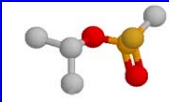

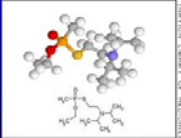


CBRNE Awareness **Chemical-Bio Agents Module 3**

CCOP(=O)(F)C

Overview 1 NJSP HMRU

CBRNE Awareness **Objectives**

- **Student will:**
 - Demonstrate ability to recognize signs and symptoms of chemical agent exposure
 - Describe how to protect oneself against chemical agents
 - Demonstrate a knowledge of terms, symbols, definitions and characteristics

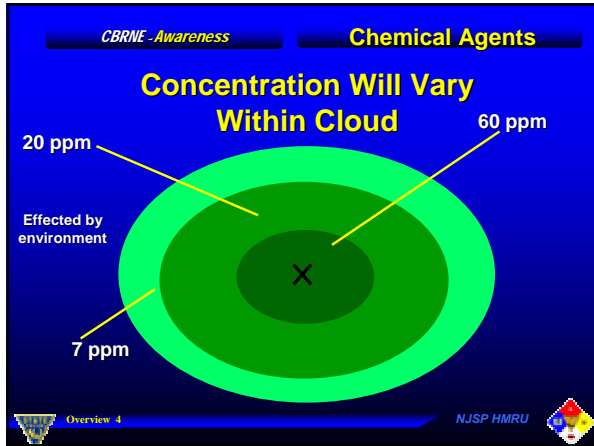
Overview 2 NJSP HMRU

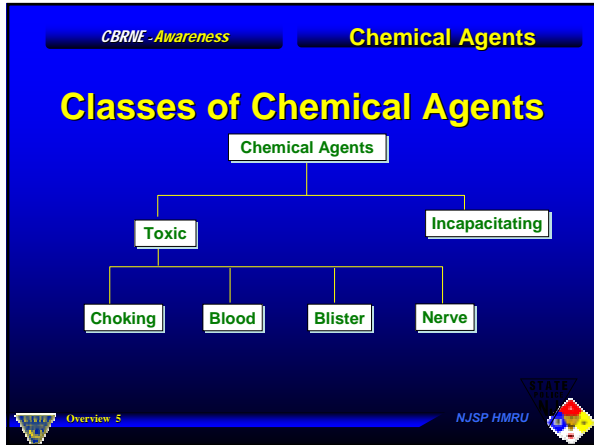
CBRNE Awareness **Chemical Agents**

General Characteristics of Chemical Agents

- Generally liquid (when containerized)
- Normally disseminated as aerosols or gas
- Influenced by weather conditions
- Can be protected against

Overview 3 NJSP HMRU





CBRNE Awareness

Choking Agents

Common Name, Military Symbol	Phosgene (CG)	Chlorine (Cl)
Odor	Newly Mown Hay	Swimming Pool
Persistence	Minutes to hours	
Form	Gas, heavier than air	
Rate of Action	Immediate, symptoms will get worse with time	
Route of entry	Respiratory	
Symptoms	Coughing, choking, tightness of the chest	
Hazard	Respiratory	
Self aid	Leave contaminated area	
Decontamination	Aeration	

Overview 6 NJSP HMRU

CBRNE Awareness

Blood Agents

Common Name, Military Symbol	Hydrogen Cyanide (AC)	Cyanogen Chloride (CK)
Odor	Bitter Almonds	Bitter Almonds
Persistency	Minutes to hours	
Form	Gas, lighter than air	Gas, heavier than air
Rate of Action	Rapid (seconds)	
Route of entry	Respiratory	
Symptoms	Flush color, gasping for air, reddish lips (blue in dark-skinned), frothing	
Hazard	Respiratory	
Self aid	Leave contaminated area; Antidote available	
Decontamination	Aeration	

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CBRNE Awareness

Blister Agents

Common Name, Military Symbol	Mustard (H)	Lewisite (L)	Phosgene Oxime (CX)
Odor	Garlic	Geraniums	Irritating
Persistency	Hours to days		
Form	Liquid, Gas, heavier than air	Solid	
Rate of Action	Rapid		
Route of entry	Skin, inhalation, eyes		
Symptoms	H, no immediate pain; L and CX immediate pain; burning eyes, coughing, skin blistering after 6-24 hrs.		
Hazard	Respiratory and skin		
Self aid	Immediate removal; flush with water; dilute bleach		
Decontamination	Removal; flush with water; dilute bleach		

Overview 8 NJSP HMRU

CBRNE Awareness

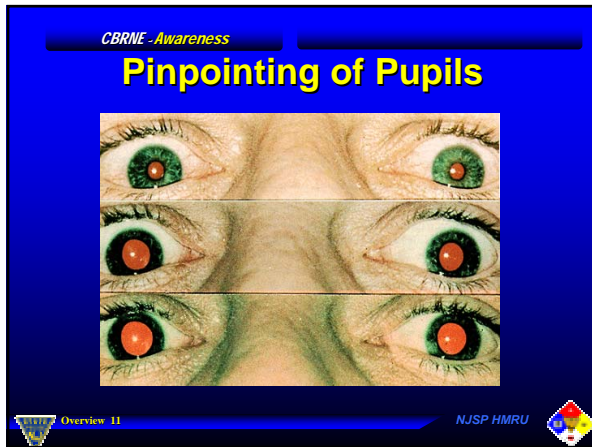
Blisters

Overview 9 NJSP HMRU

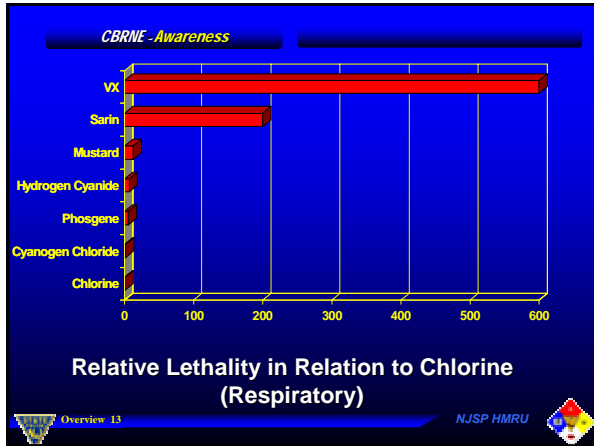
CBRNE Awareness Nerve Agents

Common Name, Military Symbol	Tabun (GA)	Sarin (GB)	Soman (GD)	VX
Odor	None; fruity		None; camphor	None; sulfur
Persistency	Minutes to hours		Hours	Hours to days
Form	Liquid vapor; heavier than air			Liquid
Rate of Action	Inhalation rapid; skin seconds to minutes			
Route of entry	Skin, inhalation, eyes			
Symptoms	Pinpointing pupils; dimness of vision; runny nose; drooling; difficulty breathing; tightness in chest; muscle twitching			
Hazard	Respiratory and skin			
Self aid	Immediate removal; flush with water; dilute bleach			
Decontamination	Removal; flush with water; dilute bleach			

Overview 10 NJSP HMRU



- CBRNE Awareness SLUDGE-M**
- S** - Salivation - Drooling
 - L** - Lacrimation - Tearing
 - U** - Urination
 - D** - Defecation
 - G** - Gastrointestinal; pain and gas
 - E** - Emesis - Vomiting
 - M** - Miois - Twitching
- Overview 12 NJSP HMRU




- CBRNE Awareness
- ### Key Points
- Chemical agents are supertoxic
 - But:
 - They can be detected
 - You can protect yourself
 - There are first aid measures
 - They can be decontaminated
- Overview 14 NJSP HMRU



CBRNE Awareness **Biological Agents**

Objectives

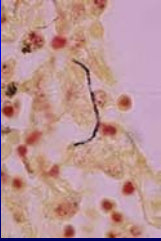
- Know how to protect yourself
- Universal Precautions/PPE
- Recognize the hazards and indicators of a biological incident



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CBRNE Awareness **Characteristics**

- Do not penetrate unbroken skin
- Non-volatile
- More toxic than chemicals by weight
- Undetectable by senses
- Limited field detection
- Disseminate as aerosols




Bacilli

Overview 17 NJSP HMRU

CBRNE Awareness **Biological Agents**

Biological Characteristics (Continued)

- Range of effects
- Obtained from nature
- Relatively easy to produce
- Have delayed effects



Anthrax

Overview 18 NJSP HMRU

CBRNE - Awareness

Potential Biological Agents

- Anthrax (bacteria)
- Plague (bacteria)
- Q fever (rickettsia)
- Small pox (virus)
- Ebola (virus)
- Venezuelan Equine Encephalitis (VEE) (virus)
- Staphylococcal Enterotoxin B (toxin)
- Botulinum (toxin)
- Ricin (toxin)


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CBRNE - Awareness


Biological Agents

Bacteria and Viruses

- Routes of entry
- Multiply and overcome body's immune system
- Some can cause epidemics



Tularemia



Anthrax Spore

Overview 20 NJSP HMRU

CBRNE - Awareness

Biological Agents

Toxins

- Poisonous substances produced as by-products of microorganisms, plants and animals
- Not living organisms
- Not CONTAGIOUS

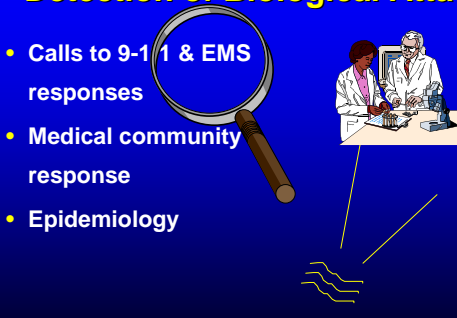


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CBRNE Awareness

Detection of Biological Attacks

- Calls to 9-1-1 & EMS responses
- Medical community response
- Epidemiology




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CBRNE Awareness

Protecting Yourself Against Biological Agents

- Mask
- Clothing
- Sanitation measures
- Decontamination
- Medical treatment
- Blood-borne pathogen universal precautions



Overview 23 NJSP HMRU

CBRNE Awareness


Decontamination

Wet
Strip
Flush
Cover

Overview 24 NJSP HMRU

CBRNE Awareness

HEPA Filters




Overview 25 NJSP HMRU

CBRNE Awareness

Key Points

- First indications may be 9-1-1 calls or patient "surge" on medical community.
- Protection
 - Protective mask/HEPA mask, properly fitted
 - Good sanitary procedures/universal precautions on site
 - Seek medical attention immediately
 - Treatment is available



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CBRNE Awareness

End of Module


- Additional information on specific materials follows.

Overview 27 NJSP HMRU

CBRNE Awareness **Anthrax**

Route of entry:

- Respiratory, cuts in skin, Ingestion.
- Incubation period: 1-7 days
- Contagious: No
- Mortality: 80%-90% (respiratory)
- Symptoms:
 - Nausea
 - Fever, chills
 - Swelling of lymph nodes



Overview 28 NJSP HMRU

CBRNE Awareness

Anthrax Disease Course Summary (Inhalation)


Day 1	Day 2	Day 3	Day 4	Day 5
EXPOSURE		Patient ambulatory		
		Incubation 1-6 Days		
		Fever, malaise, fatigue, cough, mild chest discomfort, respiratory distress. SHOCK and DEATH near 100% mortality		
		Patient's illitered		

Overview 29 NJSP HMRU

CBRNE Awareness **Plague**

Route of entry:

- Flea bites
- Incubation period: 2-3 days
- Contagious: Yes
- Mortality: 90%-100% (respiratory)
- Symptoms:
 - Headache, shortness of breath
 - High fever, chills
 - Spitting up blood



Overview 30 NJSP HMRU

CBRNE Awareness **Q Fever**

Route of entry:


- Respiratory, digestive
- Incubation period: 2-10 days
- Contagious: No
- Mortality: Low (under 1%)
- Symptoms: Flu like

Overview 31 NJSP HMRU

CBRNE Awareness **Small Pox**

Route of entry:


- Respiratory
- Incubation period: 10-12 days
- Contagious: Yes
- Mortality: 30%
- Symptoms:
 - Fever, rigors, vomiting
 - Headache, backache
 - Lesions (after 2-3 days)



Overview 32 NJSP HMRU

CBRNE Awareness **Ebola**

- Route of entry: Direct contact
- Incubation period: 3-21 days
- Contagious: Yes
- Mortality: 90%
- Symptoms:
 - Fever, vomiting, diarrhea
 - Blotches on skin
 - Bleeding



Overview 33 NJSP HMRU

CBRNE Awareness **VEE**

Venezuelan Equine Encephalomyelitis

Route of entry:

- Mosquito bites, respiratory
- Incubation period: 1-5 days
- Contagious: **No**
- Mortality: 1%
- Symptoms:
 - Flu like

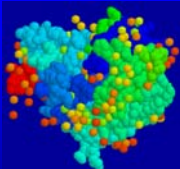
Overview 34 NJSP HMRU

CBRNE Awareness **SEB**

Staphylococcus Enterotoxin B

Route of entry:

- Digestive, respiratory
- Incubation period: 4-6 hours
- Contagious: **No**
- Mortality: Low
- Symptoms:
 - Vomiting, abdominal cramps, explosive watery diarrhea (ingestion)
 - High fever, cough chills, prostration (respiratory)




Overview 35 NJSP HMRU

CBRNE Awareness **Botulinum**

Route of entry:

- Digestive, respiratory
- Incubation period: 24-72 hours
- Contagious: **No**
- Mortality: 80%
- Symptoms:
 - Weakness, dizziness
 - Dry mouth and throat
 - Blurred vision

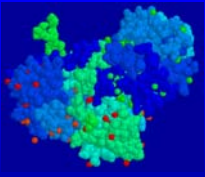


Overview 36 NJSP HMRU

CBRNE Awareness **Ricin**

Route of entry:

- Digestive, respiratory
- Incubation period: 24-72 hours
- Contagious: **No**
- Mortality: High
- Symptoms:
 - Nausea, vomiting
 - Abdominal cramps, bloody diarrhea
 - Difficulty breathing



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