The 2019-2023 HPP Funding Opportunity Announcement (FOA) requires Healthcare Coalitions (HCCs) to develop a complementary coalition-level radiation emergency surge annex to their base medical surge/trauma mass casualty response plan. This annex aims to improve capacity and capabilities to manage exposed or potentially exposed patients during a radiation emergency. According to the 2017-2022 Health Care Preparedness and Response Capabilities, “Communities should be prepared to manage exposed or potentially exposed patients during a chemical or radiation emergency. During such events, individuals may go to various health care facilities, police and fire stations, and other locations for assistance...” (Capability 4, Objective 2, Activity 5).

This radiation emergency-focused operational annex complements the HCC’s Response Plan. It is intended to be a high-level, incident-specific response plan, identifying the experts and specialized resources that exist within the HCC or external to the HCC that are available. Each facility is encouraged to develop more detailed policies/procedures that support their individual operations, but that level of detail is not necessary in this annex.

This template provides general headers and descriptions for a sample HCC radiation emergency surge annex. The resources used to develop this template include sample HCC plans and the 2017-2022 Health Care Preparedness and Response Capabilities. This document is organized as such:

- Sample plan headings/sub-headings.
- Description and considerations (where appropriate, language from the FOA and Health Care Preparedness and Response Capabilities are used; refer to the full text of the capabilities for additional detail/information); and
- Sample resources/plans that may provide guidance or a template for HCCs to assist in their planning efforts. There is no guarantee the resource(s) listed will fully comply with the capability. A sample annex outline is provided in Appendix A of this document. Appendix B includes relevant resources.
According to the 2019-2023 FOA, HCCs must develop a series of specialty surge annexes to address pediatric, burn, infectious disease, radiation, and chemical emergencies. It is important to consider trauma, illness, surgical, and behavioral health topics inclusively since those caring for patients will likely be working on these situations simultaneously.

The FOA states, on page 70, "In addition to the usual information management and resource coordination functions, each specialty surge annex framework should be similarly formatted and emphasize the following core elements:

- Indicators/triggers and alerting/notifications of a specialty event
- Initial coordination mechanism and information gathering to determine impact and specialty needs
- Documentation of available local, state, and interstate resources that can support the specialty response and key resource gaps that may require external support (including inpatient and outpatient resources)
- Access to subject matter experts (SMEs) – local, regional, and national
- Prioritization method for specialty patient transfers (e.g., which patients are most suited for transfer to a specialty facility)
- Relevant baseline or just-in-time training to support specialty care
- Evaluation and exercise plan for the specialty function."

Additionally, the FOA states that the radiation emergency surge annex may also consider:

- “Local risks for radiation mass casualty events (e.g., power plant, industrial/research, radiological dispersal device, nuclear detonation)
- Detection and dosimetry equipment for EMS/hospitals
- Decontamination protocols
- On-scene triage/screening, assembly center, and community reception center activities
- Treatment protocols/information
- Coordination mechanisms with hematology/oncology centers and the Radiation Injury Treatment Network (RITN)
Prior to developing any emergency operations plan, HCCs should work with jurisdictional emergency management to conduct or participate in a risk assessment/hazard vulnerability assessment and a resource gap analysis to gather the information listed above and understand their specific risks, hazards, and resources available for a response. Additional guidance on collaborative planning and the role of HCCs through the phases of disaster can be found in the 2017-2022 Health Care Preparedness and Response Capabilities. In addition to the above, HCCs should also consider identifying incident specific essential elements of information, integrating with state and local crisis standards of care plans, and supply stockpiles of relevant acquisition and standards of re-use and extended use.

NOTE TO COALITIONS: Although jurisdictions are not required to use this template nor follow this format, the previously listed core elements must be included in the radiation emergency surge annex. There are many acceptable planning methods and document formats. However, HCCs are encouraged to use this template to promote consistent operational planning and formatting of the specialty annexes. The focus of this planning is to facilitate the growth of operational capabilities of coalitions to address specialty casualties. The planning process should be collaborative between hospitals, community-based healthcare facilities, public health departments (particularly with local and state response teams), emergency medical services (EMS), emergency management agencies, and other community organizations to discuss, strategize, and plan for the level of care that can be provided and resources available during and after a radiation emergency. This annex template is consistent with our base Healthcare Coalition Response Plan format and supports a seamless planning process and facilitated response. The length and complexity of the annex is directly proportional to the diversity of resources and members within the coalition. Additional ASPR TRACIE resources developed for HCCs include:

- Preparedness Plan, Response Plan, and Recovery Plan templates
- Pediatric Surge Annex Template, Burn Surge Annex Template, and Infectious Disease Surge Annex Template
- Radiological and Nuclear Topic Collection
- Select CBRN Resources
- Major Radiological or Nuclear Incidents: Potential Health and Medical Implications
- Additional resources that are helpful for HCCs
Contributors and reviewers of this document are listed alphabetically and include:

Eric Alberts, CEM, CHS-V, FPEM, FPEM-HC, CDP-1, CHPP, CHEP, SEM, CFRP, FABCHS, Corporate Manager, Emergency Preparedness, Orlando Health, Inc.; Cullen Case Jr., MPA, CEM, CBCP- Radiation Injury Treatment Network; Susan Sutton Clawson, PhD, HPP Field Project Officer Region III, HHS ASPR; C. Norman Coleman, MD, Senior Medical Advisor and Member of the Chemical, Biological, Radiological, and Nuclear Team at HHS ASPR, Associate Director for the Radiation Research Program, Senior Investigator in the Radiation Oncology Branch, National Institutes of Health, National Cancer Institute, Center for Cancer Research; Craig DeAtley, PA-C, Director, Institute for Public Health Emergency Readiness, MedStar Health; John Hick, MD, HHS ASPR and Hennepin Healthcare; Richard Hunt, MD, Senior Medical Advisor, HHS ASPR; Mary Russell, EdD MSN, Healthcare Emergency Response Coalition Palm Beach County Florida; and CDR Duane Wagner, U.S. Public Health Service, HPP Field Project Officer Region V, HHS ASPR.

For more information, visit https://asprtracie.hhs.gov or contact our Assistance Center at 1-844-5-TRACIE or askasprtracie@hhs.gov.
# 1. Introduction

<table>
<thead>
<tr>
<th>Section Headers/Subheadings</th>
<th>Description and Considerations</th>
<th>Sample Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Purpose</td>
<td>This section describes what the Radiological/Nuclear surge annex will address and related HCC goals and objectives.</td>
<td>American College of Radiology Disaster Preparedness for Radiology Professionals</td>
</tr>
<tr>
<td></td>
<td><strong>Sample language:</strong></td>
<td>ASPR TRACIE Major Radiological or Nuclear Incidents: Potential Health and Medical Implications</td>
</tr>
<tr>
<td></td>
<td>The annex provides guidance to support a coordinated healthcare response to a radiation emergency in which the number and severity of exposed or possibly exposed patients challenges the capability of HCC member facilities. The annex will outline specific incident response, treatment, and response protocol necessary to properly plan for, manage, and care for patients during a radiological emergency.</td>
<td>ASPR TRACIE Radiological and Nuclear Topic Collection</td>
</tr>
<tr>
<td></td>
<td>This Annex does not replace other county or local emergency operations plans or procedures, but rather builds upon the existing plans and their annex.</td>
<td>Centers for Disease Control and Prevention Radiation Emergencies Information for Public Health Professionals</td>
</tr>
<tr>
<td>1.2 Scope</td>
<td>This section should include:</td>
<td>Department of Homeland Security Nuclear Radiological Incident Annex</td>
</tr>
<tr>
<td></td>
<td>• Timeframe covered by the plan,</td>
<td>Environmental Protection Agency Radiological Emergency Response Planning</td>
</tr>
<tr>
<td></td>
<td>• Involved coalition and jurisdictional partners,</td>
<td>Federation of American Scientists Federal Radiological Emergency Response Plan (FRERP)</td>
</tr>
<tr>
<td></td>
<td>• General command structure and communication protocols (may refer to base plan),</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Definitions of key terms</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Any necessary disclaimers about the plan (e.g., not to supersede authorities of the participating entities).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>This section may also describe elements not addressed in the plan and refer the reader to relevant organizational documents, related considerations, and other annexes such as pediatrics, burn surge, etc.</td>
<td></td>
</tr>
<tr>
<td>1.3 Overview/Background of HCC and Situation</td>
<td>This section should include a general overview of the HCC and the community relative to a radiation emergency, including:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Members</td>
<td></td>
</tr>
</tbody>
</table>
• Demographics (general), at-risk groups (e.g., power plant workers, EMS/first responders, etc.), and vulnerable populations (e.g., elderly, pediatric community).
• Geography including areas at higher risk of a radiological event (e.g., power plants, industrial/research facilities, terrorism risk, etc.).
• Facilities specific for radiation emergency response including healthcare facilities, trauma centers, specialized treatment centers, urgent care facilities, coalition hospitals, and community health centers, to include a description of the healthcare system and their potential role during a radiological incident.
• Coalition agreements (e.g., transfer agreements, resource exchanges, staffing transfers)
• Key partners and external resources with the necessary radiological expertise needed to temporarily provide treatment, support, and recovery skills.

1.4 Assumptions

This section should outline the key points/assumptions of the plan, for example:
• Radiation incidents may be accidental in nature (e.g., industrial or transportation accident) or purposeful, require prolonged response and extensive resource management challenges.
• Substantial differences in response protocols and priorities exist between power plant / industrial, terrorist (e.g., RDD/dirty bomb) and nuclear bomb detonation. The plan should emphasize the scenario(s) most relevant to the community.
• The coalition annex does not replace the need for protocols at each hospital and EMS agency
• Different agencies may have authority over management of power plant, transportation, and terrorist incidents, including the authority to implement shelter-in-place and evacuation orders.
• The roles and responsibilities of agencies and organizations will change depending on the severity and scale of the incident and the respective level of activation by impacted jurisdictions and should be outlined ahead of an incident.
• Federal, state, and local emergency resources will all be needed during a large-scale event.
• Contamination assessments, proper PPE utilization, and decontamination efforts will be essential in protecting coalition partners, staff, and the public.
• Staff at coalition facilities may be impacted by exposure, fear of exposure, or family obligations (e.g., child/family care if schools are closed, acute care facilities are affected).
• Fear from the incident will cause a worried well surge to the emergency departments and pharmacies. Consider how limited understanding of radiation and nuclear contamination will contribute to public anxiety and will require multi-modal solutions.
• Public safety (e.g., police, fire, EMS) and other first responder personnel are considered a high-risk population; the implementation of protocols for monitoring control zones and effective contamination control measures will be essential for workforce protection.
• Federal resources (e.g., ambulance contracts, National Disaster Medical System [NDMS] teams) cannot be relied upon to mobilize and deploy for the first 72 hours.
• Management of contaminated waste from decontamination efforts should be managed in consultation with SMEs, EPA, and local water authorities.

Each facility or healthcare organization should understand expectations specific to them as part of the coalition. For example:
• Implementation of surge protocol specific to a radiation emergency will occur quickly- staff must be prepared to pivot operational procedures immediately.
• Initial trauma care should precede radiation injury management.
• Radiation contamination assessments will require rapid protocol and education implementation. Staff will need to evaluate real versus possible exposure, internal versus external contamination, and assess overall exposure levels for at-risk patients based on serial blood testing.
• Specialized expertise (such as clinical advisors) will be needed to manage the complexities of a major radiological incident (e.g., dose estimation, exposure type, treatment plans, site evaluations, decontamination protocol).
• Contaminated injury care and decontamination may require rapid expert consultation.
• Community screening sites will be required to assess low-risk patients.
• Depending on the scale of the radiological event, it may be necessary to establish alternate care sites, especially for radiological exposure requiring higher levels of care.
Emergency departments, outpatient care centers, and alternate care sites, must be prepared to rapidly screen large groups of potentially exposed individuals, triage, and transport as needed.

- Allocation of limited/scarcce resources, and their distribution, should be based on agreed upon prioritization systems / methods.
- Large-scale radiological incidents may require the recruitment of volunteers (e.g., Medical Reserve Corp), retirees, and trainees to support and relieve screeners and healthcare workers.
- Some individual healthcare facilities may require large-scale fatality management support.
- Community-based interventions will require significant public health effort if an evacuation or shelter in place order is necessary. Critical infrastructures will be impacted (e.g., food distribution, isolation assistance, surveillance activities).
- Health concerns, prolonged response requirements, difficult work environments, and stress may present behavioral health challenges among staff of coalition members and the general public.
- Rural areas may be severely impacted by citizens fleeing an affected area and seeking care.

### 2. Concept of Operations

<table>
<thead>
<tr>
<th>Section Headers/ Subheadings</th>
<th>Description and Considerations</th>
<th>Sample Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1 Activation</td>
<td>This section should include the annex activation process (and levels, if relevant) and indicators/triggers that initiate the plan (including use of incident command and a description of the system if relevant). This section should also define who is contacted to initiate the coordination response and how that is done. Information should include who will be responsible for characterizing the incident severity level to establish accurate timelines, impact zones, and assess infrastructure damage.</td>
<td>Department of Homeland Security Nuclear Radiological Incident Annex Environmental Protection Agency Radiological Emergency Response Authorities</td>
</tr>
<tr>
<td>2.2 Notifications</td>
<td>This section should include alerting/notification strategies specific to a radiation emergency, including who will be notified, by whom, when, and how. Content should address communication systems, information</td>
<td>Department of Homeland Security Nuclear Radiological Incident Annex Environmental Protection Agency Radiological Emergency Response Authorities</td>
</tr>
</tbody>
</table>
management needs, and include coordination strategies between the HCC, healthcare facilities, specialty facilities, and with local, state, and federal agencies.

Consider what mechanisms are in place, or needed, to properly notify all responding agencies/organizations in a timely manner to ensure they take proper protective measures.

### 2.3 Roles and Responsibilities

This section should define HCC, agency, and specialty facility support and coordination roles specific to a radiation emergency. This should include:

- Detection equipment and resources for pre-hospital and hospital use including screening equipment at each hospital.
- The expected decontamination capabilities of each facility.
- Whether or not facilities have radiation safety/nuclear medicine services/staff.
- Whether or not a facility can provide oncology/hematology services.
- Identifying a specific institution, agency, or partner to coordinate healthcare aspects of the response. Note: this may be the same agency listed in an all-hazards plan or there may be a need to designate specialized entities to assist with the coordinated movement of radiation affected individuals, evacuation or shelter in place activities, and decontamination efforts.
- The designated lead agency for radiologic event response, lead agency to operate community reception centers.

Information should differentiate the roles between agencies involved directly with clinical surge care and those actively navigating environmental components of a radiological incident to include evacuation orders, contamination and decontamination efforts, environmental monitoring, population-based screening, investigations, and safety assessments. Some of these roles may vary between a nuclear power plant and a terrorist incident.

Consider how to identify and manage issues and gaps among responding members, other coalitions, or jurisdictions to improve response activities.
This section should also explain the application of crisis standards of care principles with essential radiation exposure protocol following a nuclear detonation and how critical resources will be allocated across a region as well as how new clinical policy will be developed, approved, and implemented.

This section should define HCC, agency, and specialty facility support and coordination roles specific to a radiation emergency:

- Identify which facilities can provide care for patients with severe radiation injury (e.g., hematology/oncology services, familiar with chemotherapy patients).
- Define expectations of EMS regarding initial patient distribution from a radiological incident and mutual aid for secondary transfers.
- Establish who has responsibility for patient movement activities including matching patients to available resources.
- Emphasize and discuss the coordination plan with regional trauma centers and identify local, regional, and national sub-speciality sources of expertise available to support a response or provide specialty consult (this may include radiation safety officers, health physicists, and other consultation resources such as regional Radiation Injury Treatment Network (RITN) centers, Radiation Emergency Assistance Center/Training Site (REAC/TS), and others).
- Describe how radiation treatment expertise is obtained for crisis standards of care decision-making that is consistent with facility, HCC, and state crisis standards of care plans.
- Describe initial coordination and information gathering strategies to determine impact, contamination levels, and specialty transportation needs. This should include essential elements of information to be gathered on all patients according to coalition requirements.
- Determine the specific roles of public health entities and emergency management personnel in assessing exposed citizens without acute medical needs (e.g., at community reception centers).

2.4 Logistics

This section should outline any anticipated resource issues during a radiological incident and the strategies for the HCC and member facilities to address these challenges. These should include resource shortages, resource allocation, and supply chain issues. Include protocol for how resources are requested and how they are distributed and managed during an incident.
and thresholds to identify inadequate supply levels to meet demand consistent with the HCC crisis standards of care plans. Include specific mechanisms to prioritize resource allocation.

Include documentation of available local, state, and interstate resources and activation procedures that can support the specialty response as well as key resource gaps that may require external support (including inpatient and outpatient resources). This should also include behavioral health support for patients, families, and staff.

There may be a need to collect and process evidence and utilize laboratory resources to assess bodily fluids and other samples. Depending on the severity of the incident, this may cause strain on existing resources. Policies and plans should include strategies for expanding laboratory capabilities and consider safety guidance and protocol for safe evidence gathering/processing.

<p>| 2.4.1 Space | This section should include information on the available space needed for a radiation emergency response, including strategies for setting up, occupying, and managing these spaces. This should include regulatory considerations, use limitations, access restrictions, and security needs. Coalition members may integrate at the jurisdictional EOC during a radiation event. Consider the need for community reception centers, shelter in place sites, alternate care sites, triage/screening space, specialty treatment facilities or at-risk/vulnerable population needs (e.g., pediatric care, prisons, homeless shelters). Include alternate plans if there is a need to meet virtually, in addition to a Continuity of Operations (COOP) site. |
| 2.4.2 Staff | This section should include strategies for increasing/maintaining staffing levels, including specialty care staff. Identify the necessary skills and expertise needed to adequately respond to a large-scale radiological event. Outline recruitment, training, and use/allocation strategies. This section may reference surge capacity plans, in the coalition base plan, or anticipated Federal requests. |</p>
<table>
<thead>
<tr>
<th>Consider how limited staffing may impact facilities, healthcare providers, and overall HCC duties during a surge event. Some staff may have to shelter in place or may be unable to travel. Consider developing a secondary plan with limited staffing to account for these circumstances.</th>
<th>National Academies of Sciences Engineering Medicine Federal Planning for Nuclear Incidents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utilize available health care facility (HCF) radiation safety/nuclear medicine personnel to assist with critical decision making and response coordination.</td>
<td>Nuclear Emergency Situations Improvement of Medical and Health Surveillance (SHAMISEN) Pennsylvania Emergency Management Agency: Nuclear Power Plant Safety Resources</td>
</tr>
<tr>
<td>Consider cross-training staff on radiological safety and response protocol and leveraging staff from Radiation Injury Treatment Network (RITN) medical centers, pediatric critical care hospitals, or other major medical centers.</td>
<td>Pennsylvania Emergency Management Agency Radiological Responder Certification Program REDi Healthcare Coalition Resource Coordination Process</td>
</tr>
<tr>
<td>Ensure decontamination teams at hospitals have protocols in place to guide radiologic decontamination activities within those facilities.</td>
<td>Radiation Emergency Medical Management Nuclear Detonation: Weapons, Improvised Nuclear Devices</td>
</tr>
<tr>
<td>Consider what sharing agreements are in place, (e.g., shifting and sharing staff from HCC partners, vendors, other non-impacted health system facilities).</td>
<td>Radiation Response Volunteer Corps Development Toolkit</td>
</tr>
<tr>
<td>Leverage existing government and non-governmental volunteer registration programs (e.g., Emergency System for Advance Registration of Volunteer Health Professionals [ESAR-VHP] or MRC personnel) or NDMS staffing support.</td>
<td></td>
</tr>
<tr>
<td>Outline plans to expedite credentialing, licensing, and onboarding while reducing liability, compensation policies for temporary staff.</td>
<td></td>
</tr>
<tr>
<td>Include policies and procedures for engaging volunteers; define thresholds for when these supplemental staff activities should start.</td>
<td></td>
</tr>
<tr>
<td>Incorporate hospital, HCC, jurisdictional, or state-based medical assistance teams into medical surge planning and response. Anticipate the need for supplemental staff for extended periods of time- depending on the scale and severity of the event.</td>
<td></td>
</tr>
<tr>
<td>Consider support services, including healthcare and non-healthcare staff or material resources required to support the care of radiologically exposed patients (e.g., blood banks/ blood product providers, laboratories, waste and contaminated material management, food and dietary services, pharmacy, and environmental services).</td>
<td></td>
</tr>
<tr>
<td>Consider long-term engagement with a specialist or subject matter experts (e.g., radiologists, radiation oncologists, medical physicists).</td>
<td></td>
</tr>
</tbody>
</table>
### 2.4.3 Supplies

This section should document the coalition-level equipment expectations of member healthcare facilities relevant to a radiological incident and coalition-level strategies to ensure adequate supply levels and available equipment. This section may also include coalition-level resources.

- Document essential elements of supply information to be shared across the coalition including, bed availability, ICU availability, specialized equipment availability (e.g., detection and dosimetry equipment), and current capacity relevant to a radiological emergency.
- List current HCC PPE and other stockpile data. Ensure local PPE, stockpile release, replenishment, and sharing policies are clear (e.g., who gets what, when).
- Include policies to request, receive, and distribute radiation incident specific assets in accord with jurisdictional public health and emergency management processes, including personal protective equipment (PPE), respirators, medical treatments, radiation countermeasures, and decontamination materials/supplies.
- Document public safety and hospital radiation assessment resources (e.g., dosimeters, hand-held and portal detectors/survey instruments, etc.).
- Document appropriate PPE resources needed for hospital decontamination, equipping community reception sites, including stockpiling considerations; consider vendor managed inventory and the potential extended use or reuse of equipment.
- Include state plans to request and distribute local, state, and federal radiation countermeasures (e.g., Prussian Blue for cesium 137, bone marrow cytokines for acute radiation illness).
- Define baseline preparedness thresholds for hospitals/EMS agencies as appropriate.
- Describe strategies to overcome inventory management, supply chain, or delivery issues; include promising practices or lessons learned during other radiological emergencies.
- Identify HCC partners/networks to access private sector assets; consider timelines for order/delivery/transfer of these supplies (e.g., delivery mechanisms, storage, location barriers).

### 2.5 Operations- Medical Care

This section should document categories of clinical care and emergency management needs associated with a radiation emergency. Specific operational requirements for each category should be outlined.
### 2.5.1. Triage and Screening

This section should include *triage guidelines* for exposed, or possibly exposed patients, and outline expectations for hospital transport to adequate treatment facilities (e.g., use of the Exposure and Symptom Triage (EAST) sorting tool after a nuclear detonation, establishing screening criteria for community reception centers, capabilities for conducting outpatient absolute lymphocyte counts).

Note: For determination of who to give the limited resource bone marrow cytokines to review the RITN Cytokine Administration Triage Guidelines for Acute Radiation Syndrome (Adult and Pediatric). These guidelines provide healthcare providers with myeloid cytokine triage guidelines to assist with the administration of these pharmaceuticals to adult and pediatric casualties in the immediate aftermath of a radiological disaster.

List available local experts in radiation injury / response. Likely, experts outside the immediately affected area will need to be engaged.

- Outline the basis for prioritizing patient screening, treatment, transport (e.g., dose rate, exposure severity, longevity, other trauma).
- Consider the need for screening and care to occur in separate areas to avoid overload and contamination. Know what types of spaces coalition partners can make available and what additional spaces may be leveraged for a large-scale incident.
- Highlight what information is needed (e.g., exposure level, patient history, diagnostic data, lab/test results) to support decision-making. Note how information will be collected, documented, shared.
- Establish how the coalition will engage with needed experts.

### 2.5.2. Patient Care/Management

This section should describe the HCC resources available to support radiation emergency surge operations. It should include the HCC role in developing and helping to implement strategies to maintain patient care when the system is overwhelmed. Plans should include the ability to shift from conventional to contingency to crisis care and back as the situation requires.

- Outline what guidelines will be used to prioritize treatment or decontamination efforts (e.g., extent of trauma, external contamination counts, partial or whole-body exposure, etc.).
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
</table>
| **2.5.3 Treatment** | This section should include the coalition role in planning for and implementing monitoring and treatment protocols for radiologically exposed patients. This should include how specialty consult will be initiated and maintained for the duration of patient care, including transport to a different facility. Provide an overview of the coalition role in distribution/administration of treatments.  
  - Consider establishing consultation and coordination mechanisms with hematology, oncology, radiology facilities. Include engagement with the Radiation Injury Treatment Network (RITN) and other similar organizations to stay up to date on currently approved treatment protocol.  
  - If the healthcare system utilizes Epic electronic medical records system download the acute radiation syndrome treatment medical orders developed by RITN.  
  - Incorporate established radiation treatment plans (e.g., diagrams, flow charts, and algorithms) to ensure best practice treatment methods.  
  - Consider use of radiation countermeasures. Ensure understanding of the request process and guidance for use. |
| **2.5.4 Safety and Control Measures** | This section should discuss the coalition role in establishing and implementing necessary safety and control measures during a radiological emergency (i.e., limiting exposures and avoiding spread of radioactive/contaminated materials) alongside deeper understanding of the time/distance/shielding |

---

Executive Office of the President  
Planning Guidance for Response to a Nuclear Detonation  
FEMA Improvised Nuclear Device Response and Recovery: Communicating in the Immediate Aftermath  
FEMA Radiological Emergency Preparedness (REP) National Public Information Map  
FEMA Resilience Analysis and Planning Tool (RAPT)  
Greater New York Hospital Association Acute Care Needs for Responding to a Detonated Improvised Nuclear Device  
Greater New York Hospital Association Mass Casualty Incident Response Toolkit  
Health Physics Society Emergency Department Management of Radiation Casualties

---

Outline coalition involvement in surge activities, coordination of emergency response efforts.  
Describe how just-in-time training will be conducted to support care of radiation patients in a limited resource setting, and how related information will be circulated to other facilities.  
Consider how treatment and patient conditions will be documented and shared.  
Describe how patient movement will be coordinated and by whom.  
Consider the potential need to move a large number of patients with minimal current symptoms but who are at significant risk for complications due to significant radiation exposure.  
Outline mechanisms and processes to track patients, contamination, lab results, and treatments.  
Consider the need for palliative care which could be critical during a large-scale incident.  
This section should include the coalition role in planning for and implementing monitoring and treatment protocols for radiologically exposed patients. This should include how specialty consult will be initiated and maintained for the duration of patient care, including transport to a different facility. Provide an overview of the coalition role in distribution/administration of treatments.  
Consider establishing consultation and coordination mechanisms with hematology, oncology, radiology facilities. Include engagement with the Radiation Injury Treatment Network (RITN) and other similar organizations to stay up to date on currently approved treatment protocol.  
If the healthcare system utilizes Epic electronic medical records system download the acute radiation syndrome treatment medical orders developed by RITN.  
Incorporate established radiation treatment plans (e.g., diagrams, flow charts, and algorithms) to ensure best practice treatment methods.  
Consider use of radiation countermeasures. Ensure understanding of the request process and guidance for use.  
This section should discuss the coalition role in establishing and implementing necessary safety and control measures during a radiological emergency (i.e., limiting exposures and avoiding spread of radioactive/contaminated materials) alongside deeper understanding of the time/distance/shielding.
2.5.5 Fatality Management

This section should describe the HCC role in helping to develop and disseminate decedent handling guidance for contaminated casualties to healthcare agencies and relevant partners during a mass casualty event.

2.5.6 Transport

This section should refer to transport policies, plans and procedures, including transport of potentially contaminated casualties and the mass movement of persons with significant radiation exposure but who have minimal current symptoms (i.e., latent phase radiation illness).

Reference any use of EMS for “level loading” during a radiological emergency. Consider the need for safe inter-facility transport of stable, unstable, and potentially unstable or contaminated patients. Include regional resources for ground and air transport for movement of seriously affected individuals.

<table>
<thead>
<tr>
<th>Principles to reduce dose rates. HCC plans should incorporate jurisdictional emergency management protocols if already outlined in local emergency response plans.</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Outline the coalition involvement and strategy for supporting and communicating evacuation or shelter in place orders.</td>
</tr>
<tr>
<td>• Consider the need for large-scale disposal of contaminated waste from decontamination and patient care operations.</td>
</tr>
<tr>
<td>• Consider any special transportation waste management protocol (e.g., state, local regulations). Some jurisdictions may have limitations on the disposition, or transportation of, certain types of medical waste (to include nuclear contaminated materials).</td>
</tr>
<tr>
<td>• Reference specific decontamination protocols for self-care, pre-hospital, community reception centers, and healthcare facilities, as well as the need for just-in-time training on standard safety measures.</td>
</tr>
<tr>
<td>• Include relevant waste management protocols for EMS agencies.</td>
</tr>
<tr>
<td>• Ensure there are local protocols for establishing thresholds for rescue (e.g., &gt; 10 mrem/h) and safe zones (e.g., &lt;1 mrem/h) for first responder operations.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hick, J.L., Coleman, C.N. Population-Based Triage, Treatment, and Evacuation Functions Following a Nuclear Detonation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Los Angeles County Multi-Agency Radiological Response Plan Monitoring People for Contamination at Public Reception Centers</td>
</tr>
<tr>
<td>Lawrence Livermore National Laboratory Nuclear Detonation Fallout: Key Considerations for Internal Exposure and Population Monitoring</td>
</tr>
<tr>
<td>National Academies of Sciences Engineering Medicine Federal Planning for Nuclear Incidents</td>
</tr>
<tr>
<td>National Council on Radiation Protection and Measurements Responding to a Radiological or Nuclear Terrorism Incident: A Guide for Decision Makers</td>
</tr>
<tr>
<td>2.5.7 Surveillance, Tracking, and Situational Awareness</td>
</tr>
<tr>
<td>2.5.8 Rehabilitation and Outpatient Follow Up Services</td>
</tr>
<tr>
<td>2.5.9 Deactivation and Recovery</td>
</tr>
</tbody>
</table>
### 2.6 Special Considerations

#### 2.6.1 Behavioral Health

This section should include considerations for access to a continuum of stepped-care mental health services for patients, caregivers, and providers with emphasis on radiation survivor support and radiation counseling that include telehealth options. General behavioral health response issues should be addressed in the all-hazards coalition response plan. Consider coalition role in supporting long-term mental health implications in cases with prolonged or severe dose rate exposure.

- **ASPR TRACIE Disaster Behavioral Health Resources**
- **ASPR TRACIE Mental/Behavioral Health (non-responders) TC**
- **ASPR TRACIE Disaster Behavioral Health Self Care for Healthcare Workers Modules**

#### 2.6.2 Pediatric and At-Risk Populations

This section should include considerations specific to at-risk populations and people with special needs (e.g., children, communities of color, elderly populations, individuals with underlying physical and behavioral health conditions, persons experiencing access to care issues, language barriers, individuals experiencing homelessness, and incarcerated individuals).

The information should ensure that coalition member organizations account for community members who could be more vulnerable during a radiological emergency. Consider the need for supporting special interventions (e.g., higher sensitivity to radiation, smaller body size, physical characteristics, increased stress/panic levels) to ensure access to appropriate services and care.

- **American Academy of Pediatrics Considerations Before, During, and After Radiological or Nuclear Emergencies**
- **Health Physics Society Emergency Department Management of Radiation Casualties**
This section should include considerations specific to caring for pediatric cases including triage, specialty care, transport needs, or specialty resources/supplies. Decision-making for pediatric patients with trauma should be highlighted (e.g., is the regional care center that receives children capable of caring for trauma and radiation illness - and if not, what factors will decide where a pediatric patient goes?).

Coalition members should address possible issues surrounding suddenly orphaned children, children separated from family, and the need to reunite family members/caretakers.

<table>
<thead>
<tr>
<th>2.5.4. Communications</th>
<th>This section should include HCC role in disseminating timely, accurate, and consistent information to partners and the public. Coalition partners should:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Work with member organizations and local jurisdictions to ensure streamlined communications efforts across the community to prevent the public from overwhelming healthcare systems.</td>
</tr>
<tr>
<td></td>
<td>• Ensure consistent messaging and understanding of incident status and severity via use of the Centers for Disease Control Radiation Hazard Scale.</td>
</tr>
<tr>
<td></td>
<td>• Have mechanisms in place to maintain awareness of current conditions within the community.</td>
</tr>
<tr>
<td></td>
<td>• Monitor multiple sources of information to identify and counter rumors and misinformation.</td>
</tr>
<tr>
<td></td>
<td>• Consider the best mechanism to clearly articulate to the public what they can and cannot do (e.g., an incident has occurred at this location, anyone within a 1-mile radius should…, and should not…) Provide specific guidance on what to do if they were in a contaminated area or are experiencing symptoms.</td>
</tr>
<tr>
<td></td>
<td>• Provide real-time information through coordinated HCC and jurisdictional public health information sharing systems. Adjust timing and content to fit operational tempo of the response.</td>
</tr>
<tr>
<td></td>
<td>• Consider how the HCC will share situational awareness information, or any other essential data received, from the state, Medical Operations Coordination Cell (MOCC), or other organization within the reporting chain.</td>
</tr>
<tr>
<td></td>
<td>• Consider designating media-trained clinicians to speak on behalf of the HCC. FEMA offers a Public Information Officer (PIO) training program to teach the essentials of disaster operations public information communications.</td>
</tr>
</tbody>
</table>

| Institute for Disaster Mental Health at SUNY New Paltz Disaster Mental Health Assisting People Exposed to Radiation |
| Institute for Disaster Mental Health at SUNY New Paltz Disaster Mental Health Participant Manual |

<table>
<thead>
<tr>
<th>ASPR TRACIE TCs:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Communication Systems</td>
</tr>
<tr>
<td>• Information Sharing</td>
</tr>
<tr>
<td>• Risk Communications/ Emergency Public Information and Warning</td>
</tr>
<tr>
<td>• Social Media in Emergency Response</td>
</tr>
</tbody>
</table>

<p>| Centers for Disease Control and Prevention Nuclear Detonation Response Communications Working Group |
| Department of Homeland Security Nuclear Radiological Incident Annex |
| Executive Office of the President Planning Guidance for Response to a Nuclear Detonation |</p>
<table>
<thead>
<tr>
<th>2.5.5 Jurisdictional-Specific Considerations</th>
<th>This section should outline and specify jurisdictional/demographic/geographic based protocol that could impact response and recovery efforts. (e.g., tribal, or territorial policies, border control laws, etc.).</th>
</tr>
</thead>
</table>

Federal Emergency Management Agency Improvised Nuclear Device Response and Recovery: Communicating in the Immediate Aftermath

Nuclear Emergency Situations Improvement of Medical and Health Surveillance (SHAMISEN)

State of Florida Radiological and Nuclear Incident Emergency Response Plan

University Nevada Las Vegas Radiation Emergency Response Plan

ASPR TRACIE Rural Disaster Health TC


Washington State Department of Health State Radiological Emergency Preparedness Agencies

U.S. Department of Health and Human Services State and Local Planners Playbook for Medical Response to a Nuclear Detonation.
### 3. Appendices

<table>
<thead>
<tr>
<th>Section Headers/ Subheadings</th>
<th>Description and Considerations</th>
<th>Sample Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1 Training and Exercises</td>
<td>This appendix should include relevant baseline or just-in-time training for radiological incident care. This section should address how to:</td>
<td>ASPR Radiation Emergency Surge Annex Tabletop Exercise Template Situation Manual</td>
</tr>
<tr>
<td></td>
<td>• Develop a coalition-wide training, exercise, and evaluation program to improve response capabilities in a radiological incident scenario. This may include safety, decontamination, and screening or triage training; implementation of acute radiation syndrome resources; and establishment of community reception centers.</td>
<td>California Emergency Medical Services Authority Nuclear Detonation Improvised Nuclear Device Scenarios</td>
</tr>
<tr>
<td></td>
<td>• Ensure ongoing training on appropriate use of PPE, radiation, contamination, and exposure assessments, decontamination protocols, and treatment regimens.</td>
<td>California Office of Emergency Services: Nuclear Power Preparedness Program</td>
</tr>
<tr>
<td></td>
<td>• Include radiologic incident specialty personnel and jurisdictional level planning/training/exercises.</td>
<td>Department of Homeland Security Radiological Emergency Preparedness Program (REPP)</td>
</tr>
<tr>
<td></td>
<td>• Develop exercise plans to coordinate patient management and distribution for a variety of radiation incident scenarios with differing levels of severity and impacts. These exercises should include assessing and treating complex medical cases, to include vulnerable or at-risk populations.</td>
<td>FEMA: Modular Emergency Radiological Response Transportation Training</td>
</tr>
<tr>
<td></td>
<td></td>
<td>FEMA: REP Program Manual</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Health Physics Society Emergency Department Management of Radiation Casualties</td>
</tr>
<tr>
<td>Institute for Disaster Mental Health at SUNY New Paltz Disaster Mental Health Participant Manual</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minnesota Multi-year Planning, Training, and Exercise Plan Template</td>
<td></td>
<td></td>
</tr>
<tr>
<td>National Alliance for Radiation Readiness Radiation Training Modules for Public Health</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nuclear Emergency Situations Improvement of Medical and Health Surveillance (SHAMISEN)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oak Ridge Institute for Science and Education Radiation Emergency Assistance Center Training Site</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radiation Emergency Medical Management Implementing the Scarce Resources Project Guidance: Video Teaching Tools</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radiation Injury Treatment Network Tabletop Exercises Radiation Injury Treatment Network Training Materials</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radiation Injury Treatment Network Functional Radiological/Nuclear</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 3.1 Legal Authorities

This appendix should list applicable legal authorities/regulatory information specific or relevant to radiological incidents, mass casualties, and waste management, surveillance and population monitoring, and any pertinent safety and control measures (e.g., evaluation procedures or shelter in place). This may refer the reader back to the all-hazard coalition response plan unless related issues are covered in this section. Inter-state issues of staff licensure/sharing, use of volunteers, or patient transport may be particularly relevant for radiological incidents when both providers and patients may cross state lines.

<table>
<thead>
<tr>
<th>Resources</th>
<th>ASPR TRACIE Healthcare-Related Disaster Legal/ Regulatory/ Federal Policy TC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Federation of American Scientists Federal Radiological Emergency Response Plan (FRERP)</td>
</tr>
</tbody>
</table>

### 3.2 Additional Resources/References

This appendix lists applicable plans, tools, templates, and/or resources used to develop the radiation emergency surge annex. This may include:

- Decision support tables, graphics
- Sample forms
- Treatment visuals
- Clinical guidance tip sheets
- Decontamination methods
- Media packages related to public messaging and crisis communications best practices

<table>
<thead>
<tr>
<th>Resources</th>
<th>American College of Radiology Disaster Preparedness and Response</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>American Hospital Association Emergency Readiness</td>
</tr>
<tr>
<td></td>
<td>Department of Labor Radiation Emergency Preparedness and Response</td>
</tr>
<tr>
<td>Healthcare Coalition Radiation Emergency Surge Annex</td>
<td></td>
</tr>
<tr>
<td>-----------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Executive Office of the President</td>
<td></td>
</tr>
<tr>
<td>Planning Guidance for Response to a Nuclear Detonation</td>
<td></td>
</tr>
<tr>
<td>National Alliance for Radiation Readiness Tools</td>
<td></td>
</tr>
<tr>
<td>Oak Ridge Institute for Science and Education</td>
<td></td>
</tr>
<tr>
<td>Occupational Safety and Health Administration Ionizing Radiation</td>
<td></td>
</tr>
<tr>
<td>University of Rochester Medical Center Radiation Emergencies</td>
<td></td>
</tr>
<tr>
<td>Radiology Medical Response to a Major Radiologic Emergency: A Primer for Medical and Public Health Professionals</td>
<td></td>
</tr>
</tbody>
</table>
Appendix A: Healthcare Coalition Radiation Emergency Surge Annex
Outline Example

1. Introduction
   1.1 Purpose
   1.2 Scope
   1.3 Overview/Background of HCC and Situation
   1.4 Assumptions

2. Concept of Operations
   2.1 Activation
   2.2 Notifications
   2.3 Roles and Responsibilities
   2.4 Logistics
      2.4.1 Space
      2.4.2 Staff
      2.4.3 Supplies
   2.5 Operations- Medical Care
      2.5.1 Triage and Screening
      2.5.2 Patient Care/Management
      2.5.3 Treatment
      2.5.4 Safety and Control Measures
      2.5.5 Fatality Management
      2.5.6 Transport
      2.5.7 Surveillance, Tracking, and Situational Awareness
      2.5.8 Rehabilitation, Outpatient Follow-Up Services
      2.5.9 Deactivation and Recovery
   2.6 Special Considerations
      2.6.1 Behavioral Health
      2.6.2 Pediatric and At-Risk Populations
      2.6.3 Communications
      2.6.4 Jurisdictional- Special Considerations

3. Appendices
   3.1 Training and Exercises
   3.2 Legal Authorities
   3.3 Additional Resources/References
Appendix B: Resources

ASPR TRACIE Developed Resources for HCCs:

- Additional resources that are helpful for HCCs
- Communication Systems
- Continuity of Operations (COOP)/ Business Continuity Planning TC
- COVID-19 Legal/Regulatory/Authorities Resources
- Disaster Behavioral Health Resources
- Disaster Behavioral Health Self Care for Healthcare Workers Modules
- Exchange Issue 8: Supporting Hospital Surge—Meeting Patient and Staff Needs
- Healthcare-Related Disaster Legal/ Regulatory/ Federal Policy Topic Collection
- Hospital Personal Protective Equipment Planning Tool
- Hospital Pharmacy Disaster Calculator
- Information Sharing
- Mental/Behavioral Health (non-responders) TC
- Partnering with the Healthcare Supply Chain During Disasters
- Pediatric Surge Annex Template, Burn Surge Annex Template, and Infectious Disease
  Surge Annex Template
- Preparedness Plan, Response Plan, and Recovery Plan templates
- Recovery Planning TC
- Risk Communications/ Emergency Public Information and Warning
- Rural Disaster Health TC
- Social Media in Emergency Response

ASPR TRACIE Developed Resources for Radiological Emergencies:

- Major Radiological or Nuclear Incidents: Potential Health and Medical Implications
- Radiological and Nuclear Topic Collection
- Select CBRN Resources


Caro, J.J., DeRenzo, E.G., Coleman, C.N. et al. (2013). Resource Allocation After a Nuclear Detonation Incident


Institute for Disaster Mental Health at SUNY New Paltz Disaster Mental Health. (n.d.). Assisting People Exposed to Radiation.


Nuclear Emergency Situations Improvement of Medical and Health Surveillance. (2020). Recommendations and Procedures for Preparedness and Health Surveillance of Populations Affected by a Radiation Accident.


Oak Ridge Institute for Science and Education. (n.d.). Radiation Emergency Assistance Center Training Site.

Occupational Safety and Health Administration. (n.d.). Ionizing Radiation.


Radiology. (2010). Medical Response to a Major Radiologic Emergency: A Primer for Medical and Public Health Professionals.


