned to a Life Saving mission this rule does not apply.</u>
2 R	Protecting Valuable Property	EMS personnel will not be assigned to the mission of protecting valuable property. This mission applies primarily to Law Enforcement.
5 R	Life-Saving	EMS personnel will be assigned to the Life-Saving mission. Once employee's 0-5 SRD reads 5 R, they will immediately notify the EOC. These employees must be withdrawn from the 10-mile EPZ and replaced with another crew. Personnel can volunteer to return to the 10-mile EPZ after they have been informed of all health hazards the increased doseage may cause and agree in writing to return to the 10-mile EPZ.
Read your Self-Reading Dosimeter (SRD) every 15 to 30 minutes.		
Keep a daily log of your exposure on the Radiation Exposure Record Form.		
At the end of your mission turn, give the SRD to the Radiation Control Officer in the EOC. Keep your Radiation Exposure Record Form until the end of the incident.		

3. On-scene time: On-scene time for all EMS calls in the 10-mile EPZ will be limited to **10 minutes**. This time limit is set to minimize the time the EMS

crew is outside of the ambulance under the plume. EMS personnel must remember to include their travel time to and from the scene as time spent under the plume. Personnel should remember these basic protective actions for exposure to radioactivity;

- A. TIME - Keep the time that you are being exposed to ionizing radiation to the absolute minimum.
 - B. DISTANCE - Keep as much distance as possible between you and the radioactive source.
 - C. SHIELDING - Make the most effective use of the available shielding. The body of the ambulance may not be the ideal or desired shielding, but the materials in the body of the ambulance is still reducing the ionizing radiation you are exposed by creating density between you and source.
- 4. If you are unable to complete the mission within the time constraints and before your self-reading dosimeter reaches 5R, notify the EOC immediately for additional instructions.
 - 5. Since the EMS RRT will enter the 10-mile EPZ during a release at the HBRSEP, the RRT will be instructed to take Potassium iodide (KI) prior to entry into the EPZ. During , the RRT will carry "Simulated KI" tablets in a marked envelope.

2. Dosimetry:

- A. EMS personnel that are assigned missions in the 10-mile EPZ will be issued dosimetry prior entry. The Radiation Control Officer or Special Programs Coordinator in the EOC will issue dosimetry. Darlington County has sufficient dosimetry on hand to equip two (2) EMS crews for entry into the 10-mile EPZ. When an event is declared at the HBRSEP, Darlington County will request that SCEMD activate the Dosimetry Re-distribution Plan as specified in SCOREP.
- B. EMS crews that are assigned missions in the 10-mile EPZ will be issued the following dosimetry:
 - 1. 1 – Ludlum Model 3 Survey meter
 - 2. 1 – 0-5R SRD per EMT with 1 – 0-5R SRD per member as backup.
 - 3. 1 – PRD/TLD per EMT
 - 4. 1 Radiation Exposure Record form per EMT

5. If the event has reached an Emergency Classification Level of Site Area Emergency or General Emergency, personnel will be issued KI prior to entry into the 10-mile EPZ.

NOTE: For exercises and drills, MS-1 drill players will be issued the same dosimetry as above except PRD/TLDs will be simulated. Emergency worker KI will be simulated with an envelope containing hard candy and the words "Simulated KI" on the outside of the envelope. An additional Ludlum Model 3 Survey Meter will be issued as backup during exercises.

- C. Upon completion of their assigned mission or event closure and following decontamination of the crew, ambulance and equipment, all dosimetry will be turned into the Radiation Control Officer or Special Programs Coordinator in the EOC.
 - D. Perform all pre-operational checks on your equipment prior to entering the 10-mile EPZ. Background radiation levels across Darlington County are 60 to 80 CPM regardless of location.
3. Radiation Exposure Records: All emergency workers that are issued dosimetry, will be issued a Radiation Exposure Record Form. This form will be used to record total exposure levels encountered by emergency workers. At the end of the event, the form will be turned into the Radiation Control Officer or Special Programs Coordinator. A copy of the form will be retained by Darlington County and the original forwarded to DHEC. The Radiation Exposure Record will also be utilized to document that the emergency worker has been issued KI along with the instruction on when and how to take the KI.

4. Medical Facilities:

- A. Medical facilities that can accept radiologically contaminated patients are approved by DHEC through a signed agreement. The SCOREP contains the statewide list of hospitals that can accept radiologically contaminated patients. There is one (1) hospital in Darlington County and two (2) in adjacent counties that can accept radiological patients. These hospitals are:
 1. (Primary) Carolina Pines Regional Medical Center
1304 West Bobo Newsome Hwy
Hartsville, SC 29550
CPRMC can accept 8 ambulatory patients and 2 non- ambulatory patients.
 2. (Back-up) Chesterfield General Hospital
Hwy 9 West
Cheraw, SC 29520
Chesterfield General can accept 4 ambulatory patients and 2 non-ambulatory patients.

3. (Alternate) Carolinas Hospital System
805 Pamplico Hwy
Florence, SC 29505

- B. An event at the HBRSEP has the potential to become a mass casualty event. The EMS Coordinator in the EOC has the option to activate the County's Mass Casualty Plan. All three (3) hospitals will be contacted to determine the number of patients the facility can accept. The EMS Coordinator will then direct EMS as to which facility radiologically contaminated patients will be transported. As soon as the three local hospitals reach their capacity, the Emergency Services Director will be notified. The County EOC will then notify the DHEC representative in the SEOC. The SEOC will direct which hospital Darlington County will be utilized for radiologically contaminated patients.
- C. All radiological patients will be transported to the closest facility appropriate for the patient's medical condition.

5. Communications:

- A. An event at the HBRSEP may be a slow moving event or a fast breaking event. In fast breaking events the first emergency notification message may show the plant declaring a General Emergency. Prior to transporting any radiologically contaminated patients, the Emergency Services Director or his designee will notify the hospital about the event declaration. As a minimum this communication will include the emergency classification level of the event, the time the event was declared and any information about anticipated patients that may be transported to the hospital.
- B. Communications between the EOC and ER will be performed primarily by telephone. Communications between the ambulances and hospital will be performed over standard radio frequencies, unless otherwise directed. Specific communications with the hospitals, Dispatch and EOC will be as follows:
 1. Initial notification to the hospitals by the Emergency Services Director or his designee that an event has been declared at the HBRSEP.
 2. The EMS Coordinator will notify the ER when an ambulance is dispatched into the 10-mile EPZ to transport a potentially contaminated patient.
 3. The designated ambulance will establish communications with Dispatch and the ER as soon as they are enroute to the scene. The initial hospital notification will include the Medic number (i.e., Medic 34, etc) and the estimated time to the scene and subsequent travel time to the hospital.

4. The ambulance will notify Dispatch when they arrive on scene.

(**NOTE:** CPRMC should assign someone to monitor the radio and specifically listed for the ambulance that is enroute to pickup the contaminated patient.)
 5. As soon as the crew has the patient packaged and enroute to the hospital, the crew will notify both Dispatch and the ER. The patient report to the ER should include as minimum, the patients injuries, vital signs, treatment provided, contamination levels for the patient and ETA to the hospital.
 6. The crew will notify Dispatch and the EOC upon arrival at the hospital.
 7. Once the ambulance and crew have been surveyed for contamination and it is determined that both the crew and ambulance require decontamination, the EOC will be notified that ambulance is out of service and enroute to the County Decon Point.
- C. Names of the EMS crew, patient or hospital staff will not be given over the radio. Qualifications of the crew will not be given over the radio since all Darlington County ambulances are Advanced Life Support. Names will be given over the radio only when requesting on-line orders for narcotic medications.
- D. Communications with out-of-county hospitals will be performed over the frequencies commonly identified as "220" or "340". Communications that cannot accomplished over these frequencies will be completed as directed by the EMS Coordinator.
6. Personal Protective Equipment:
- A. FEMA Region IV uniform standard for EMS crews is standard turnout gear (uniform) with latex gloves. However, the Oak Ridge Associated Universities publication 223 (prepared for FEMA) states "Standard turnout gear or other protective clothing to cover bare skin". Any standard turnout gear that protects the emergency worker from the blood borne pathway is ideal (turnout gear exceeds the FEMA minimum requirement).
 - B. Darlington County EMS crews are provided Tyvek coveralls for protection against blood borne pathogens and communicable diseases. EMS personnel will use the Tyvek coveralls instead of turnout gear during radiological events. Crews will wear the standard duty uniform under the Tyvek coveralls. T-shirts may be used instead of the black short sleeve shirt.
 - C. This dressing sequence will be used for both exercises and actual events.

1. Use Tyvek coveralls.
2. Wear a waterproof shoe cover (tape and leave a tab on the tape.)
3. Wear a head covering or hood.
4. Wear multiple sets of gloves. The first gloves are taped to the coverall sleeve. Leave a tab on the tape. If possible, use a different color glove.
5. The second and third layers of gloves are not taped to allow attendant to frequently change gloves. Each time a procedure is performed on a contaminated victim, immediately change gloves.
6. Wear a surgical mask.
7. Attach PRD/TLD to inside of the coverall. (In an actual event, label the dosimeter with your name).
8. Attach a calibrated dosimeter at the neck level and report the reading every 15 to 30 minutes to the Recorder.

NOTE: A second outer garment may be worn if heavy contamination is suspected.

D. This undressing sequence will be used for both exercises and actual events.

1. Radiological Response Team (RRT) member goes to the clean line and removes protective clothing (placing all in a plastic container marked "contaminated").
 - a. Remove outer gloves – inside out.
 - b. Give dosimeter and TLD to Health Physicist or Radiation Control Officer.
 - c. Remove tape on inner gloves and shoe covers.
 - d. Remove coverall – inside out and do not shake.
 - e. Remove head cover.
 - f. At the step off pad:
 1. Remove shoe cover (HP monitors shoe, if clean, step over the clean line).
 2. Repeat for the other shoe.

- h. Remove inner gloves.
- i. HP performs whole body frisk and final monitor. If contaminated, refer to the County Decon Point.

7. Survey, Treatment and Transport of Radiologically Contaminated Patients:

- A. EMS personnel will be required to perform radiological monitoring of patients during a radiological incident. Ambulances will be staffed with a three (3) person crew (referred to as the Radiological Response Team) and perform the following duties:
 - 1. Driver/Recorder - the driver will serve as the recorder for the RRT. The Recorder is responsible for recording the time that the ambulance received the call, time the RRT goes enroute to the scene, arrives at the scene, departs the scene enroute to the hospital and the time of arrival at the hospital. Additionally the Recorder will remind the RRT when they have been on scene 10 minutes, record all radiation levels on the patients and the dosimeter readings of all RRT members. The driver will use the form provide at Attachment 1, this appendix.
 - 2. First Attendant - The first attendant will be the senior EMT, EMT-I or EMT-P and is responsible for providing patient care during transport.
 - 3. Second Attendant - The second attendant will serve as the Radiological Monitor (RM). The RM is responsible for conducting all radiological surveys of the patient and scene.
- B. When sufficient personnel are not available to provide a three (3) person RRT, the First Attendant will also perform the RM function. When three (3) person crews are available, the Driver/Recorder will remain in the vehicle. On a two (2) person RRT, the driver will exit the vehicle to assist with patient packaging and loading.
- C. Radiological monitoring will be performed using a Ludlum Model 3 Survey meter. Pre-operational checks will be performed using either the operators manual or the SCEMD Radiological Emergency Workers Job Aid. Confirm calibration dates during your pre operational checks.

NOTE: REMEMBER - Establish background levels before entering the 10-mile EPZ. Normal background for Darlington County is 60 to 80CPM.

- D. Ambulance preparation: The ambulance will be prepared as described in the SCEMD Medical Services Drill Handbook and this appendix.
 - 1. If using a walk-thru type ambulance, the door will be closed separating the

patient and drivers compartment. The small window in the door will be opened enough to allow the Recorder to hear the information from the First Attendant and RM. In non-walk-thru ambulances, the window will be left open wide enough to understand speech from the attendant(s).

2. All loose, non-essential equipment will be stored in the cabinets. A blood pressure cuff, stethoscope, trauma shears and jump kit may be left out for immediate access.
3. The floor and all seating surfaces will be covered with herculite, plastic or brown paper.
4. Insure that the following supplies are available:
 - A. PPE (tape, booties, coveralls and surgical mask)
 - B. Gloves - 1 box per RRT member
 - C. Plastic bags and ties (for contaminated clothing and material)
 - D. Radiological hazard tape or rope
 - E. Full size sheets and blankets
 - F. Ludlum Model 3 survey meter
 - G. 0-5 SRDs, 2 per crewmember
 - H. PRDs/TLDs
 - I. Weights to hold down ground covers
 - J. Saran wrap
 - K. CDV-750 Model 6 Dosimeter charger
- E. Enroute to scene: RRT will report Call-back and Turn-back values as they are encountered. Maintain communications as directed paragraph 5 this appendix.
- F. Arrival at the scene: Upon arrival at the scene perform the following actions.

NOTE: Patient radiological monitoring will be attempted by the EMS crew, however if the LM3 survey meter "pegs out" defer patient monitoring until you exit the 10-mile EPZ or plume or; defer patient monitoring until arrival at the hospital.

1. Perform a radiological survey of the area in close proximity of the ambulance and patient, then record readings.
2. On-scene decontamination is not practical in a highly contaminated area, other than clothing removal and cocooning of the patient. Bag, tag and leave the contaminated clothing at the scene.
3. Place a ground cover next to the patient to protect the backboard or scoop stretcher from contamination and place the backboard on top of the ground cover. All ground covers should be weighted down to prevent the wind from blowing them away.
4. Place the patient and a medical bag on a weighted, clean ground cover and treat the patients medical injuries.
5. Place a clean sheet on top of the backboard or scoop stretcher to cocoon the patient.
6. Secure the cocooned patient with a cervical collar and straps as you would any patient that has fallen. Cocoon the patient's entire body, except for the face. Consider O2 therapy if necessary.
7. Place a second ground cover at the rear of ambulance and place the stretcher on top of the ground cover.
8. Place the cocooned patient on the stretcher and load the stretcher into the ambulance.
9. Notify the hospital as specified in this appendix. The report should include;
 - A. Physical condition of the patient(s).
 - B. Vital signs.
 - C. Extent of contamination/monitoring results (radiation levels on the patient) if monitored in the ambulance.
 - D. Estimated time of arrival to the hospital.
 - E. Determine if there is special entrance procedures for the hospital.
- G. Enroute to the Hospital:
 1. Continue medical procedures as appropriate for the injuries.
 2. Obey normal speed and safety regulations. Do not use sirens and

flashing lights.

3. Maintain communications with receiving medical facility to update ER in accordance with Darlington County Standing Orders.

H. Arrival at the hospital:

1. Hospital RRT meets the ambulance.
2. The Hospital RRT has established a clean zone for patient hand-off. A red line will separate the ambulance zone and hospital clean zone. Do not allow contaminated material from the ambulance to cross into the hospitals clean zone.
3. The EMS RRT crew transfers the patient with assistance from the Hospital RRT over the control line onto a clean gurney.
4. Hospital RRT uses state and local government Action Levels, whichever are most conservative for determining radiological contamination of personnel and vehicles using a Ludlum Model 3 Survey meter.
5. EMS RRT and ambulance are monitored and referred to the County Decon Point if contaminated.

<p><u>Normal background radiation for Darlington County is 60 to 80 CPM</u></p>
<p>State Personnel Contamination Action Level <u>Greater than twice (2X) background not to exceed 330CPM</u></p>
<p>State Vehicle Contamination Action Level <u>Greater than 1650CPM</u></p>

6. Upon arrival at the County Decon Point, the ambulance and crew will be decontaminated in accordance with Appendix 4, this annex.
- I. Transport of emergency workers that cannot be decontaminated:
Emergency workers that have gone through the Decon shower twice and still show contamination will be transported by ambulance to the hospital as determined by DHEC. These workers will be dressed in coveralls with large bold letters "MQ" (Medical Quarantine) on the front and rear of the coveralls. If the workers medical condition is stable and the worker is ambulatory, a maximum of three (3) patients per ambulance may be transported. If the workers condition is medically unstable (i.e., heart attack or acute radiation poisoning), not more than two (2) patients per ambulance will be

transported. Treat and transport these patients in accordance with local Standing Orders. Medically unstable patients should be cocooned during transport. Medically stable, ambulatory patients should have all skin surfaces and hair covered. Consider placing a surgical mask over the face of stable, ambulatory patients.

8. Medical Services Drill (MS-1):

A. The eight objectives of MS-1 drills are:

1. Demonstrate the capability to continuously monitor and control radiation exposure to emergency personnel.
2. Control the spread of contamination from injured individuals who may be contaminated.
3. Prioritize the need to address radioactive contamination and need for prompt transportation to a medical facility of an individual with an urgent medical condition.
4. Transport individuals to medical facilities equipped to deal with radiologically contaminated and injured crews.
5. Communicate with the medical facility by the EMS RRT while enroute to the medical facility.
6. Decontaminate contaminated individuals to the lowest level reasonably achievable.
7. Monitor and determine the need to decontaminate emergency vehicles after use.
8. Complete all activities through adherence to the EMS and hospital plans.

B. Medical Services Drill (MS-1) Extent of Play requirements:

1. These recommended procedures incorporate lessons learned in the conduct and evaluation of past MS-1 drills and the Handling of Radiation Accidents by Emergency Personnel course taught at Oak Ridge Institute for Science and Education. These are not iron-clad rules but, instead, are experience based suggestions that answer most of the Points of Review in the FEMA Evaluator's EEM Checklist.
2. These sequenced procedures, recommended actions and referenced checklists may be adapted as needed to your existing radiological response plan. They may also serve as a review prior to an MS-1 drill or

an actual radiological emergency.

3. Assumptions:

- A. A FEMA approved generic scenario developed by SCEMD annually, will be localized for each specific MS-1 drill.
- B. HBRSEP's Emergency Classification Level is General Emergency.
- C. A radioactive plume has been released from the plant.
- D. Local and State EOC's are fully activated.
- E. A designated EMS RRT is on standby.
- F. The State Health Officer (DHEC) has authorized the issuance and administration of KI for emergency workers and the EMS RRT has taken KI.
- G. Victim's injuries **are not** life-threatening.
- H. There will be wounds requiring decontamination.
- I. An EMD controller will announce monitor readings while monitoring is in progress.
- J. A FEMA Evaluator will observe.

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Attachment 1 (RRT Recorder Sheet) to Appendix 6 (Procedures for the Treatment and Transport of Radiologically Contaminated Patients)

Darlington County Medical Services Team Recorder Sheet				
NOTE: Normal Background Radiation for Darlington County is 60 to 80 Counts Per Minute (CPM). Establish background level when performing LM3 pre-operational checks.				
Unit #: <u>M</u> Times: Call Received: _____ Enroute: _____ On Scene _____				
Enroute to Hospital _____ Arrival at Hospital _____ Enroute to Decon _____				
Type of Survey Meter Used: _____ Serial #: _____				
Type of Dosimeter Used: _____ Serial # _____				
Serial #: _____ Serial #: _____				
Contamination Action Levels at: Scene: _____ Time: _____				
Contamination Action Levels at : Patient: _____ Time: _____				
<u>1st Attendant</u> _____		<u>2nd Attendant</u> _____		
	Dosimeter Reading	Time	Dosimeter Reading	Time
On Scene	_____	_____	_____	_____
On Scene	_____	_____	_____	_____
In Unit	_____	_____	_____	_____
In Unit	_____	_____	_____	_____
In Unit	_____	_____	_____	_____
In Unit	_____	_____	_____	_____
<u>Driver/Recorder</u> _____		<u>Patient</u> _____		
	Dosimeter Reading	Time	Ludlum M3 Reading	Time
On Scene	_____	_____	_____	_____
On Scene	_____	_____	_____	_____
In Unit	_____	_____	_____	_____
In Unit	_____	_____	_____	_____
In Unit	_____	_____	_____	_____

Reminder(s): Check your dosimeter and give readings to the Driver/Recorder.

