

# “Validating Emergency Response Capabilities in Hazardous Materials Incidents”



Argus Preparedness Solutions LLC

# What is a Hazardous Materials Incident?

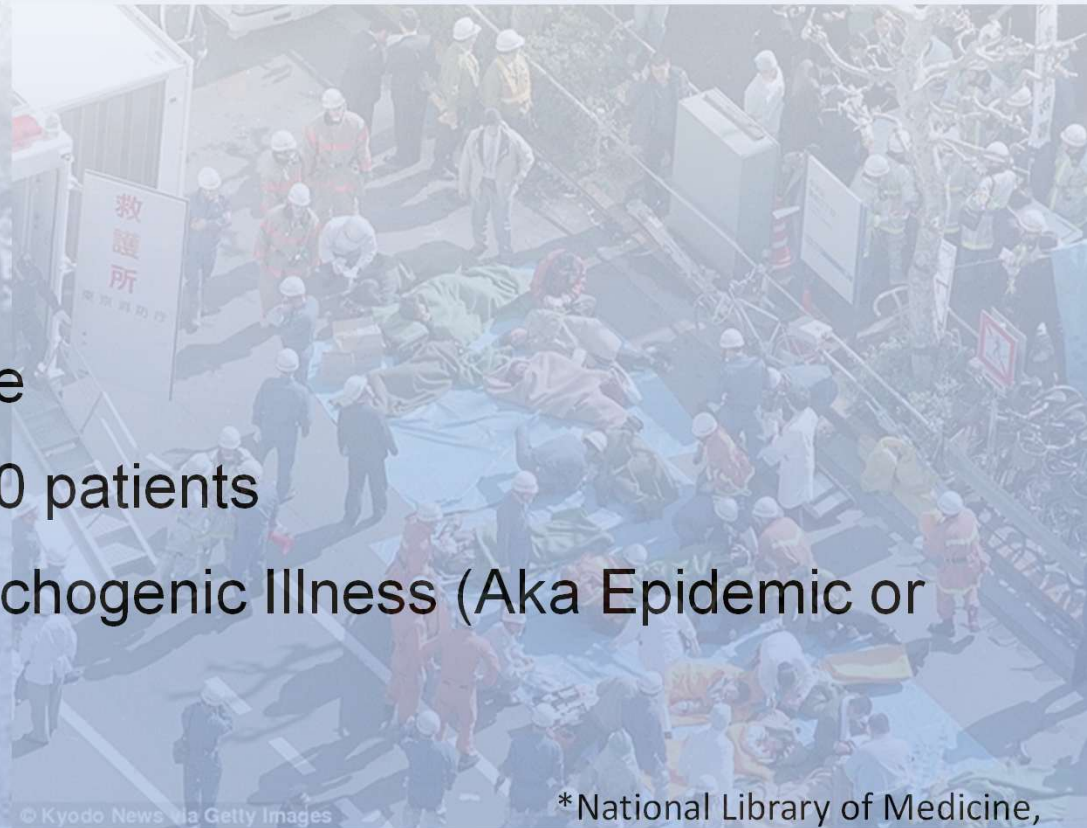
A hazardous material incident refers to any event involving the release or potential release of hazardous materials that can cause harm to people, the environment, or property.



# Aum Shinrikyo Sarin Attack 3/20/95

## Tokyo Subway System

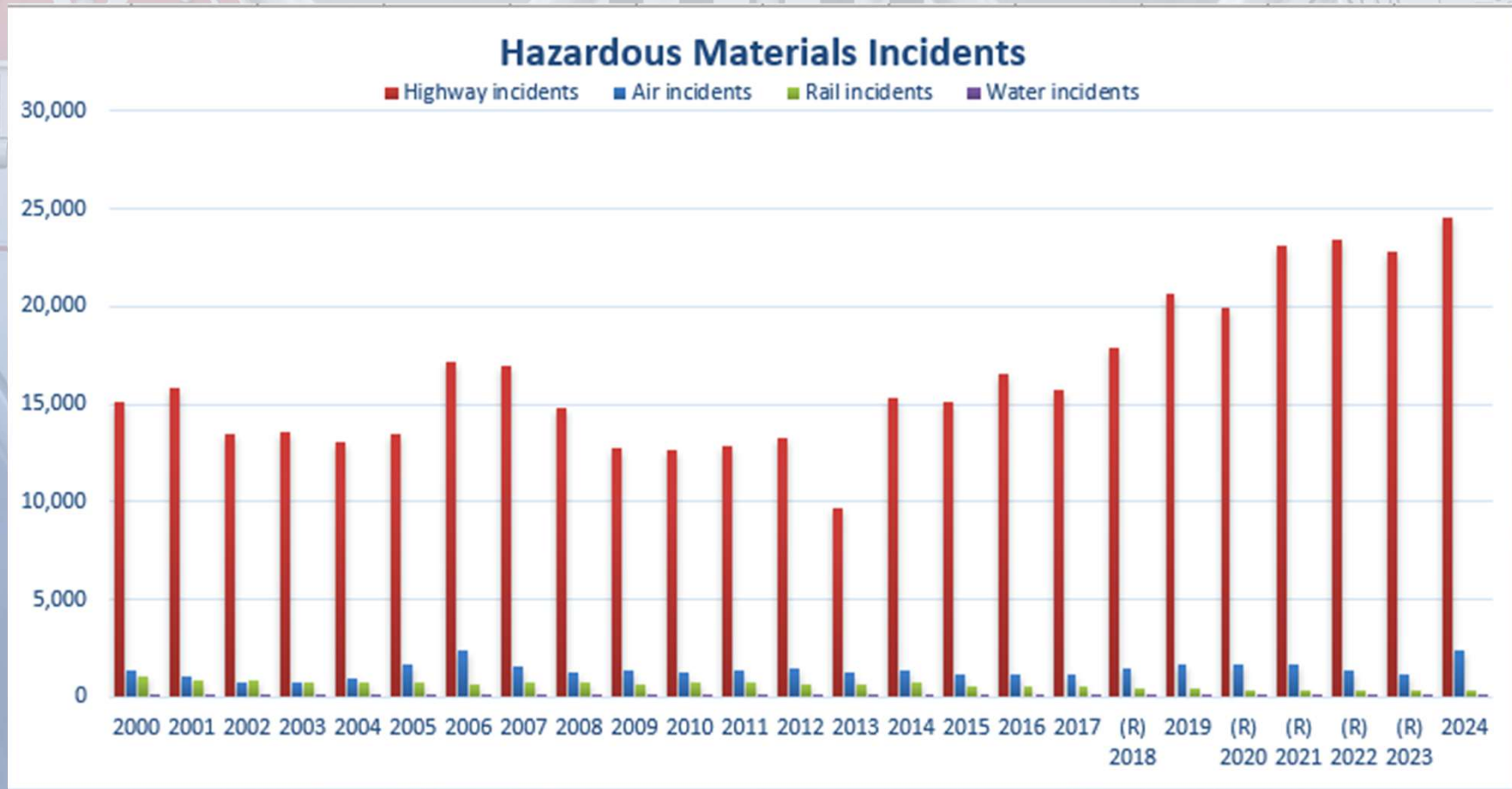
- Five attackers, five trains
- 13 fatalities
- 688 transported by ambulance
- 278 hospitals-more than 5,500 patients
- 85% - worried well: Mass Psychogenic Illness (Aka Epidemic or Mass Hysteria)
  - 6,226 filed injury report\*



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\*National Library of Medicine,  
National Center for Biotechnological Information

# Hazardous Materials Incidents in the U.S.



# HazMat Shipments by Hazard Class 2017

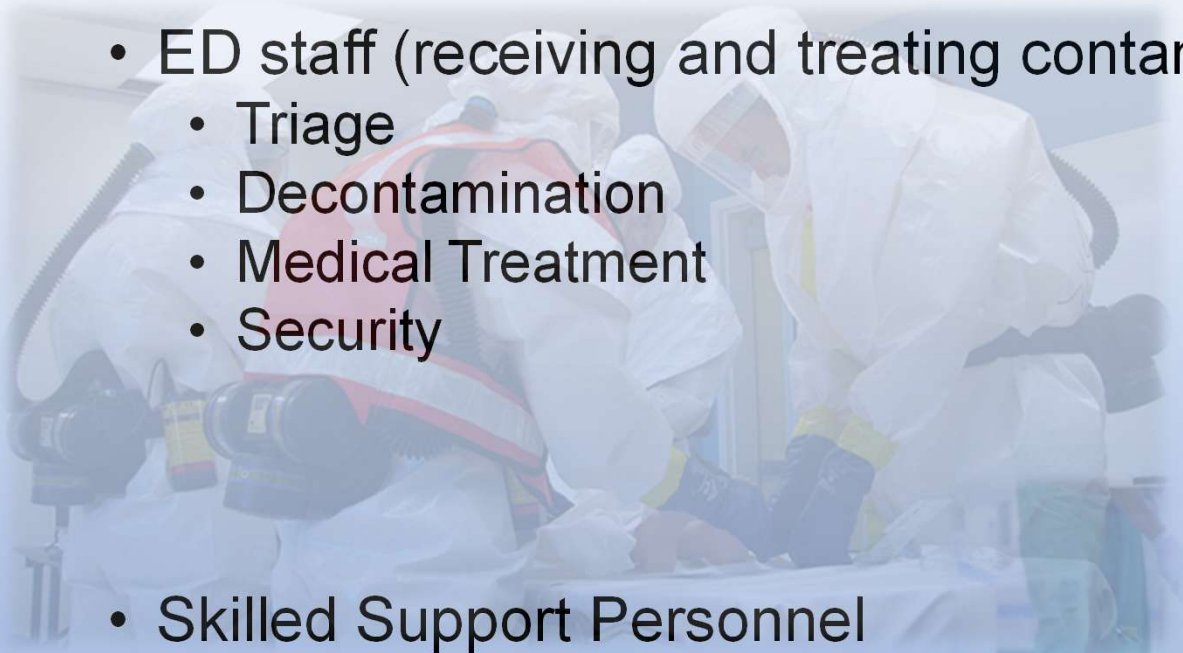
**Table 1-63: U.S. Hazardous Materials Shipments by Hazard Class, 2017**

Hazard class and description	Value		Tons		Ton-miles		Average miles per shipment
	(billions of dollars)	Percent	(millions)	Percent	(billions)	Percent	
Class 1. Explosives	14.9	0.9	3.3	0.1	1.0	0.3	1,046
Class 2. Gases	114.8	6.8	227.6	7.7	28.9	7.6	210
Class 3. Flammable liquids	1,373.8	81.8	2,466.6	83.1	269.8	70.5	100
Class 4. Flammable solids	5.3	0.3	28.2	1.0	7.6	2.0	478
Class 5. Oxidizers and organic peroxides	9.8	0.6	15.0	0.5	5.8	1.5	204
Class 6. Toxics (poison)	13.3	0.8	6.4	0.2	3.8	1.0	828
Class 7. Radioactive materials	6.9	0.4	0.4	U	U	U	63
Class 8. Corrosive materials	79.3	4.7	151.0	5.1	45.7	11.9	273
Class 9. Miscellaneous dangerous goods	62.0	3.7	69.4	2.3	19.8	5.2	944
<b>Total</b>	<b>1,680.2</b>	<b>100.0</b>	<b>2,968.0</b>	<b>100.0</b>	<b>382.5</b>	<b>100.0</b>	<b>189</b>



# First Receivers, not First Responders

- ED staff (receiving and treating contaminated victims)
  - Triage
  - Decontamination
  - Medical Treatment
  - Security
- Skilled Support Personnel
  - Electrician, Plant Ops Mechanic, Environmental, etc,
  - Others in support functions (e.g., set up and patient tracking)



# Probability of Risk to Receive Contaminated Victims of an MCI

- Key Treatment Centers
  - In large urban areas
- Potential Risk Hospitals:
  - Within 50 miles of large urban area
  - With high-visibility potential targets

## Best Practices for Hospital-Based First Receivers

of Victims from Mass Casualty Incidents  
Involving the Release of Hazardous Substances



# Worst-Case Scenarios in MCIs

- Little or no warning
- Information regarding agent(s) not immediately available
- 80% of victims self-referred
- Assume victims will not have been decontaminated prior to arrival



# Transition Considerations from Functional to Full-Scale Exercise

- Planning
  - Build on findings and lessons learned from functional exercise
- Realism
  - Ensure scenarios realistic to effectively test preparedness
- Evaluation
  - After action reporting to identify areas for improvement



UNIVERSITY OF MIAMI  
MILLER SCHOOL  
of MEDICINE



Nicklaus  
Children's  
Hospital

MIAMI CHILDREN'S HEALTH SYSTEM 

# Introduction

- FIFA World Cup at Hard Rock Stadium:
  - Hazardous materials incident, vapor cloud moving toward stadium
  - Panic/uncontrolled evacuation (80,000+)
  - EMS/ambulance transport, POV
  - Medical surge strains decon/treatment ability
  - Surge/mass casualty plans activated





# Exercise Scope



- Validate critical capabilities covering five objectives:
  - Onsite incident management decontamination capabilities
  - Deploy and perform decon
  - Bed tracking reporting/capabilities
  - ESF-8 communications
  - Interoperable communications

# Exercise Scope (cont.)

## Significance of Healthcare Facilities Preparedness

- Protecting staff and patients
- Effective triage and treatment
- Minimizing secondary contamination
- Maintaining continuity of care
- Building public trust



# Exercise Scope (cont.)

- Other Significant Healthcare Facilities Preparedness Issues
  - Environmental and Community Safety
  - Regulatory Compliance and Legal Protection



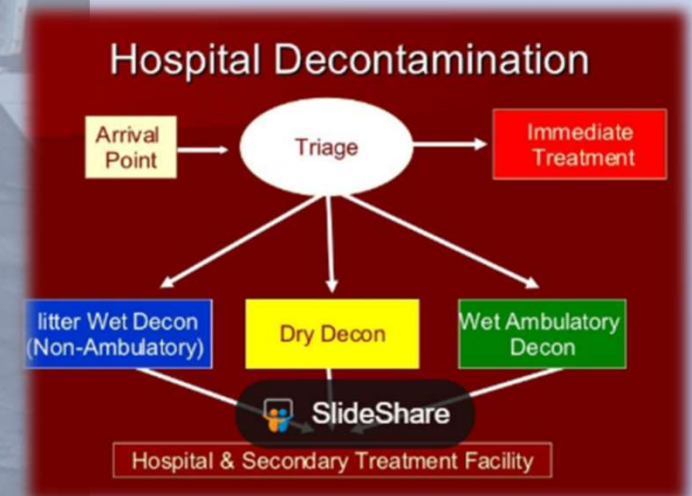
No fault learning environment focusing on four HCC Core Capabilities



# Objective 1 – Onsite Incident Management Decontamination Capabilities

- Assess the effectiveness of hospital decontamination procedures
- Ensure collaboration between departments and external response teams
- Identify resource needs and training requirements.

Goal: Achieve safe, efficient decontamination processes that meet healthcare systems objectives and community expectations



# Objective 2 – Hospital Bed Tracking and Reporting

- Ensure real-time availability of hospital bed data
- Maintain a common operating picture for effective care coordination
- Promote seamless collaboration across the system network



# Objective 3 – Emergency Support Functions (ESF-8) Communications

- Assess flow of critical information between departments and executive staff
- Ensure effective resource sharing and coordination between participating hospitals
- Strengthen partnerships/collaboration among stakeholders in public health and medical services, applicable ESFs



Florida ESF8 Planning Map

User Manual



# Objective 4 – Interoperable Communications

- Ensure effective information exchange across multiple platforms
- Test tools and technologies for compatibility, analyzing and sharing real-time data
- Build situational awareness to support timely informed decision-making during emergencies



# Summary of Objectives

## Onsite Incident Management Decontamination Capabilities

- Ensure collective approaches achieve health system objectives for a HazMat incident
- Hospital Bed Tracking and Reporting
- Ensure a common operating picture re: bed tracking reporting/capabilities, collaboration and coordination of medical care

## Emergency Support Functions (ESF-8) Communications

- Ensure information flow and coordination, management and sharing of resources

## Interoperable Communications

- Ensure information is shared and analyzed resulting in situational awareness

# Findings

- Summarize key insights and gaps identified during the exercise
- Outline actionable steps for improving response capabilities
- Emphasize the importance of training and collaboration



# Next Steps

- Develop After-Action Report (AAR): Summarize findings, including strengths, areas for improvement, and specific recommendations for corrective actions
- Engage Stakeholders: Input from all relevant parties (emergency managers, first responders, community partners)

## AFTER ACTION/CORRECTIVE ACTION REPORT

for response to \_\_\_\_\_  
(Fill in name of event)

*(This AA/CA Report template can be used for a declared or non-declared event, training, exercise, and/or planned event).*

### GENERAL INFORMATION

Name of Agency	Text goes in text boxes below
Name of Agency	
Type of Agency* * City, County, Operational Area (OA), State agency (State), Federal agency (Fed), special district, Tribal Nation Government, UASI City, non-governmental or volunteer organization, other (Select one)	
OES Admin Region (Coastal, Inland, or Southern)	
Completed by	
Position	
Phone number and email address	
Dates and Duration of event (When your agency began and ended response activities - using mm/dd/yyyy)	
Date report completed	
Type of event* *Table top, functional, full scale, actual event, pre-identified planned event, training, class room training (Select one and enter the name of exercise or event)	



# Next Steps (cont.)

- Each facility/system to implement plan and monitor progress
- Schedule future exercises to test changes and ensure continuous improvement



## Next Steps (cont.)

- Review exercise objectives: Compare outcomes of exercise against original goals to identify gaps or unmet objectives
- Analyze and document strengths and areas for improvement: Focus on communication, coordination, decision-making, and adherence to protocols
- Review/test existing plans, procedures, policies ,overall coordination mechanisms: evaluate whether effective or need revision

# Corrective Action Plan (CAP)

- Reference AAR findings to define areas for improvement
- Realistic and measurable steps to address identified gaps
- Outline actionable steps for improving response capabilities
- List specific actions needed to address each issue
- Ensure steps are realistic and measurable

# CAP Next Steps (cont.)

- Emphasis on continued training and collaboration
- Plans for resource allocation, process improvements
- Provide regular updates
- Include predefined milestones or deadlines for each action



# CAP Next Steps (cont.)

- Conduct periodic reviews to assess progress
- Assign ownership of corrective actions (individual, team, department) and implement plan
- Deadlines for completing corrective action
- Resources required (personnel, equipment, funding)

# Improvement Plan

- Facilities/system to implement improvement plan and monitor progress
- Schedule future exercises to test changes and ensure continuous improvement
- Identify internal personnel qualified for Decon team
  - Current or former Fire-Rescue, HazMat, National Guard, military reserve unit members
- Decon of surfaces and equipment
  - In-house – trained under 29 CFR 1910.120 (q) (11) Hazardous Waste Operations and Emergency Response (HAZWOPER)

# Improvement Plan (cont.)

Test policies, procedures, overall coordination mechanisms for next phase (full-scale exercise)

Steps to address identified gaps

Plans for training, resource allocation, process improvements

# Other Considerations

## Solid Waste Management Clothing Removal

- Cut, do not pull it off (may spread contamination)
- Residue may be considered evidence
  - Possible terrorism nexus
  - FBI lead agency

## Employee Stress

- Consider mental health provider
- Decon team members access to post-event counseling if requested
- May not have assistance from local Fire Rescue Hazmat Team



# Conclusion

- Conducting exercises vital to ensuring effective preparedness and response
- Opportunities to simulate real-world scenarios
- Assess hospital's ability to manage hazardous materials events
- Identify areas for improvement

## Conclusion (cont.)

- Involve key stakeholders (hospital staff, emergency responders, public health agencies)
- Promote coordination and communication during actual incidents
- Continue regular evaluation and refinement to remain ready



# THANK YOU!

Bob Palestrant, John Meizoso

Argus Preparedness Solutions LLC

<https://argus4preparedness.com>

[argus4solutions@gmail.com](mailto:argus4solutions@gmail.com)