

OKLAHOMA STATE UNIVERSITY™

Weapons of Mass Destruction Hazardous Materials Specialist



DOMESTIC PREPAREDNESS CBRNE-HAZMAT SPECIALIST LEVEL

The course material presented is our attempt to present the most up to date compilation of available information in the realm of Nuclear, Biological and Chemical emergency response and preparedness. The curriculum material presented here has been developed by drawing upon nationally recognized resources including, but not limited to relevant coursework and content from the National Domestic Preparedness Program, the United States Army Chemical and Biological Countermeasures Course, National Emergency Response and Rescue Training Center, the U.S. Environmental Protection Agency Advanced NBC Training and numerous other resources available from internet research, publications and conferences.

Terrorist incidents involving the potential use of Weapons of Mass Destruction pose a growing threat to the security of the United States. The mission of this training curriculum is to increase awareness and preparedness among responders at the federal, state, and local levels of the potential threat posed by domestic CBRNE events.

Weapons of Mass Destruction

- **Biological Agents**
- **Nuclear Devices**
- **Incendiary**
- **Chemical Agents**
- **Explosives**



WEAPONS OF MASS DESTRUCTION

The focus of this training program is on the response to an incident involving Nuclear, Biological, and Chemical (NBC) agents. These chemical warfare agents are significant as they were designed and optimized specifically to kill or injure, and as a result will affect the response procedures normally employed at hazardous material incidents. We will discuss the impact of Chemical, Biological, Radiological, Nuclear, and Explosives (CBRNE) and potential changes to response procedures.

Additionally, because many of these agents were invented for military use, the terminology associated with them is often military in nature, and thus different from that normally encountered with respect to everyday Toxic Industrial Chemicals or Materials (often referred to as TICs or TIMs). Our collective responsibilities are to bring order from confusion and defeat the terrorist by minimizing the effects of these weapons. Understanding the complexity and severity of what has happened and what could happen, will rely heavily on an understanding of these differences.

Above all, it is our responsibility as responders to:

1. Ensure Life Safety
2. Minimize Impact to Real Property
3. Minimize Impact to the Environment.

Everyday HAZMAT Incident VS. NBC/WMD Terrorism Incident

	HAZMAT	NBC
• Deliberate attack		Δ
• Supertoxic material		Δ
• Early hazard identification	x	
• Mass casualties		Δ
• Many fatalities		Δ
• Mass decontamination		Δ
• Unusual risk to emergency Responders and civilians		Δ

EVERYDAY HAZMAT INCIDENT VS. NBC-WMD TERRORISM INCIDENT

You are all familiar with everyday hazardous materials incidents. Due to the nature of our economy and society, the inevitable spill, leak or release, intentional or not occurs everyday. In light of recent events, the acute awareness brought on forces us to look at how an everyday HAZMAT incident differs from an NBC terrorism incident and explore the challenges and consequences presented by those differences.

- HAZMAT incidents are generally accidents. An NBC terrorism incident is intentional.
- NBC agents are more toxic than the hazardous material normally encountered by responders, and are referred to as "supertoxic" substances. Milligrams of radiological material, chemical, or biological agents can cause injury or death to thousands if disseminated correctly.
- Early identification of hazardous material is relatively easy: DOT placards, shipping papers, workers, other location of the incident can all provide information on the identification of the material involved in the incident. NBC agents will be difficult to identify (except by signs and symptoms) because none of the identifiers associated with an everyday event in the regulated society will normally be present.

EVERYDAY HAZMAT INCIDENT VS. NBC-WMD TERRORISM INCIDENT (continued)

- As a general rule, HAZMAT incidents do not produce mass casualties. An NBC terrorist incident may or may not result in mass casualties, but NBC incident will almost certainly produce large numbers of psychological casualties. This was demonstrated on a small scale by the Tokyo attack, which produced 5,500 casualties (4,700 of which were psychological). **A key point should be made here that while an NBC terrorist attack may or may not result in mass fatalities, it will almost certainly produce mass casualties. The reason is that there will almost certainly be mass psychological casualties. As a result, regardless of the effectiveness of the agent or the dispersal system, responders will be faced with a mass casualty situation.**
- While the normal HAZMAT response requires the decontamination of only a few people, an incident involving an NBC agent will require mass decontamination of hundreds, or even thousands of individuals. As a result, some of the initially arriving responders will have to be assigned this task, with another part of the HAZMAT team committed to establishing a separate decontamination corridor to provide technical decontamination for responders.
- Most NBC agents are supertoxic, are heavier than air, and fall in the range of semi-persistent or persistent agents. As a result, they in general, pose a greater threat than most hazardous materials or TIMs, to responders for a longer period of time in the area where the responders must execute their higher toxicity, certain NBC agents will tend to pose a greater threat to individuals downwind of the site of the incident than conventional TIMs and other hazardous materials.

Everyday HAZMAT Incident VS. NBC/WMD Terrorism Incident

	HAZMAT	NBC
• Crime scene and evidence Preservation	x	Δ
• Major interaction/coordination with Local, state, and federal agencies		Δ
• Scene communication overload		Δ
• Chaos		Δ
• Resources overwhelmed		Δ
• Secondary device designed to kill Responders		Δ
• Pre-incident indicators		Δ

EVERYDAY HAZMAT INCIDENT VS. NBC/EMD TERRORISM INCIDENT Critical Differences to Be Aware Of...

- While an everyday HAZMAT incident may or may not be labeled an environmental crime scene, an act of **terrorism involving NBC agents is a federal crime**. As a result, the incident site will be designated a crime scene and evidence preservation will be a key component of the response so that the perpetrator can be identified, apprehended, and brought to trial.
- **Interagency coordination** at the municipal, state, and federal levels may be needed at the site of a hazardous material release. This same interagency coordination will be required in the event of an NBC terrorism attack, both as a result of the complexity of the response required, and due to public concern. The employment of liaison officers and staging area managers will be critical to the timely and efficient application of resources. As a result, the Incident Commander at these types of incidents must be experienced in executing the Incident Command System and have the requisite experience to assign areas of responsibility to responding agencies and their personnel.
- Because of the number of agencies and responders involved in the response to and NBC incident, **communications systems will quickly become overloaded**, and even the use of cellular phones may be inadequate as the sole auxiliary system.

Critical Differences to Be Aware Of...

- Because of the public's concern about the consequences of exposure to nuclear, biological, and chemical material, **mass panic and hysteria should be anticipated**. This reaction on the part of the public will be many times greater than seen at an everyday hazardous material scene. It will rapidly exceed the management capability and resources of fire companies and hazardous material teams alone. As a result, the importance of proper and immediate employment of local law enforcement personnel cannot be overemphasized.
- At the scene of a standard hazardous material release, intervention can be methodical and deliberate; however, because of the expected number of victims, the catastrophic nature of injuries, and the speed with which the agents can kill, it is expected that the normally deployed forces will be quickly overwhelmed.
- All responders must be aware that there is a possibility of secondary devices or multiple NBC devices might be present at or near the incident site. Secondary devices may be of conventional high explosive fill, or may be constructed to deliver additional NBC material. When responding to a terrorist incident, always expect a secondary device to be present.
- Indications that might alert responders to the impending attack may be present before a terrorist incident occurs. These indicators may take the form of phone calls to authorities describing the event or stating the reason for the attack, or might be the discovery of the dissemination device before it releases the agent into the atmosphere. The primary pre-incident indicator will be intelligence gathered by the FBI and other organizations to indicate a credible threat or an imminent attack.

Course Goals

Train responders to initiate the correct Technician & Specialist Level offensive response actions in a CBRNE – WMD incident, to include:

- Identification and recognition of an incident
- Agent detection, identification & sampling procedures
- Selection and use of PPE and protective measures
- Technical and mass casualty decon considerations
- Notifications and communications
- Tactical considerations of scene command and control

COURSE GOALS

The goal of this activity is to provide you the tools and knowledge base to continue developing your professional advancement as a HAZMAT Technician & Specialist Level responder. The modules that follow are designed to increase the depth of knowledge of responders who may be confronted with the challenges created if a terrorist incident were to involve the employment of CBRNE agents or devices. This coursework has been presented in every way possible to ensure that following its completion, you should be able to:

- Employ the correct Technician & Specialist Level offensive response actions to be taken in the event a terrorist were to employ an NBC weapon. These actions include:
 - Identify types of potential terrorist targets, subject to potential hazardous materials attacks and recognize when they occur,
 - Agent detection, identification and sampling procedures,
 - PPE selection and self protective measures,
 - Decontamination of responders and mass casualties,
 - Make appropriate notifications and effective communication, and
 - Identify command and control issues associated with terrorism incidents.

Overview

- Introduction
- NBC/WMD Threat
- Dissemination Devices
- Hazmat Terminology
- Chemical Agents
- Chemical Detection and Sampling
- Biological Agents
- Biological Detection and Sampling
- Radiation Material, Detection and Sampling
- Personal Protective Equipment
- Decontaminatin
- Technician & Specialist Level Responder Actions
- Tactical Considerations
- Comprehensive Scenario Integrated Practical Exercise
- Test of Lessons Learned

OVERVIEW

This Hazmat Specialist course is organized into modules of instruction designed to serve as an initial introduction as well as comprehensive refresher curriculum for Technician & Specialist Level responders:

- Threat will address the potential danger posed by terrorist who have access to nuclear, biological, or chemical material.
- Federal Response Agencies and Roles will present information regarding the current FRP, CONLPLAN and respective agencies' roles.
- Recognizing Dissemination Devices will discuss recognizing and identifying potential dispersion methods or scenarios terrorists may employ
- HAZMAT Terminology to serve as a basic chemistry overview to better understanding of agent behavior in the environment.
- Chemical Agents comprehensive review.
- Chemical Agent Detection and Sampling will provide instruction about the operation of selected items of chemical detection and sampling equipment.
- Biological Agents will present information about selected biological agents that a terrorist might employ.
- Biological Detection Sampling will include a review of existing and developing biological sampling techniques and equipment
- Radiological Material and Detection will present technical information about nuclear material that a terrorist might employ as well as detection considerations.

OVERVIEW

(continued)

- Personal Protective Equipment (PPE) will describe different types of equipment and present illustrative scenarios asking students to choose the correct PPE.
- Decontamination will address the types of decontamination, which solutions are best for specific chemical agents, those to be used on victims and those only for use on equipment, and the risks associated with decontamination. Also, considerations for mass casualty incidents.
- Technician & Specialist Level Responder Actions will focus on the offensive actions Technician & Specialist Level responders should execute to minimize hazards, rescue casualties, identify hazardous materials, and collect evidence.
- Tactical Considerations will bring all of the instruction together to prepare course participants for a scenario exercise combining all of the modules in a comprehensive test of lessons learned.