Emergency Preparedness & Response to Terrorism in Industrial Operations

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Emergency Preparedness

Natural Emergency
- Medical
- Flood
- Earthquake
- Hurricane
- Tornado
- Volcano

Unintentional Technological
- Chemical Release
  - Fire
  - Utility Outage

Intentional Technological
- Civil Disturbance
- Workplace Violence
- Terrorism
  - Conventional
  - Unconventional
  - Cyber-terrorism

• Terrorist activity: outcome is another emergency that needs to be planned for
What is Terrorism

- The unlawful use of force or violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives. -- FBI

- The calculated use of violence or the threat of violence to inculcate fear; intended to coerce or to intimidate governments or societies in the pursuit of goals that are generally political, religious, or ideological. -- Dept. of Defense
Why be concerned?

- The majority of Anti-US attacks are US businesses
- It’s a only matter of time for domestic attacks
Business Targets

• World Trade Center (March 1993)
  – 6 Dead, 1,042 injured, $300M damage
  – Urea nitrate / nitroglycerin /aluminum / magnesium / ferric oxide / hydrogen weapon
  – Use of cyanide was considered
  – Intent to drop one tower into the other
  – At risk: 100,000+ people
Business Targets

- First Data Corp (March 1995)
  - Bomb threats with detailed knowledge of the floor plan of the First Data Corporation's headquarters complex + U.S. Customs Service and INS offices in Arizona, California, Colorado, New Mexico, and Texas
  - Prompted by Mexican Army activity in Chiapas

- Mink Research Facility, Michigan State University (March 1995)
  - Animal Liberation Front arson of facility

- Abortion/Medical Clinics (1990s)
  - Bombings/arsons
Use of Weapons of Mass Destruction (WMD)

- any destructive device [explosive, incendiary, or poison gas, bomb, grenade, rocket having a propellant charge of more than four ounces, missile having an explosive or incendiary charge of more than one-quarter ounce, mine or device similar to the above];
- poison gas;
- any weapon involving a disease organism; or
- any weapon that is designed to release radiation or radioactivity at a level dangerous to human life.
  - Title 18, U.S.C. 2332a
Types of Terrorism

- Probability
- Consequence

Environmental Risk Management and Occupational Risk Management
Conventional Weapons

- **Firearms**
  - Most workplace violence incidents involve the use of firearms.

- **Explosives**
  - Types:
    - Detonatable
    - Incendiary Devices
  - Components:
    - Igniter / fuse
    - Container or body
    - Filler (incendiary material or explosive)
Chemical Weapons

- Nerve agents
  - sarin (GB), soman (GD), tabun (GA), V agent (VX)

- Blister agents
  - mustard (H, HD), lewisite (L)

- Blood agents
  - hydrogen cyanide (AC), cyanogen chloride (CK)

- Choking agents
  - chlorine, phosgene

- Irritating agents
  - Chloropicrin, mace (CN), tear gas (CS), capsicum
Example: Sarin

GENERAL CATEGORY: Nerve Agents
SPECIFIC CATEGORY:
G-Series Nerve Agents
GENERAL NAME: GB (Sarin, Zarin)
CHEMICAL NAME: O-Isopropyl methylphosponofluoridate
CAS NUMBER: 107-44-8

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flash Point</td>
<td>155 °C (280 °F)</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>178 °C (316 °F)</td>
</tr>
<tr>
<td>Melting Point</td>
<td>-63 °C (-69 °F)</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>2.9 mmHg</td>
</tr>
<tr>
<td>Vapor Density (Air = 1)</td>
<td>4.86</td>
</tr>
</tbody>
</table>

IMMEDIATE DANGER TO LIFE HEALTH (IDLH) (mg*min/m³): 0.2
AIRBORNE EXPOSURE LIMIT (AEL): .0001 mg/m³
FATAL DOSAGE - PERCUTANEOUS (LD 50): 1700 mg
FATAL DOSAGE - INHALATION (LC 50) (exposure duration of 2-10 minutes): 70-100 mg-min/m³

DESCRIPTION: Nerve Agents are colorless to light brown. Most are essentially odorless, however, some may have a faint fruity odor. In toxic amounts, liquid solutions of nerve agents are tasteless. G-agents tend to be non-persistent. Nerve agents are liquids under temperature conditions.

Information from FEMA RRIS:
http://www.rris.fema.gov/
Chemical Delivery Systems

• Munitions
  – Artillery shells, rockets, grenades, mines
    • Produce aerosoles (1-7 µm), 6-10 ft. from ground

• Commercial delivery systems
  – Crop dusting, truck mounted pesticide generators, aerosol cans, pump-type air pressure sprayers, HVAC systems

• Conditions that will effect the attack
  – Temperature, humidity, precipitation, wind speed, nature of buildings and terrain
Biological Weapons

• Bacteria & Rickettsia
  – Anthrax (Bacillus anthracis), cholera (Vibrio cholerae), plague (Yersinia pestis), tularemia (Franciscella tularensis), Q fever (Coxiella burnetti)

• Virus
  – Small pox, Venezuelan equine encephalitis, viral hemorrhagic fevers (e.g., Ebola, Marburg, Lassa fever)

• Toxins
  – Botulism, staphylococcal enterotoxin B (SEB), ricin, mycotoxins
# Biological Agents

<table>
<thead>
<tr>
<th></th>
<th>Anthrax</th>
<th>Pneumonic Plague</th>
<th>Ebola</th>
<th>Botulinum</th>
<th>Ricin</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Method</strong></td>
<td>Spores</td>
<td>Aerosol</td>
<td>Contact Aerosol (BW)</td>
<td>Aerosol Oral</td>
<td>Aerosol Oral</td>
</tr>
<tr>
<td><strong>Incubation</strong></td>
<td>1-5 days</td>
<td>1-3 days</td>
<td>4-16 days</td>
<td>Variable (hrs)</td>
<td>Variable (hrs)</td>
</tr>
<tr>
<td><strong>Duration of Illness</strong></td>
<td>3-5 days</td>
<td>1-6 days</td>
<td>Death in 7-16 days</td>
<td>Death in 1-3 days; months if not lethal</td>
<td>Days - death within 10-12 days for ingestion</td>
</tr>
<tr>
<td><strong>Lethality</strong></td>
<td>High</td>
<td>High unless treated within 12-24 hrs</td>
<td>High (for Zairean), Moderate for Sudanese</td>
<td>High w/o respiratory support</td>
<td>High</td>
</tr>
<tr>
<td><strong>Vaccine</strong></td>
<td>2 doses protects against 200-500 LD50s</td>
<td>Low</td>
<td>No vaccine</td>
<td>3 doses 100% against 25-250 LD50s</td>
<td>No vaccine</td>
</tr>
</tbody>
</table>

*Information from Jane’s Chem-Bio Handbook*
Biological Delivery Systems

• Commercial delivery systems
  – Similar to chemical systems:
    • Crop dusting, truck mounted pesticide generators, pump-type air pressure sprayers, HVAC systems, water and food

• Conditions that will effect the attack
  – Temperature, humidity, precipitation, wind speed, nature of buildings and terrain

• There will be a significant delay
Nuclear /Radiological Weapons

• Thermonuclear weapon
  – Controls and security make this the least likely scenario

• Radiological Dispersal Device
  – Detonation of a conventional explosive incorporating nuclear materials.
  – High level isotopes are readily available from medical and research institutions
  – Uranium/plutonium
Preparedness

- Security Assessments
  - Evaluation of facilities to determine vulnerabilities
    - Access control
    - Susceptibility of facility systems

- Equipment
  - PPE
  - Detection

- Training
  - Self-protection
  - Recognition
  - Scene control
  - Notification
  - Coordination
Self-Protection

- Recognition of Hazard Type
  - Thermal
  - Radiological
  - Asphyxiation
  - Chemical
  - Etiological
  - Mechanical

- Protection
  - Time
  - Distance
  - Shielding
Primary: Scene Safety/Control

- Secure the area/ascertain nature & severity of the threat.
  - secondary device targeted at emergency responders in an attempt to harm or kill rescuers and disrupt emergency operations.
  - Secure perimeters must be established.
  - Thorough search of these perimeters must be a priority
    - For Chem-Bio, a large downwind area may also need to be rapidly secured and evacuated in order to minimize civilian casualties
  - Don’t forget: this is a crime scene!
Identification / Planning

- Identity and properties of the substance
  - Formulate response plans
  - Decontamination procedures
  - Medical treatment plans
  - Environmental precautions
  - Challenges of assessing exposure
    - Chemical
    - Bio
Psychogenic Component

- WMD event is highly likely to induce a psychological reaction
  - Problems with crowd control, rioting, and other opportunistic crime
  - Response must involve extensive participation by PIOs and the media. Must prevent a "panic reaction" among those that might potentially be exposed to a warfare agent.
    - Could possibly spread the problem beyond the initial area.
      - Ex: Tokyo Sarin attack…bulk of victims were ambulatory
Response Authorities

- **Local**
  - Police/Sheriff
  - Fire Department

- **State**
  - OES/National Guard

- **Federal**:
  - 27 different agencies in the Federal Response Plan!!!
    - FBI
    - ATF
    - DOE
Conclusions

• “The question is no longer if this will happen, but when.”
  • William Cohen, US Secretary of Defense

• “Kill one and frighten a million.”
  • Sun Tzu

• Overall ERT concepts still apply:
  – Personal safety
  – Environmental/community impact
  – Loss control
Additional Information

• FBI National Domestic Preparedness Office

• FEMA:

• National Response Team
  – [http://www.nrt.org/nrt/home.nsf](http://www.nrt.org/nrt/home.nsf)

• Terrorism Research Center