

# ASPR TRACIE Technical Assistance Request

**Request Receipt Date (by ASPR TRACIE):** 10 August 2022

**Response Date:** 12 August 2022

**Type of TA Request:** Standard

## Request:

ASPR TRACIE received a request for resources related to first receiver operational plans during a CBRN disaster. The requestor also asked for resources with information on the evaluation of first receiver CBRN guidance (programs).

## Response:

The team reviewed existing ASPR TRACIE resources related to CBRN incident response and first receiver planning within our topic collections, select TA responses, and other specially developed resources. The team also conducted online searches for information on CBRN first receiver operational plans and evaluations.

*Sections I* of this document lists specific CBRN first receiver resources related to operational planning and response. *Section II* lists resources related to the assessment of first receiver CBRN guidance, including lessons learned, best practices, and considerations for improving challenges and strategies. *Section III* lists other relevant ASPR TRACIE collections related to operational impacts that could result from a CBRN incident.

For more comprehensive information on preparing for, responding to, and assisting communities recover from a CBRN incident, ASPR TRACIE recommends reviewing our [CBRN Resource Page](#) or our [Bioterrorism and High Consequence Biological Threats](#), [Chemical Hazards](#), and [Radiological and Nuclear](#) topic collections.

## I. Specific CBRN Incident First Receiver Resources

ASPR TRACIE. (2018). [Hospital All-Hazards Disaster Supplies](#).

This ASPR TRACIE TA response provides resources related to supplies that a hospital should have in the event of a disaster (all-hazards), including references to mass casualty and CBRN incidents (updated in 2018).

ASPR TRACIE. (2019). [First Receiver Personal Protective Equipment \(PPE\) Screening Resources](#).

This ASPR TRACIE TA response provides resources specific to the level of screening needed by first receivers using Level C PPE for chemical, biological, radiological, nuclear, and explosive (CBRNE) decontamination.

Bartenfeld, M., Peacock, G., and Griese, S. (2014). [Public Health Emergency Planning for Children in Chemical, Biological, Radiological, and Nuclear \(CBRN\) Disasters.](#)

The authors discuss the distinguishable physical, developmental, and social traits and characteristics of children in the context of chemical, biological, radiological, and nuclear (CBRN) incidents. This includes the science behind exposure, health effects, and treatment for exposure to potential agents during CBRN events.

Calamai, F., Derkenne, C., Jost, D., et al. (2019). [The Chemical, Biological, Radiological and Nuclear \(CBRN\) Chain of Survival: A New Pragmatic and Didactic Tool Used by Paris Fire Brigade.](#)

This report details the cognitive tool, developed by the Paris Fire Brigade, that outlines the exact order of response activities to be used as a framework for improving health system preparedness and limiting contamination, exposures, and death.

Centers for Disease Control and Prevention. (2006). [Radiological Terrorism: Medical Response to Mass Casualties.](#)

This 2-hour video training uses online lectures and case studies to prepare first receivers to assess, triage, treat, and make disposition decisions for patients following mass casualty radiation incidents.

Center for the Study of Traumatic Stress, Uniformed Services University of the Health Sciences. (2017). [Psychological and Behavioral Issues Healthcare Providers Need to Know When Managing a Chemical, Biological, Radiological or Nuclear \(CBRN\) Event.](#)

This document discusses the management of acute psychological and behavioral responses following widespread exposure to a chemical, biological, radiological, or nuclear (CBRN) event, which will be as important as the treatment of any CBRN-related injuries and illnesses. It provides guidance on administering psychological first aid, health care, patient education, public health, and mental health.

Chilcott, R.P., Larnar, J., and Matar, H. (2019). [UK's Initial Operational Response and Specialist Operational Response to CBRN and Hazmat Incidents: A Primer on Decontamination Protocols for Healthcare Professionals.](#)

The authors describe decontamination protocols for healthcare professionals in the event of chemical, biological, radiological, nuclear, and hazardous material incidents. This information is based primarily on the United Kingdom's evidence-based update to mass casualty and decontamination procedures.

Cibulsky, S., Kirk, M., Ignacio, J., et al. (2014). [Patient Decontamination in a Mass Chemical Exposure Incident: National Planning Guidance for Communities.](#)

This guidance can help emergency planners prepare for mass patient decontamination from initial assessment to evaluation of process effectiveness. The authors emphasize the importance of communication and coordination between on-scene and health care facility-based staff.

City of Los Angeles. (2018). [Emergency Operations Plan: Chemical, Biological, Radiological, and Nuclear \(CBRN\) Hazard Specific Annex- Chemical Appendix](#).

This appendix serves as a template to facilitate planning for city-wide response to a chemical incident. City planners with primary emergency response roles should use this as a framework to develop standard operating procedures and protocol for emergency management of a chemical incident.

Djalali, A., Della Corte, F., Segond, F., et al. (2016). [TIER Competency-Based Training Course for the First Receivers of CBRN Casualties: A European Perspective](#). *European Journal of Emergency Medicine*. 24(5):371-376

The authors developed a set of competencies under 10 domains to define the skills and knowledge necessary to respond to chemical, biological, radiological, and nuclear (CBRN) emergencies. They created a training program based upon these competencies and note that a blended training approach may allow clinicians the opportunity to participate in the same trainings, even in different time zones and locations.

Federal Emergency Management Agency. (n.d.). [CBRNResponder](#). (Accessed 8/12/2022).

This FEMA sponsored chemical, biological, radiological, and nuclear platform was developed to support CBRN incident data sharing and multi-hazard event management efforts. The tool integrates federal guidance, policy, planning, preparedness, and operational resources as a free service to all state, local, tribal, and territorial emergency response organizations.

Federal Emergency Management Agency. (2022). [Tools for Chemical, Biological, Radiological and Nuclear \(CBRN\) Hazards](#).

This webpage contains resources for FEMA's standardized suite of chemical, biological, radiological, and nuclear response capabilities for federal, state, local, tribal, and territorial emergency responders, and planners. It includes key planning factors and links to the interactive web tools.

InterAgency Board for Equipment Standardization and Interoperability. (2014). [Stress-Related Mental Health Issues in Emergency Responders, First Receivers, Disaster Workers, and Their Families](#).

This document discusses the need for improved operational approaches to the detection of stress and mitigation of stress-induced mental health disorders in emergency responders and disaster workers. It makes six recommendations, including the need for

emergency response departments, agencies, and organizations to provide access to behavioral and mental health programs for their responders and receivers, and their immediate family members, whenever needed.

Metrolina Healthcare Preparedness Coalition. (2015). [North Carolina First Receiver Hospital Decontamination Guidance](#).

This planning guide can be used to assist hospitals and healthcare facilities develop and maintain a standardized hospital-wide decontamination program that is compliant with federal requirements for worker health and safety. Content includes planning templates, decontamination considerations, resource suggestions, and an overview of case studies.

National Institute for Occupational Health and Safety. (2018). [Chemical, Biological, Radiological, and Nuclear \(CBRN\) Respiratory Protection Handbook](#).

This document provides technical information on use of NIOSH respiratory protective devices (RPD) during a nuclear or radiological emergency. Guidance includes information on respiratory program requirements, fit testing methods, and user training.

Occupational Safety and Health Administration. (2018). [PPE \(Personal Protective Equipment\) for Emergency Response and Recovery Workers](#).

This webpage discusses personal protective equipment (PPE) for emergency response and recovery workers, particularly those responding to natural disaster and chemical (including oil), biological, radiological, and nuclear (CBRN) events. (Note that hospital decontamination is different than scene response and should refer to OSHA's "First Receiver" document in the Hospital Patient Decontamination Topic Collection).

Radiation Emergency Medical Management. (2019). EPA [Emergency Worker Exposure Guidelines](#).

This web page explains "safe" levels of occupational exposure to radiation, control measures, and protective actions for emergency responders and first receivers.

## II. CBRN First Receiver Guidance Assessments

The following resources are lessons learned, best practices, and considerations related to the evaluation of first receiver response guidance during a CBRN incident.

Blumenthal, D.J., Bader, J.L., Christensen D., et al. (2014). [A Sustainable Training Strategy for Improving Health Care Following a Catastrophic Radiological or Nuclear Incident](#).

The authors propose a training strategy that includes all members of the health care delivery team, from first responders to first receivers and hospital support staff, and divides them into four tiers for targeting educational strategies. These strategies are

capabilities-driven and include the addition of radiological and nuclear-focused modules to existing trainings; the incorporation of radiation contamination measures into everyday practice; and providing just-in-time training at the time of an event.

Kearns, R.D., Myers, B., Cairns, C.B., et al. (2014). [Hospital Bioterrorism Planning and Burn Surge](#).

This article discusses how using an all-hazards approach to bioterrorism response planning helped to prepare hospitals in the Raleigh/Durham, NC area to care for casualties from a plant explosion in June 2009. The rescue, response, and resuscitation of survivors by first responders and first receivers, as well as efforts to develop burn surge, are described.

Kotora, J. (2015). [An assessment of Chemical, Biological, Radiologic, Nuclear, and Explosive Preparedness Among Emergency Department Healthcare Providers in an Inner-City Emergency Department](#). *Journal of Emergency Management*. 13(5):431-46.

This report evaluated the level of CBRNE preparedness among physicians, nurses, and midlevel providers at an urban tertiary care emergency department. Results identified knowledge gaps and the need for standardized training and preparedness protocol.

Lansdowne, K., Scully, C., Galeotti, L., et al. (2015). [Recent Advances in Medical Device Triage Technologies for Chemical, Biological, Radiological, and Nuclear Events](#).

The authors provide an overview of chemical, biological, radiological, or nuclear triage technology (e.g., apps, electronic triage tags, diagnostic field devices, and decision support systems, such as the Chemical Hazards Emergency Medical Management Intelligent Syndromes Tool [CHEMM-IST]).

Occupational Safety and Health Administration. (2005). [Best Practices for Hospital-Based First Receivers of Victims from Mass Casualty Incidents Involving the Release of Hazardous Substances](#).

The Occupational Safety and Health Administration shares best practices document for hospitals to enhance employee protection and training as part of emergency planning for mass casualty incidents involving hazardous substances.

Razak, S., Hignett, S., Barnes, J. (2018). [Emergency Department Response to Chemical, Biological, Radiological, Nuclear, and Explosive Events: A Systematic Review](#).

This study evaluated key factors in emergency department CBRN response capabilities based on preparedness, response, decontamination, and PPE challenges. The results highlighted inconsistencies and obstacles with suggestions for improvement.

### III. Other Relevant ASPR TRACIE Collections and Resources

The following is a list of relevant ASPR TRACIE resources and collections related to preparing for and responding to a CBRN incident. It includes topics such as surge, decontamination, and evacuation orders that could result from a CBRN incident.

The following are additional ASPR TRACIE Topic Collections:

- [Alternate Care Sites \(including shelter medical care\)](#)
- [Crisis Standards of Care](#)
- [Emergency Operations Plans/ Emergency Management Program](#)
- [Healthcare Facility Evacuation / Sheltering](#)
- [Hospital Patient Decontamination](#)
- [Hospital Surge Capacity and Immediate Bed Availability](#)
- [Incident Management](#)
- [Mass Distribution and Dispensing of Medical Countermeasures](#)
- [Patient Movement and Tracking](#)
- [Pediatric/Children](#)
- [Populations with Access and Functional Needs](#)
- [Responder Safety and Health](#)
- [Utility Failures](#)

The following are select ASPR TRACIE TA Responses:

- [Chemical, Biological, Radiological, Nuclear, and Explosives](#)
- [Evacuation](#)
- [Infectious Diseases](#)
- [Mass Casualty](#)