

State of West Virginia Field Monitoring Team Standard Operating Procedures (SOP)



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Background

The Field Monitoring Team Standard Operating Procedure (SOP) was prepared to assist the West Virginia Radiological Monitoring Teams in collecting samples, determining the location of a radioactive plume, and establishing exposure levels inside the plume. This SOP covers monitoring techniques, personnel, documentation, dosimetry and equipment.

Overview

There is one 10-mile radius Plume Emergency Planning Zone (EPZ) associated with a nuclear power plant affecting the State of West Virginia. Parts of northern and northeastern Hancock County are in the 10-mile Plume Emergency Planning Zone (EPZ).

Responsibilities

Field monitoring team responsibilities during an emergency involving nuclear material include:

- Determining the location of the radioactive plume and potentially affected areas
- Collecting data, such as severity of accident, the impact on general population and the impact on emergency workers, for appropriate advisories and recommendations to be issued to the public.

West Virginia Division of Homeland Security and Emergency Management (DHSEM)

- Overall Direction and Control of Field Monitoring Team (FMT) through State Emergency Operations Center (SEOC).

West Virginia Bureau of Public Health (BPH)

- Primarily responsible for accident assessment
- Staffs and leads the FMT in operations in the field

Hancock County Office of Emergency Management (OEM)

- Assists in direction and control of FMT and advises FMT of traffic routes and access control points.
- Provides communications personnel to FMT, as needed.

General Operations

A field monitoring team should be made up of two or more persons. These positions may be filled by state personnel operating (permanently or temporarily) out of the Hancock County Emergency Operations Center (EOC). Vehicle drivers and communications personnel for radio may be staffed by county personnel, as needed, and one person may fill both duties. Use of county personnel is coordinated through the Hancock County OEM Director (or designee) in the Hancock County EOC. Field monitoring teams must stay below a total accumulative dose of 5 rem TEDE with an administrative limit at 1R or 1R/hr for the emergency phase of the incident. Levels in excess of established limits must be approved by the County Radiological Officer or the Bureau of Public Health.

Dose Limits

DOSE LIMIT (TEDE*)	FUNCTIONS FOR EMERGENCY WORKERS (EWs)
5 REM	<i>All EWs assigned to duties inside the Plume Exposure EPZ</i>
10 REM	EWs assigned to the care of special populations (i.e., nursing homes, hospitals, jails) or special facilities (i.e., water treatment facilities) where protective actions are being implemented.
25 REM	EWs assigned to tasks inside the Plume Exposure EPZ for lifesaving or protection of large populations.
*** > 25 REM	EWs voluntarily accepting the risk exceeding the PAG to save lives or protect large populations

NOTE: During any incident, the WVBPH may decide to lower these dose limits.

* TEDE – total effective dose equivalent

*** Trained personnel may exceed the 25 Rem TEDE limit for the functions identified in the chart with prior notification and permission granted by BPH.

All exceptions to dose limits must be approved by county health officer.

Note: TEDE refers to the sum of internal and external worker exposures, however, the Emergency Workers (EW) may only have access to direct reading dosimeters (DRD) for assessment of external dose (measured in units of Roentgens or R). If air samples or dose projection data for external dose rate with estimates of exposure for internal body burdens of inhaled or ingested radioactive materials exceed the dose limits above (reported in REM), the Accident Assessment Coordinator will inform the Accident Assessment Manager at the State EOC for communication to the County EOC and Field Monitoring Teams

For X- or gamma radiation the Quality Factor of the radiation is 1; the relative biological effect is the same for the external exposure (R) and absorbed dose (units of Rad or Gray) due to penetrating gamma radiations from potential source terms involving radioactive concentrations in the effluent. The exposures measured using DRD are recorded in units of Roentgen (R). Information from BVPS Assessment and Projection staff indicating a EDE/TEDE ratio other than 1 will result in lower dose limits and turn back values. In some cases the dose limits/turn back values may be significantly lower.

The dose assessment software or bioassay testing will provide data to calculate internal organ dose due to the presence of airborne radioactivity or particulates deposited during the plume phase, measured directly in air samples or predicted in plume models. The unit of whole body dose equivalent (REM) is used to report the worker dose due to the summation of both internal exposure and external exposure. The unit may be reported in REM or milliSievert.

Turn Back Values - Established Dose Limits at which an EW should leave the area if he receives no further directions. Except for life-saving tasks by EW, the **Turn - Back Value is 2.5 R for all EWs with a dose limit of 5 rem** or one half of their dose limit in the table above (12.5 R for EWs with a dose limit of 25 rem).

Declared Pregnant Workers – Are not authorized to work inside the plume exposure pathway EPZ.

Administrative Reporting Limits - EWs are to report readings at least once every half hour, and in one (1) R increments to their supervisor and/or to their dosimetry coordinator: 1 R, 2 R, 3 R, 4 R, 5 R, etc. Dosimetry coordinators are to report readings of 2 R and greater to the county radiological officer.

Potassium Iodide (KI) - Administer KI at the projected dose of 5 REM to the Thyroid CDE to Emergency workers and the general public or special populations within the 10-mile EPZ.

Duties and Required Actions

Field Monitoring Team Leader

1. Prepare the Field Monitoring Team for deployment by
 - Coordinate all activities for the Field Monitoring Team, its transportation, and 24-hour coverage for the team.
 - Coordinate response activities with other response agencies (State EOC, Beaver Valley Emergency Operations Facility, etc.)
 - Verify communication and back-up communication are in place for the field monitoring team, before deployment into field.
 - Verify the Field Monitoring Team has appropriate equipment for duties
 - Determine field monitoring points, from established locations, for field readings.
2. Deploy the Field Monitoring Team and direct activities by
 - Maintaining overall direction and control for accident assessment at the Hancock County EOC.
 - Assigning field monitoring points from established location to FMT.
 - Relaying Emergency Action Levels, wind speed and direction, and radiological release information to FMT at least every 30 minutes or when information changes. FMT should relay dosimetry readings in 30 minute intervals.
 - Communicate all field readings to State EOC.
 - Assist the County Radiological Officer, as needed.
 - Notify FMT members and County Radiological Officer of any changes in dose limits

Field Monitoring Team Members

1. Prepare for Field Monitoring Team deployment by
 - Checking in with the Field Monitoring Team Leader at Hancock County EOC.
 - Verifying appropriate transportation with oil, gasoline and working 12-volt power outlet
 - Verifying communication and back-up communication are in place for the field monitoring team, before deployment into field.
 - Obtaining security pass from Hancock County EOC Law Enforcement for checkpoints
 - Inventory equipment using Appendix 3.
 - Performing an operational check and reviewing operation of equipment using Appendices 4, 5, 6 and 7.
 - Reviewing proper survey procedures using Annex A, B, C and D.
 - Obtaining dosimetry, reviewing dose limits, and completing Dosimetry Report Form in Appendix 2.
 - Reviewing map of Field Monitoring Points in Appendix 9.
 - Check and prepare protective clothing at Emergency Worker Decontamination Center (EWDC)
2. Deploy with the Field Monitoring Team and perform duties by
 - Reading dosimetry every 30 minutes or as directed and reporting readings in 1 Roentgen (R) increments.
 - Not eating, drinking, or smoking while performing field monitoring duties.
 - Take readings and/or samples, as requested
 - Complete the West Virginia Field Monitoring Team Log in Appendix 12.
 - Directing all public and media inquiries to the local county information line at 304-564-4040, while remaining courteous. Field Monitoring Team members are authorized to explain that the survey is a precautionary measure and that the data will be evaluated and reported to state and local authorities and the public.
 - Report to the assigned location(s) and conduct a radiological survey outlined in Annex A and B.
 - Conduct air sampling, if requested, as outlined in Annex C and D. Samples may be monitored once leaving the sample area. Complete Sample and Laboratory Data Sheet in Appendix 1, being sure to fill in the chain of custody section.
 - Report reading(s) back to Field Monitoring Team Leader in Hancock County EOC.