

Policies, Procedures, and Dangerous Plumes: Lessons Learned From a Mixed- Hazardous Waste Tabletop Exercise

Presented by:
Joel Hewett

4695 Millennium Drive
Belcamp, MD 21017-1505
hdiac.org

Office: 443.360.4600
Fax: 410.272.6763
Email: contact@hdiac.org



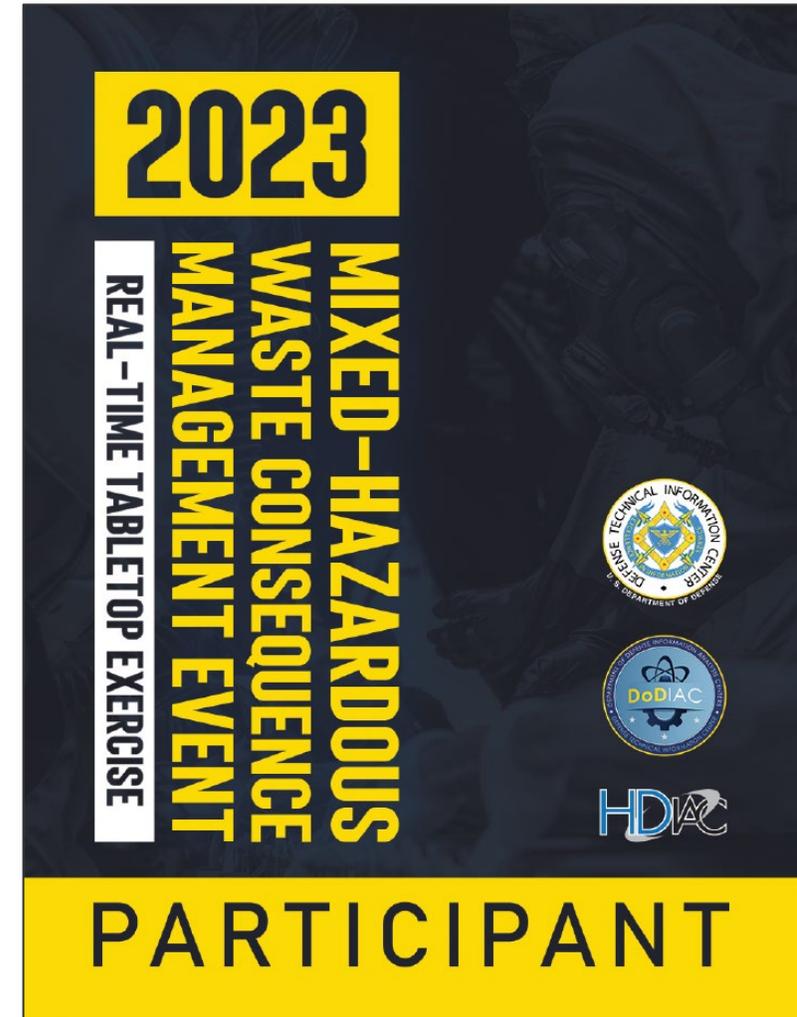
Introduction

In June 2023, HDIAC convened a Tabletop Exercise (TTX) in Oak Ridge, Tennessee, which posited a mixed-hazardous waste “dirty bomb” blanketing a nearby federal reservation and its research facilities in a harmful chemical plume. With more than 50 participants in attendance representing 20+ city, state, federal, civilian, and military organizations, the TTX grappled with questions on emergency response planning, cross-jurisdictional mutual aid, how best to detect and report hazards, and triaged personal protective equipment use.

This webinar discusses the motivation behind the chosen scenario and lessons learned from the exercise.

TTX Background

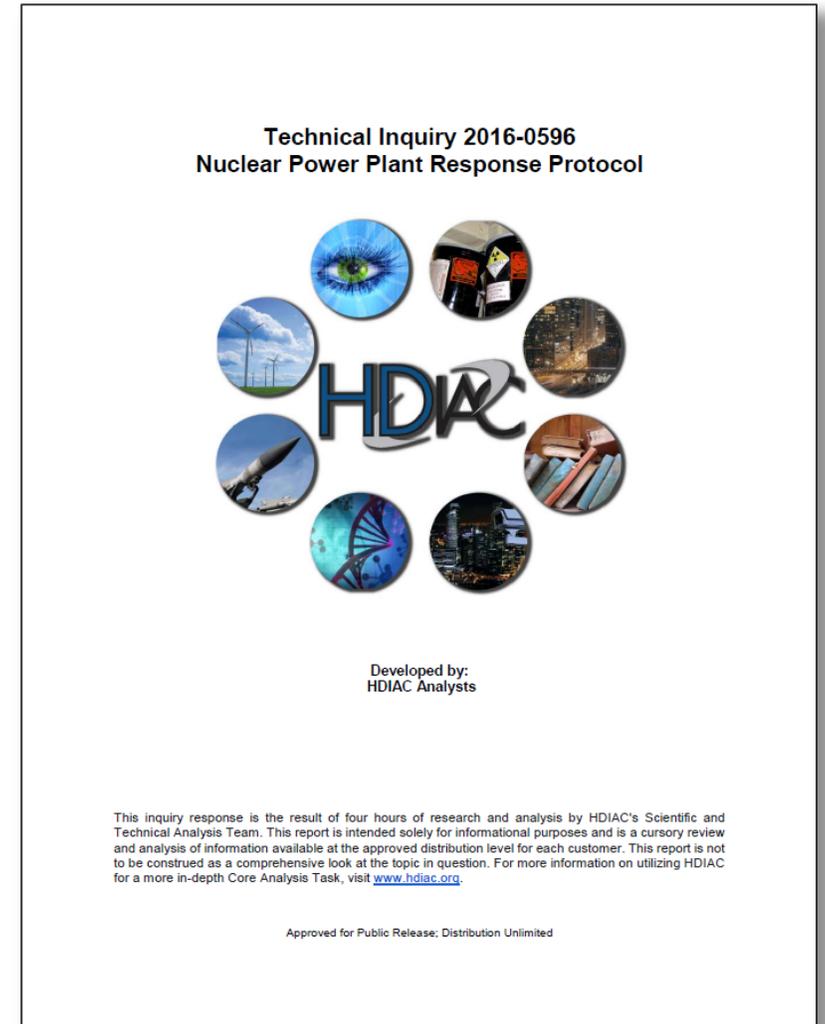
- ❑ One overarching goal of the U.S. Department of Defense (DoD) Information Analysis Center program is to enhance collaboration and information transfer.
- ❑ The homeland “is no longer a sanctuary.”
- ❑ Rising concern exists within the DoD and Homeland Defense and Security communities of asymmetric attacks.
- ❑ A clear need was identified: special in-person training events conducted outside normal exercise requirements, especially around chemical, biological, radiological, and nuclear defense.
- ❑ Our concept emerged from these concerns.



TTX participant badge
Source: HDIAC staff

Concept Development

- ❑ An HDIAC inquiry from 2016 raised interesting questions regarding radionuclides and response procedures outside a nuclear power plant (NPP).
- ❑ We gathered key subject matter expert feedback on this notion in mid to late 2022.
- ❑ This concept's usefulness was limited by the complexity of NPP oversight, TTX logistical challenges, and a fully robust exercise and training schedule for NPP entities.
- ❑ A new solution emerged: focus on lower-tier radiological material, mixed-hazardous waste (MHW).



HDIAC technical inquiry response from 2016
Source: HDIAC staff

Scenario Overview

OAK RIDGE AREA, EAST TN



Map Source: U.S. Geological Service. "The National Map Viewer." <https://www.usgs.gov/tools/national-map-viewer>, 3 November 2022.

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Exercise Goals

The overarching objective of the event was to **strengthen the consequence management (CM) capabilities** of government and other emergency response organizations in the wake of a major disaster event or attack in East Tennessee.

The TTX gameplay sought to **identify, measure, and consolidate participants' subject matter knowledge** in emergency response doctrine and agency Emergency Action Plans (EAPs) and **identify procedural or technological "pinch points"** in a complex interagency response.



Source: U.S. Army photo by Trevor Welsh

Preparation

Attachment B: Mixed-Hazardous Waste (MHW) Scenario Participant Template

Event: HZM Detonation/Explosion - Hour One

Organization: USNORTHCOM

CM Supporting SOPs/Policy Documents:

- CONPLAN 3500-14 (TAB C)
- CJCS CBRN Response EXORD

Actions on Event Notification:

- USNORTHCOM Joint Operations Center (JOC) is notified of the event and executes official notification procedures
- USNORTHCOM designates ARNORTH as the Joint Force Land Component Command (JFLCC)
- Joint Task Force – Civil Support (JTF-CS) receives official notification of event
- Request for Interagency LNO Augmentation

Requests for Information (from supporting organizations):

- USG (e.g., FEMA, NRC, DoJ, DoE, EPA, DoHHS)
- State and Commercial (e.g., TEMA, TG AG, TVA, City of Oakridge)

Organic Response Capabilities:

- National Guard: Tennessee Weapons of Mass Destruction – Civil Support Team (WMD-CST) activated on 3 hour recall
- LNO teams alerted, mobilized and preparing to deploy to supported/requesting agencies/locations

External Requests for Support:

- Begin contingency planning in anticipation of requests for support from Lead Federal Agency (DoD CBRN Response Enterprise, Defense Support of Civil Authorities (DSCA) EXORD forces, etc.)

Communications Requirements:

- Emergency Broadcast System, FEMA FirstNet, Commercial cellular QOS to responders, Organic Comm's Package notified for deployment

HDIAC Hazardous Waste Material Exercise – UNCLASSIFIED
Working Document

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TTX Pre-Event Participant Template

Promotional Flyer

2023 MIXED-HAZARDOUS WASTE CONSEQUENCE MANAGEMENT EVENT REAL-TIME TABLETOP EXERCISE

HOSTED BY THE
**HOMELAND DEFENSE & SECURITY
INFORMATION ANALYSIS CENTER (HDIAC)**
A COMPONENT OF THE DEPARTMENT OF DEFENSE

JUNE 13 – JUNE 15
POLLARD TECHNOLOGY CONFERENCE CENTER
OAK RIDGE, TENNESSEE

Scenario: an RDD of mixed-hazardous waste detonates near an electrical infrastructure node, and a plume drifts towards DOE facilities on the Oak Ridge Reservation (population: 30,000). A secondary attack is deemed likely.

Objectives:

- Better understand the capabilities and limitations of responding agencies
- Identify key players and POCs for future consequence management planning
- Highlight and record organizational limitations for future research

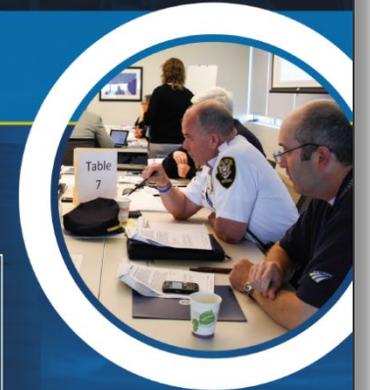
WHO CAN ATTEND? Registration is free for all attendees. The target audience is first responders, law enforcement, government, and military attendees.

Attendance is capped at 200.

For more information, please visit:
<https://hdiac.org/events/mhwcm2023>

POC

Joel Hewett, Technical SME, KeyLogic
joel.hewett@keylogic.com
(704) 962-0758 (m)



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Event Photos



Dr. Ashley Stowe, Director, Oak Ridge Enhanced Technology and Training Center, discusses his facility's training capabilities.

Source: HDIAC staff

Event Photos



COL Brad Ward (U.S. Army, Ret.) opens the TTX with a discussion of the key federal documents that govern CM planning and response.

Source: HDIAC staff

Event Photos



COL Ward engages TTX participants regarding their organizations' existing EAPs and Incident Action Plans (IAPs).

Source: HDIAC staff

TTX Observations (1/3)

- The CM community would benefit from more exercises focused on asymmetric events.
- We need more exercises/rehearsals that posit multistage attacks and more emphasis on mitigating malicious cyberattacks that specifically target CM capabilities. Most response groups have few policies or procedures in place for responding to a cyberattack.
- EAPs and IAPs rarely address asymmetric threats like the MHW attack; when they do, treatment is limited in scope. Such plans should also assess the threat of disinformation/propaganda that seeks to compound an asymmetric event.
- While sufficient-type personal protective equipment (PPE) appears to exist for most first responders to perform initial assessments, there are major questions regarding *where* and *when* suitable PPE might arrive to sustain a major, sustained emergency response.
- Participants expressed a desire for hands-on training in which modeling and simulation tools could enhance exercise fidelity. The value of such tools is paramount if EAPs and IAPs are to realistically incorporate complex and nontraditional risk assessments.

TTX Observations (2/3)

- Participants expressed limited familiarity with United States Northern Command (USNORTHCOM) and other DoD domestic-response capabilities, procedures, and timelines (e.g., Defense Support of Civil Authorities support activities).
- State representatives were aware of National Guard Bureau Civil Support Team and U.S. Army Reserve Consequence Management Unit capabilities but were less versed in Title 10 resources and the USNORTHCOM Joint Task Force for Civil Support.
- Emergency Management Agency (EMA) representatives displayed good knowledge of CM procedures and federal planning/response requirements; they appeared tightly integrated with state EMA entities.
- Excellent coordination exists between representatives from the Tennessee Emergency Management Agency (TEMA) and regional Federal Emergency Management Agency leaders. TEMA also possesses highly qualified professionals who can directly support first responder organizations.
- While sophisticated response and monitoring equipment are present across the Oak Ridge Reservation, establishing mutual aid agreements with the City of Oak Ridge is a recent occurrence (~2016).

TTX Observations (3/3)

- Counties outside of Knoxville have numerous resource shortfalls in manpower availability, training, and equipment. More emphasis should be placed on identifying shortfalls and requesting additional assets.
- CM entities would benefit from additional resourcing and rehearsal around interagency transition points (capabilities and timelines) among federal, state, and local entities in the event of an incident.
- When major events take place, detailed planning needs to highlight and prepare for the integration of response capabilities from non-governmental organizations, private volunteer organizations, and international organizations.
- Large-scale civilian population decontamination and evacuation procedures must be refined (e.g., tactics, designated personnel, collection points, and mortuary affairs).
- No equipment can provide protection from the full spectrum of hazards presented in the MHW scenario: chemical, radiological, and fire. Leaders would be forced to accept a large amount of risk, essentially a “best guess,” to provide any response in the hot or warm zones.

Areas for Improvement

- In its execution, the event was more of a “seminar-style” educational presentation/facilitated discussion than a TTX.
- Where active discussions did occur, they focused more on the question, “Is there a plan in place for this?”, with minimal amount of peer-to-peer discussion of scenario details or probable agency response actions.
- The TTX would have benefited from better visual aids, especially overarching event map(s) detailing the explosion location and extent of the plume. Charts depicting the response agencies involved and their reporting structures (or relationships) would also have been useful to many participants.
- Several agencies that would have been central to the MHW response scenario were not present.
- Some participants commented that the radiological component of the TTX scenario and response was limited, with discussions focusing mostly on the fire and chemical threat to first responders.
- A few participants suggested that after *hour 2* of the TTX, several scenario hours could be compressed into one event hour, with the scenario “jumping” ahead 6 or 12 hours to achieve a more realistic response timeline.

Acknowledgments

Staff

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Speakers

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Eliot Calhoun
Jordan Garrard
Erin Moehlen
AUSA Steven Neff
SFC Brent Rich
Jon Richards
Dr. Ashley Stowe
Robert Wagner

Advisors & Outside Experts

Dr. Steven Diaz
Ron Edmond, Ed.D.
Edward P. Feigenbaum
Dr. Jon Gill
Chris Glover
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... and many more!