

**Radiological and Nuclear Terrorism:
Like it or Not, Radiology Professionals
Will Be in the Hot Seat**

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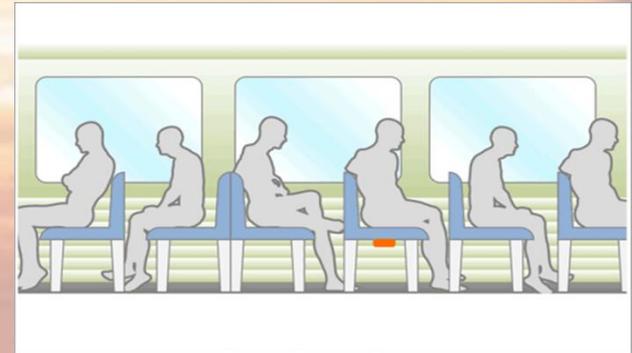
Objectives

- **To identify the various radiological emergency scenarios**
- **To describe the roles of federal, state, and local governments in a radiological emergency**
- **To identify the role of radiological professionals on the response team**
- **To recognize volunteer opportunities for radiological professionals**



Types of Radiological Emergencies

- Improvised Nuclear Device Incident
- Radiological Exposure Device Incident
 - Public transportation, Mall
- Radiological Dispersal Device Incident
 - Single/multiple Isotopes
 - Failed IND
- Nuclear Reactor Event
- Transportation Incident
- Space-launched Vehicle Event



There is No National Civil Defense Program in the U.S.



- **Since the end of the Cold War, the focus of civil defense has largely shifted from military attack to emergencies and disasters in general.**
- **We now have the National Incident Management System (NIMS) as required for readiness using the Incident Command System.**
- **A nuclear detonation would most likely be a tactical (local) incident and not strategic.**

...so the reality is that all disasters are local, at first...



Local Disaster

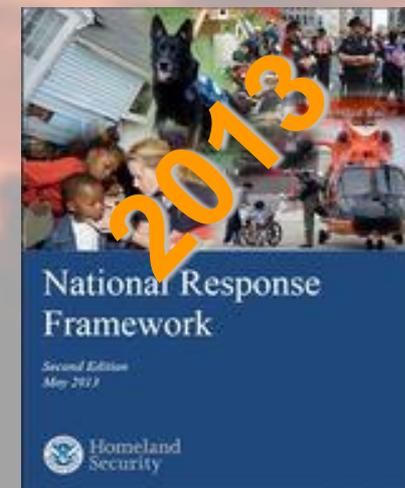
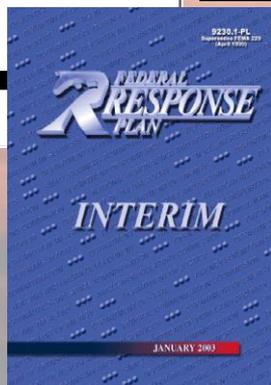
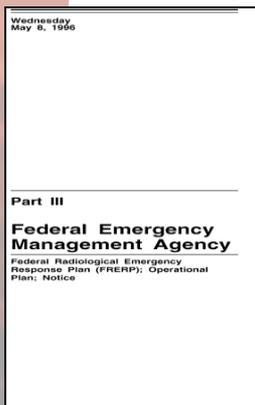
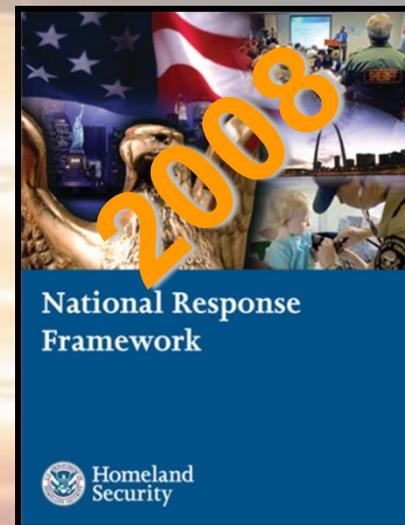
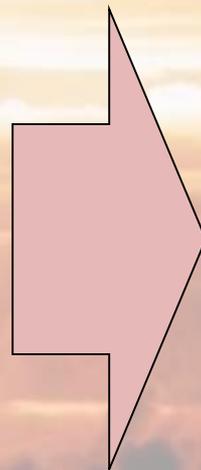
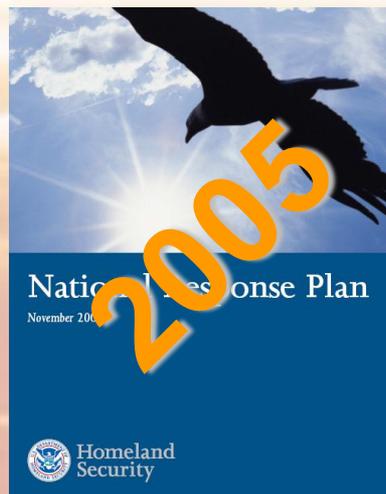
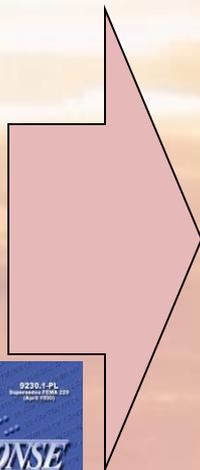
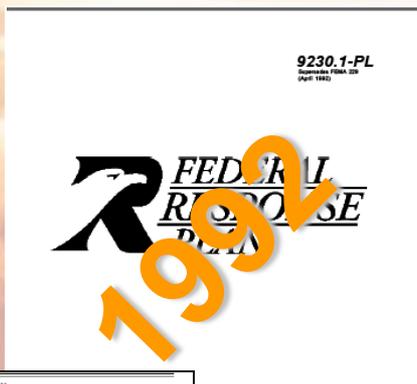
**Local/Tribal
Preparedness
and Response**

**Regional/State
Preparedness
and Response**

**Federal
Preparedness
and Response**

History Of Federal Preparedness

- Federal Response Plan (FRP)- until 9/11
 - Federal Radiological Emergency Response Plan (FRERP)
- National Response Plan (NRP)- until H. Katrina
- National Response Framework (NRF)



National Preparedness Goal

- “A secure and resilient nation with the capabilities required across the whole community to prevent, protect against, mitigate, respond to and recover from the **threats** and **hazards** that pose the greatest risk.”
- Natural disasters, disease pandemics, chemical spills, and other manmade hazards, including terrorist and cyber attacks



ALL HAZARDS

32 Core Capabilities including

“This is where you may get involved...”

- **Planning**
- **Public Information and Warning**
- **Health and Social Services**
- **Operational Coordination**
- **Health and Social Services**
- **Fatality Management Services**
- **Public Health, Healthcare and Emergency Medical Services**



Emergency Support Function Annexes (State/Local)

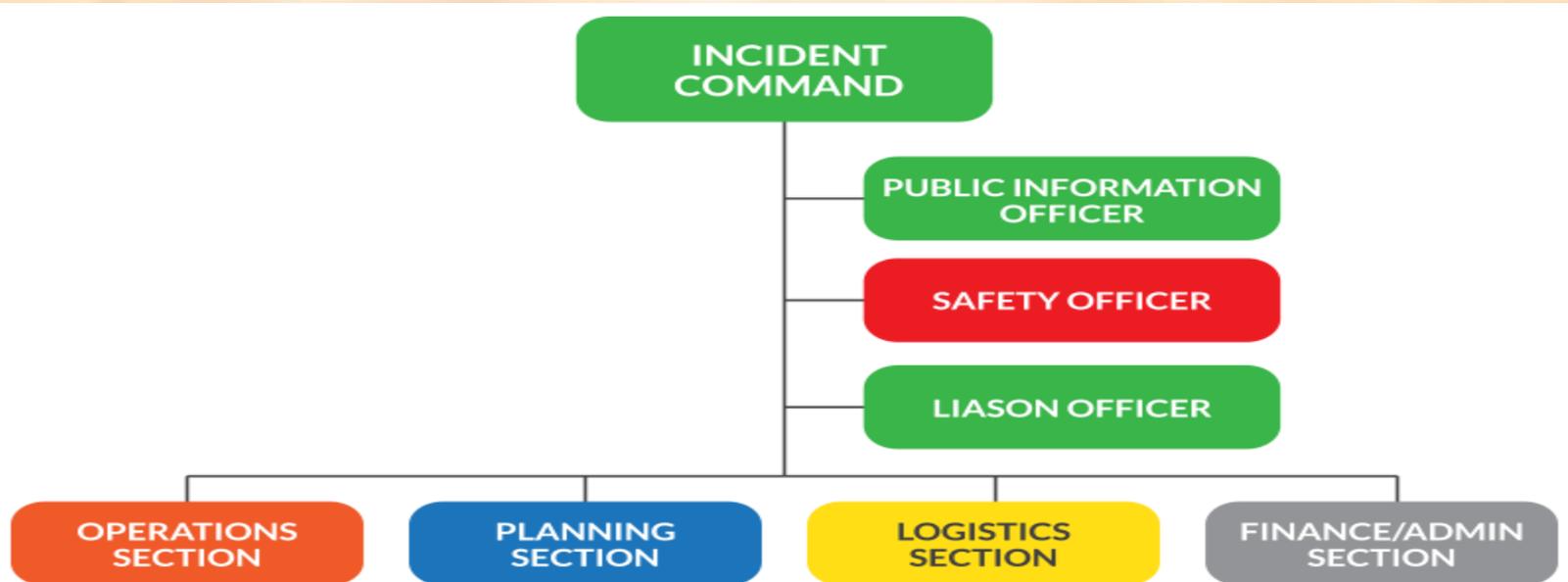
- ESF #1 - Transportation
- ESF #2 - Communications
- ESF #3 - Public Works and Engineering
- ESF #4 - Firefighting
- **ESF #5 - Emergency Management**
- ESF #6 - Mass Care, Housing, and Human Services
- ESF #7 - Resources Support
- **ESF #8 - Public Health and Medical Services**
- ESF #9 - Urban Search and Rescue
- ESF #10 - Oil and Hazardous Materials Response
- ESF #11 - Agriculture and Natural Resources
- ESF #12 - Energy
- ESF #13 - Public Safety and Security
- ESF #14 - Long-Term Community Recovery & Mitigation
- ESF #15 - External Affairs



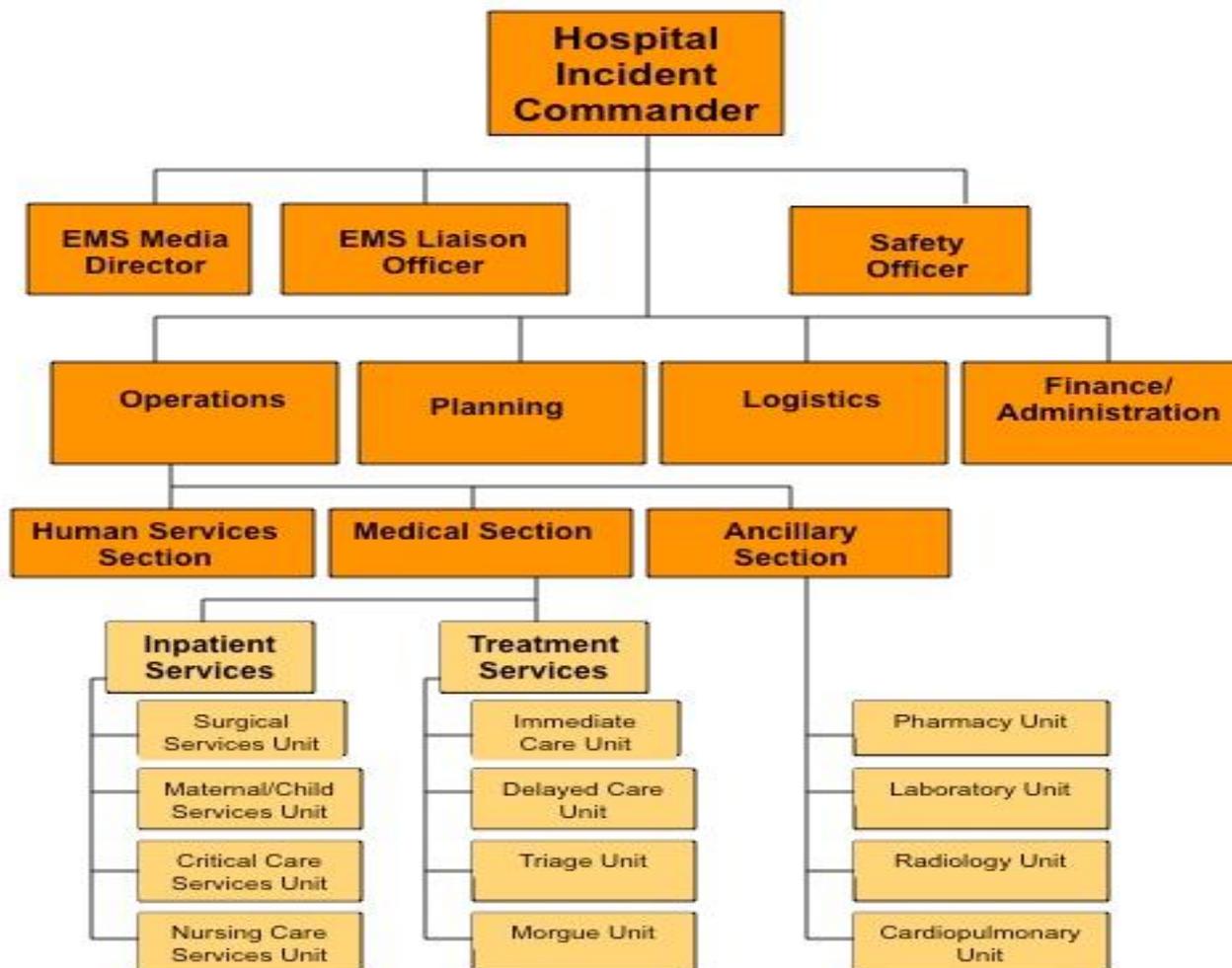
Public Health
Prevent. Promote. Protect.

Incident Command System (ICS) as part of NIMS

- Management system designed to integrate resources (facilities, equipment, personnel, procedures, and communications) from numerous organizations into a single integrated response structure using common terminology and processes.
- Used for all kinds of situations, planned or unplanned, small, as well as large and complex.



HOSPITAL INCIDENT COMMAND SYSTEM



The Preparedness Reality

- Most states/locals are prepared for all-hazards situations—commonalities of preparedness as per NIMS.
- Other than a natural disaster, they are primarily prepared for a biological event (e.g., panflu).
- Few have spent much effort in preparedness for a nuclear detonation/radiological incident.
- A nuclear detonation (IND) is vastly different from a biological event.



Dealing with the Aftermath

- For IND, tens of thousands with blast, burn, and radiation injuries
- Local healthcare facilities destroyed or damaged
- EMS infrastructure affected
- Regional, state, out-of-state transfer of casualties
- For RDD, mostly blast injuries



Local Public Health Issues After ANY Disaster

- **Assessment of Health and Medical Care Delivery**
- **Rapid Assessment of Community Health/Medical Needs**
- **Delivery of Health and Medical Care**
- **Pharmaceutical Supply**
- **Potable Water, Safe Food, and Sanitation and Hygiene**
- **Injury and illness Surveillance**
- **Vector Control**
- **Solid Waste**
- **Hazardous Materials**
- **Registry**
- **Mental Health**
- **Sheltering and Housing**
- **Mass Congregation**
- **Handling of the Deceased (humans and animals)**
- **Staffing**
- **Rumor Control**
- **Public Service Announcements/ Media Access**



Our Focus

- Terrorist incidents impacting large populations

BUT

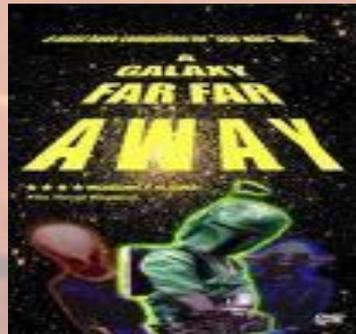
- Even “small” incidents present significant challenges
 - Goiania, Brazil (RED) (#2)
 - London Po-210 incident (RED)



November 2006, London Po-210 International Follow-Up



In the aftermath of a large nuclear or radiological incident, many close as well as far away communities will likely be impacted.

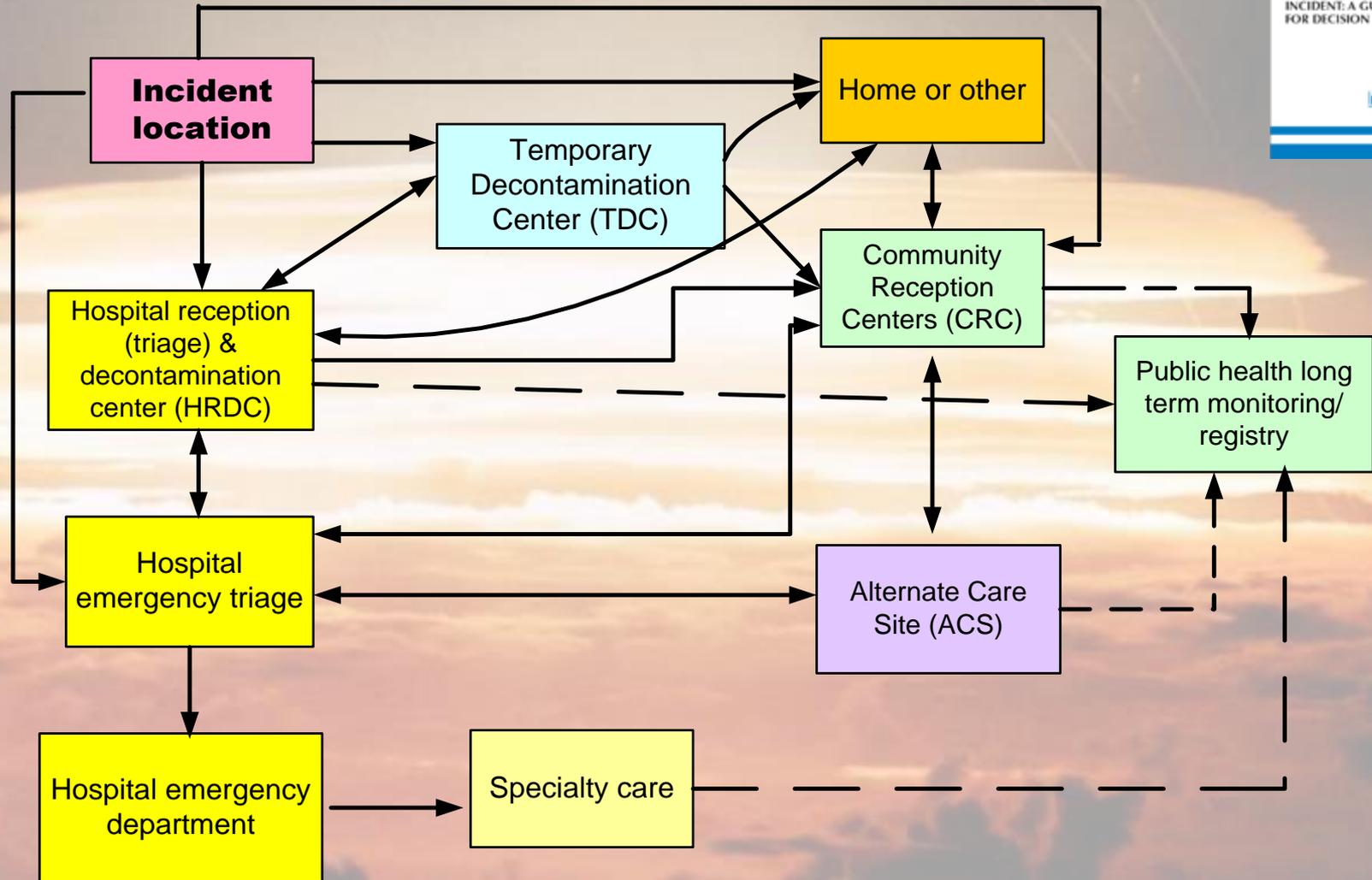
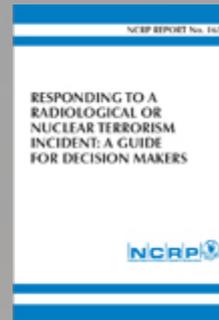


ESF-8 Staffing

- **Public Health (usually the lead)**
- **Hospitals**
- **Health/Medical Physicists**
- **Physicians (all specialties)**
- **Pharmacists**
- **Long-term care/monitoring**



Concept of Operations for a Public Health and Medical Emergency Response System (Revised)



———— Person/patient transfer via ambulance, public/private or other transportation
 - - - - Public health referrals

The Radiological Professional Volunteer

- ESAR-VHP
- Medical Reserve Corps
- Radiation Response Volunteer Corps
- Radiological Operations Support Specialist



ESAR/VHP

- **Emergency System for Advance Registration of Volunteer Health Professionals**
- **Federal program created to support states and territories in establishing standardized volunteer registration programs for disasters and public health and medical emergencies.**



Medical Reserve Corps (MRC)

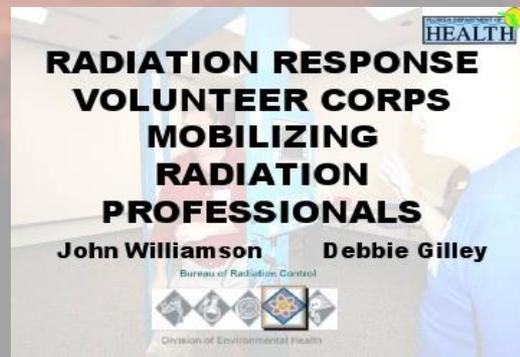
- **Nationwide over 993 local units**
- **Will provide ICS and other all-hazards training**
- **Exercises and real-world activities**
 - Emergency sheltering**
 - Medical facility surge capacity**
 - Community event support**
- **Assistive risk communications role**



Radiation Response Volunteer Corps (RRVC)



- **CDC-funded via CRCPD to the states**
- **Purpose: to recruit, train, and manage a cadre of volunteer radiation professionals and to promote a volunteer registry of those individuals for use in radiation emergencies within the states, primarily for population monitoring and shelter needs**



Radiological Operations Support Specialist (ROSS)

A means for **local health physicists and other personnel with radiological knowledge** to support radiological response operations in an emergency.

ROSS Volunteers will support emergency operations by:

- Supporting the incident command system structure;
- Helping access specialized federal resources and tools;
- Interpreting and explaining health physics response data and predictive modeling results;
- Providing guidance to responders, incident commanders, elected officials, and decision-makers on appropriate protection actions for responders and the public; and,
- Aiding public and responder communication efforts.

ROSS volunteers can serve in a range of different roles depending upon the volunteer's skills, knowledge and abilities.



FEMA



Resources

- **Health Physics Society**
- **Centers for Disease Control**
- **Radiation Injury Treatment Network**
- **MRC-Related Resources**



Health Physics Society Homeland Security Section

<http://hpschapters.org/sections/homeland>



 Emergency Department Management
of Radiation Casualties

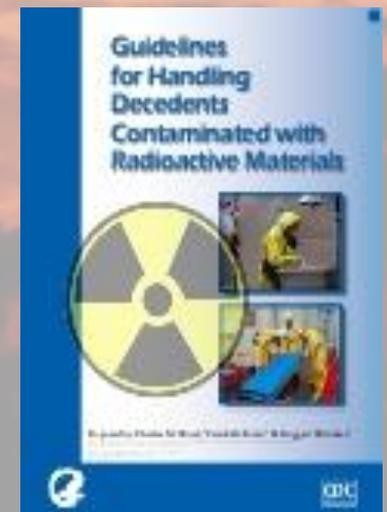
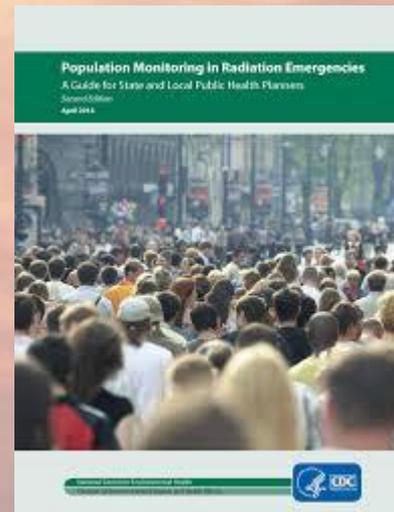
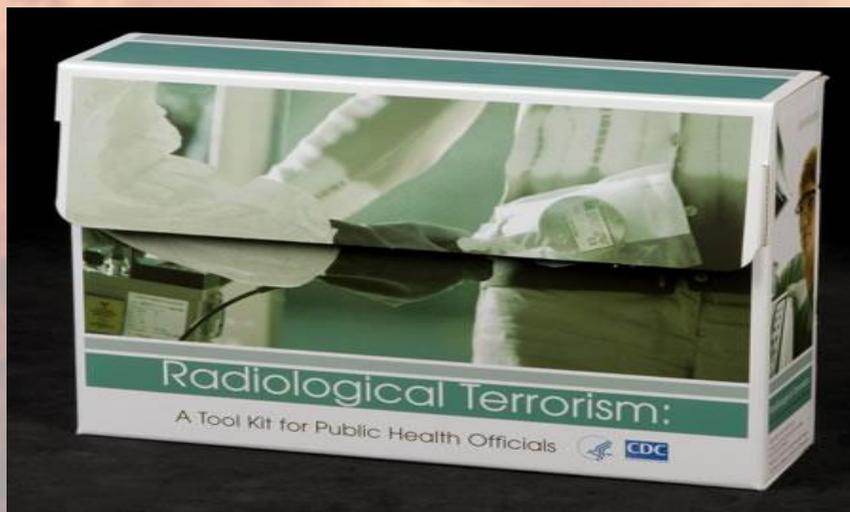
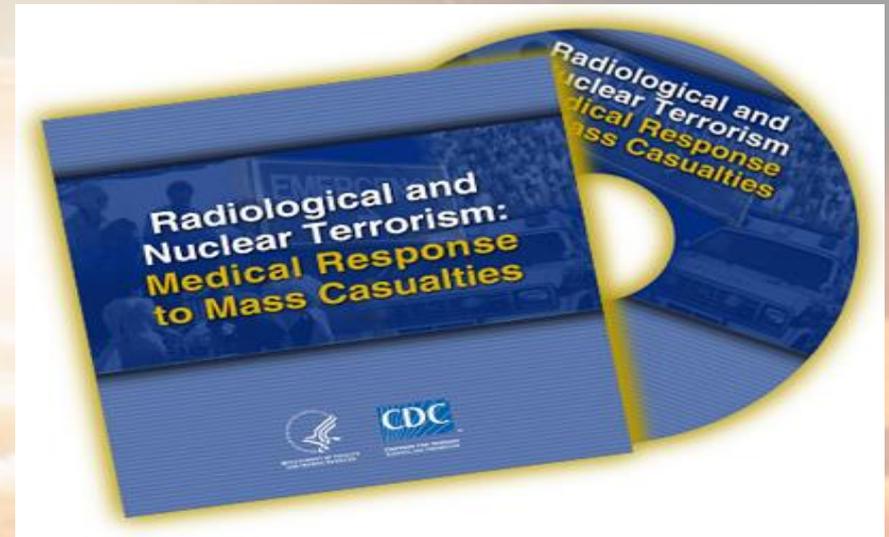
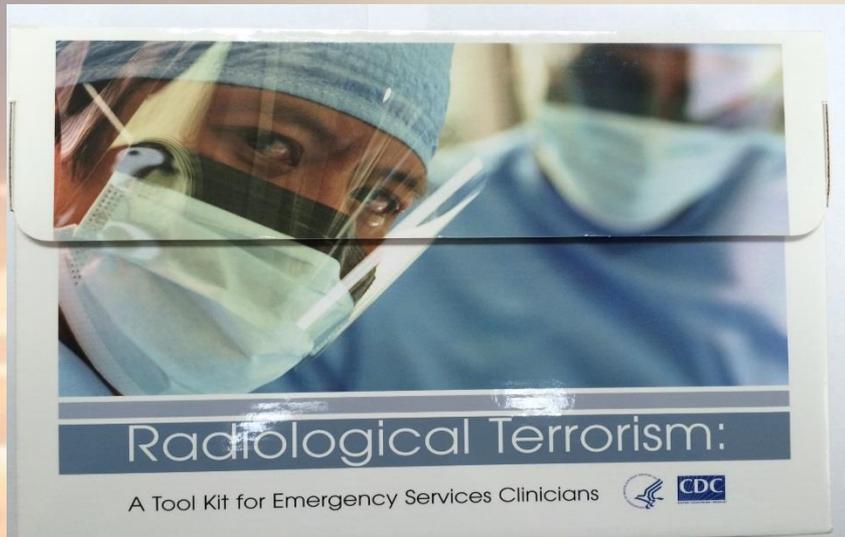


 Hospital Response Following a
Terrorist Event Involving
Radioactive Material



Medical Response Subcommittee of the
Health Physics Society
Homeland Security Committee

<http://emergency.cdc.gov/radiation/toolkits.asp>



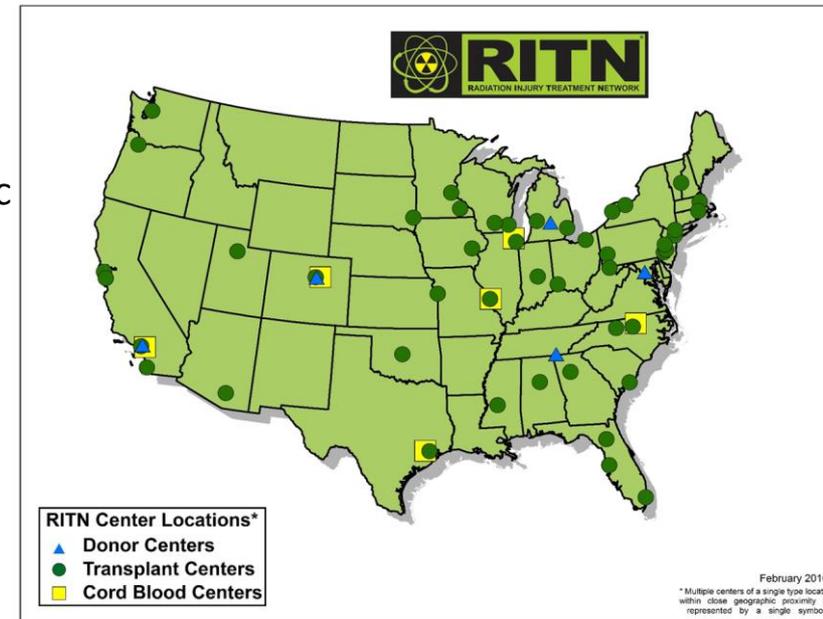
What is RITN?

The Radiation Injury Treatment Network (RITN) is a group of voluntary hospitals focused on preparing to respond to a large scale radiological incident that results in casualties with acute radiation syndrome, that occurs distant to their location.

RITN comprises of medical centers with expertise in the management of bone marrow failure, stem cell donor centers and umbilical cord blood banks across the US.

RITN is preparing to...

- Accept casualties from a distant incident
- Provide supportive care for casualties with marrow toxic injuries
- Provide treatment expertise to practitioners caring for casualties at other locations
- Collect data on casualties treated at their treatment facility
- Facilitate marrow transplantation for the small percentage of casualties who require hematopoietic stem cell transplantation



Training Radiation Professionals to Be Volunteer Risk Communicators for the Medical Reserve Corps



<http://escambia.floridahealth.gov/programs-and-services/emergency-preparedness-and-response/preparedness-surveillance-response/medical-reserve-corps/documents/mrc-risk-communications-training-0417131.ppt>

Spokesperson Suggested Background Training (1)



Suggested online training available as:

IS 3 Radiological Emergency Management

<http://training.fema.gov/is/courseoverview.aspx?code=IS-3>

IS 22 Are You Ready? An In-Depth Guide to Citizen Preparedness

<http://training.fema.gov/EMIWeb/IS/is22.asp>

IS 29 Public Information Officer Awareness

<http://training.fema.gov/is/courseoverview.aspx?code=IS-29>

IS 100.b Introduction to Incident Command System

<http://training.fema.gov/EMIWeb/IS/IS100b.asp>

IS 200.b ICS for Single Resources and Initial Action Incidents

<http://training.fema.gov/EMIWeb/IS/IS200b.asp>

IS 700.a National Incident Management System (NIMS) An Introduction

<http://training.fema.gov/EMIWeb/IS/is700a.asp>

MRC Spokesperson Suggested Background Training

**Optional in-class training available (locally/state)
as:**

ICS 300 Intermediate ICS for Expanding Incidents

http://www.fema.gov/pdf/emergency/nims/ics_300_fs.pdf



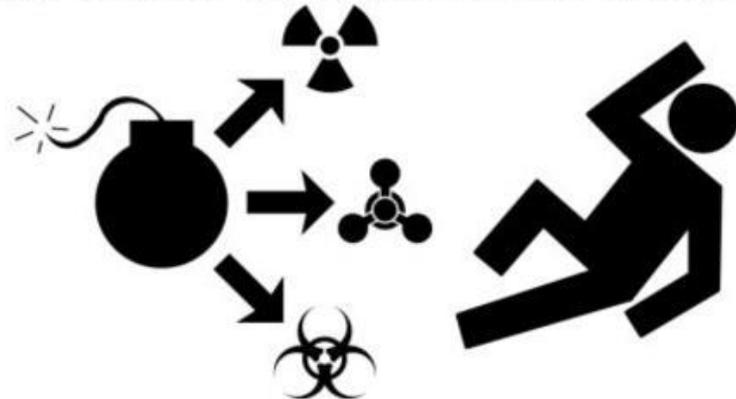
ICS 400 Advanced ICS Command and General Staff – Complex

Incidents http://www.fema.gov/pdf/emergency/nims/ics_400_fs.pdf

Public Health 101 (usually provided by local health department, but URLs to suggested introductions to public health included in MRC spokesperson PPT in Section 2, Module 8)

!WARNING

In case of terrorist attack:



KEEP YOUR WITS!



Do NOT discard brain

References

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- <https://www.fema.gov/national-incident-management-system>
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<http://pubs.rsna.org/doi/pdf/10.1148/radiol.09090330>

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- https://www.fema.gov/media-library-data/20130726-1825-25045-8027/emergency_support_function_8_public_health_medical_services_annex_2008.pdf

Questions?

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