

# **Standardized Awareness Authorized Training, Train-the-Trainer**

**Chemical Agents**



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# Objectives

- **Discuss chemical agents, such as Toxic Industrial Chemicals (TIC), Riot Control Agents (RCA), and Chemical Warfare Agents (CWA), as well as the physiological signs/symptoms associated with them.**
- **Discuss the advantages and disadvantages of using chemical agents for terrorist activity.**
- **Identify potential sources in the community where chemicals are manufactured, transported, stored, used, or disposed.**



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# Objectives (continued)

- Discuss the TRACEM-P acronym.
- Identify the indicators of a possible criminal/terrorist act involving chemical agents.
- Discuss the control zones used during a chemical agent incident.
- Discuss instructional strategies for facilitating the “Chemical Agents” module.



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# Chemical Agents

- **Types**
- **Dissemination**
- **Availability**
- **Volatility**
- **Vapor Density**
- **Senses**
- **Routes of Entry; inhalation, ingestion, absorption, injection**
- **General Signs and/or Symptoms**



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# Types of Chemical Agents

- **Toxic Industrial Chemicals**
  - **Anhydrous ammonia**
  - **Chlorine**
  - **Hydrogen cyanide**
- **Incapacitating Agents**
- **Riot Control Agents; only a temporary irritating effect**



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# Chemical Warfare Agents



Courtesy of the CDP

- Choking Agents; **dry land drowning**
- Blood Agents
- Blister Agents; **blanched skin, skin inflammation, pulmonary edema, eye irritation**
- Nerve Agents; **sweating, drooling, runny nose, pinpointed pupils**



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# Nerve Agent Signs and Symptoms

## **SLUDGEM:**

- **Salivation (drooling)**
- **Lacrimation (tears)**
- **Urination**
- **Defecation**
- **Gastric distress (stomach)**
- **Emesis (vomiting)**
- **Miosis (constriction of pupils)**



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# Advantages of Using Chemical Agents for Terrorist Activity

- Easy to make or acquire
- Available
- Immediate effect
- Hard to detect
- Easily spread
- Tie up resources
- Psychological impact



# Disadvantages of Using Chemical Agents for Terrorist Activity

- Requires large quantities
- Production and deployment hazardous to terrorists



# Sources of Toxic Industrial Chemicals (TIC)



Courtesy of the Indiana Department of Environmental Management

- **Chemical manufacturing plants**
- **Food processing facilities**
- **Transportation assets**
- **Airports**
- **Industries**
- **Laboratories**



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# TRACEM-P

**TRACEM-P outlines potential hazards and mechanisms of injury at a hazardous materials incident**

- **Thermal**
- **Radiological**
- **Asphyxiation**
- **Chemical**
- **Etiological**
- **Mechanical**
- **Psychological**



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# Indicators of a Possible CWA Attack



Courtesy of CDC Public Health  
Image Library (PHIL) # 8518

- Numerous dead animals
- Lack of insect life
- Mass casualties
- Unexplained physical symptoms
- Pattern of casualties
- Illness in a confined geographic area



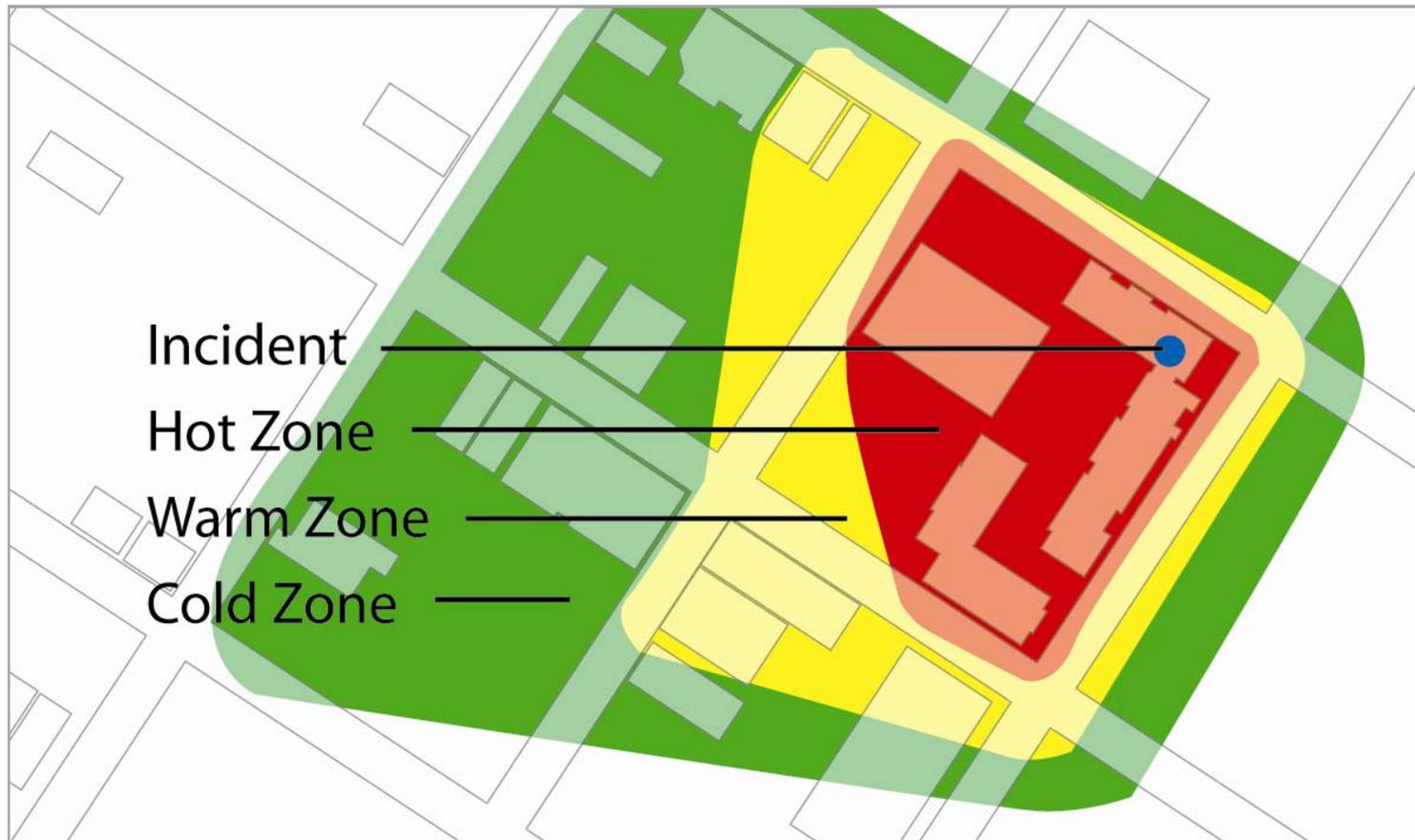
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# Indicators of a CWA Attack (continued)

- Unusual liquid droplets
- Areas of dead vegetation
- Unexplained odors
- Numerous people experiencing blisters
- Low-lying cloud/fog conditions
- Unusual metal debris/bomb-like materials present



# Control Zones



Courtesy of CDP



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# Activity



Courtesy of Rob Low



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# Questions for Presentation Preparation

- How will you explain the importance of learning this module to your participants?
- What do participants need to learn from this module content?
- What additional resources can be used to reinforce learning the content in this module?
- How will you involve the audience in learning this material?
- What safety concerns need to be reinforced in this module?



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# Conclusion

- **What are the characteristics and physiological signs/symptoms associated with chemical agents, TIC, RCA, and CWA?**
- **What are some advantages and disadvantages of using chemical agents for terrorist activity?**
- **What are some potential sources in the community where chemicals are manufactured, transported, stored, used, or disposed?**



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# Conclusion (continued)

- **What are the potential hazards encountered by a responder at a HAZMAT incident, as represented by the acronym TRACEM-P?**
- **What are the indicators of a possible criminal/terrorist act involving chemical agents?**
- **How would you use control zones for a chemical agent incident?**
- **What are some potential instructional strategies you could use to facilitate the “Chemical Agents” module?**



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# **Standardized Awareness Authorized Training, Train-the-Trainer**

**Chemical Agents—End of Module**



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