EPA's Radiological Emergency Response Program and Protective Action Guides

NRC State Liaisons Meeting
August 2009
Introduction

- Overview
- EPA Response Roles
- EPA Response Assets
- Protective Action Guides
Preparedness

Building Capacity and Coordinating with:

- DHS/FEMA
  - Federal Radiological Preparedness Coordinating Committee (FRPCC)
  - Radiological Emergency Preparedness (REP)
  - Nuclear Incident Response Team (NIRT)
- Dept. of Energy
- Homeland Security Council
- National Response Team
- Dept. of Defense
EPA Response Roles - Plans

National Response Framework (NRF)
- All Hazards
- Nationally significant incidents
- Nuclear/Radiological Incident Annex
- ESF #10

National Oil & Hazardous Substance Pollution Contingency Plan (NCP)
- All Oil, Hazardous Substances, & Pollutants or Contaminants
  - Includes any imminent and substantial threat to the public health or welfare of the United States or the environment of the United States including radiological materials
- Nationally significant incidents
EPA’s Role in Terrorist Incidents

Pre-release

- Support the DHS and the FBI in threat credibility assessment
- May pre-deploy or assist at Nationally Significant Special Events or on Domestic Emergency Support Team

Post-release

- Forensic assets assist in evidence collection
- Emergency response assets respond to consequences of incident at the tactical ICS level
- Clean-up efforts
Consequences Response Role

- Provide overall response coordination (NCP/ESF#10)

- Perform and coordinate radiological monitoring and assessment
  - Assist DOE (in the emergency and intermediate phase) and lead the Federal Radiological Monitoring and Assessment Center (FRMAC) in the long-term phase

- Develop Protective Action Guides (PAGs)

- Provide “Special Teams” emergency response expertise and support

- Serve as Coordinating Agency under the NRF’s Nuclear/Radiological Incident Annex if unowned/unlicensed sources, foreign incidents with impacts on the U.S.
Annex Coordinating Agency Roles & Responsibilities

<table>
<thead>
<tr>
<th>TYPE OF INCIDENT</th>
<th>COORDINATING AGENCY</th>
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<tbody>
<tr>
<td>a. Radiological terrorism incidents (e.g., RDD/IND or radiological exposure device):</td>
<td></td>
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<tr>
<td>1) Material or facilities owned or operated by DOD or DOE</td>
<td>1) DOD or DOE</td>
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<tr>
<td>2) Material or facilities licensed by NRC or Agreement State</td>
<td>2) NRC</td>
</tr>
<tr>
<td>3) All others</td>
<td>3) DOE (to EPA for cleanup)</td>
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<tr>
<td>Note: lead transitions to EPA for cleanup</td>
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<tr>
<td>b. Nuclear Facilities:</td>
<td></td>
</tr>
<tr>
<td>1) Owned or operated by DOD or DOE</td>
<td>1) DOD or DOE</td>
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<tr>
<td>2) Licensed by NRC or Agreement State</td>
<td>2) NRC</td>
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<tr>
<td>3) Not licensed, owned, or operated by a Federal agency or an Agreement State, or currently or formerly licensed facilities for which the owner/operator is not financially viable or is otherwise unable to respond</td>
<td>3) EPA</td>
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<tr>
<td>c. Transportation of radioactive materials:</td>
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<tr>
<td>1) Materials shipped by or for DOD or DOE</td>
<td>1) DOD or DOE</td>
</tr>
<tr>
<td>2) Shipment of NRC or Agreement State-licensed materials</td>
<td>2) NRC</td>
</tr>
<tr>
<td>3) Shipment of materials in certain areas of the coastal zone that are not licensed or owned by a Federal agency or Agreement State (see USCG list of responsibilities for further explanation of “certain areas”)</td>
<td>3) DHS/USCG</td>
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<tr>
<td>4) All others</td>
<td>4) EPA</td>
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<tr>
<td>d. Space vehicles containing radioactive materials:</td>
<td></td>
</tr>
<tr>
<td>1) Managed by NASA or DOD</td>
<td>1) NASA or DOD</td>
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<tr>
<td>2) Not managed by DOD or NASA impacting certain areas of the coastal zone</td>
<td>2) DHS/USCG</td>
</tr>
<tr>
<td>3) All others</td>
<td>3) EPA</td>
</tr>
<tr>
<td>e. Foreign, unknown or unlicensed material:</td>
<td></td>
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<tr>
<td>1) Incidents involving foreign or unknown sources of radioactive material in certain areas of the coastal zone</td>
<td>1) DHS/USCG</td>
</tr>
<tr>
<td>2) All others</td>
<td>2) EPA</td>
</tr>
<tr>
<td>f. Nuclear weapon accident/incident (based on custody at time of event)</td>
<td>DOD or DOE</td>
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<tr>
<td>Other types of incidents not otherwise addressed above</td>
<td>DHS designates</td>
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</table>
EPA Experience

- Large-scale Incidents
  - Three Mile Island
  - Chernobyl
  - DOE Site Fires
- Small-scale Incidents
  - Lost Sources
  - Removal Sites
  - DOE Site Investigations
EPA Response Assets

- OSC Locations
- National Labs & Centers
- RERT Locations
- ERT Locations
- NDT Location
- NCERT
EPA On-Scene Coordinators (OSCs)

- Coordinate all Federal HAZMAT response efforts & resources
- Direct, coordinate, and provide technical assistance to all response efforts at an incident or site
- Bring full authority of the NCP
- Can call upon EPA’s Special Teams:
  - NCERT
  - ERT
  - NDT
  - RERT
EPA’s Role in Threat Response and Incident Assessment

**Law Enforcement/Forensic Support**

Criminal Investigation Division
- Fully authorized law enforcement officers
- 235 special agents
- Memorandum of Understanding (MOU) with FBI for Environmental Crimes; WMD MOU in Draft

National Enforcement Investigations Center (NEIC)
- Chemical analytical capabilities
- Forensic and rapid public health assessments
- Accredited and nationally recognized in forensic environmental analysis

National Counter-terrorism Evidence Response Team
- High Hazard Evidence Recovery for Chemical, Biological, and Radiological Incidents
- Nationwide team of EPA Special Agents integrated with criminal investigative and science/field expertise and fixed lab support from NEIC
Environmental Response Team (ERT)

- Provides experienced technical and logistical assistance in responding to environmental emergencies
  - Emergency response, site characterization and assessment, verification, cleanup, and disposal of radiologically contaminated wastes or release events
- Response capabilities include:
  - Air Monitoring
  - Alpha, Beta, Gamma, Neutron Detection and Quantification
  - Clean-Up Verification or Final Status Surveys (MARSSIM)
  - Contamination Containment
  - Disposal Option Determination
  - Environmental Monitoring and Sampling Design and Implementation
  - Isotopic Characterization
  - Decontamination
National Decontamination Team (NDT)

- Technical resource for decontamination science to provide support for actions that contribute to the protection of human health, the environment, and national security
- Provides unique, immediate response capabilities to safely and effectively support decon activities related to chemical, biological, and radiological events
- Provides expertise in radiological, chemical, and biological decontamination (for buildings, transportation, agriculture, food, open space, etc.)
- ASPECT provides 24/7 emergency response chemical/radiological plume mapping capability
Radiological Emergency Response Team (RERT)

- Provide guidance & on-scene assistance at Superfund and ER sites to OSCs and in the FRMAC

- Field-Deployable RERT:
  - Focus is on identifying and assessing potential impacts of low-level contamination
  - Field monitoring instruments and sample collection equipment
  - Mobile laboratories and capabilities

- Two “fixed” laboratories capable of providing comprehensive environmental analytical services
EPA is upgrading its air monitoring because air the most likely pathway of exposure following a terrorist incident

- Previously known as the Environmental Radiation Ambient Monitoring System (ERAMS)
- Nationwide, continuously operating environmental radiation monitoring system
  - Currently upgrading system to include both fixed and deployable components
  - Air monitoring will provide near real-time gamma spectroscopy & beta detection
  - Milk, precipitation, and drinking water also routinely monitored
- Helps decision-makers estimate the effects of radioactive releases on human health and the environment
- Developing system to meet data quality objectives based on response timeline
National Coverage of Future Fixed Air Monitor Locations*

*specific locations may vary
The 1991 EPA PAG Manual

- Evolved from previous editions
- Included updates and revisions
- Based on 1970s science
- Promised Water and Recovery Phase
Late Phase Guidance

- DHS RDD/IND document provided the guidance for late phase - cleanup
- Based on EPA Framework for Environmental Risk Management
- Optimization – a process rather than a cleanup number
Because of the extreme range of potential impacts, the Subgroup determined that a numerical approach was not useful.

The Subgroup determined that site-specific remediation and recovery strategies should be developed using principals of optimization.
Optimization

- A process used to determine the societal objectives for expected land uses, develop and evaluate options and approaches, and select the most acceptable criteria.

- Flexible process that employs quantitative and qualitative assessments applied at each stage of site restoration decision-making, from evaluation of remedial options, to implementation of the chosen alternative.
Factors in the Optimization Process

• Nature of the incident—size, contaminants, location, special consideration items

• Technical feasibility—waste generation and disposal

• Adverse effects of the cleanup activities

• Effectiveness and permanence

• Areas impacted
• Types of contamination
• Other hazards present
• Human health
• Public welfare
• Ecological risks
• Actions already taken
• Projected land use
• Preservation or destruction of significant places
• Technical feasibility
• Wastes generated
• Disposal options
• Applicable resources
• Potential adverse impacts
• Long-term effectiveness
• Timeliness
• Public acceptability
• Economic effects
Questions?