

Emergency Preparedness for Chemical Emergencies

Community Health Care Association of New York State

Emergency Preparedness Program

Learning call – February 9, 2007

EP for Chemical Emergencies

- Background & history
- Potential terrorism agents
- Chemical spill
- Basic decontamination
- Chemical emergencies in the news!

Emergency Preparedness program

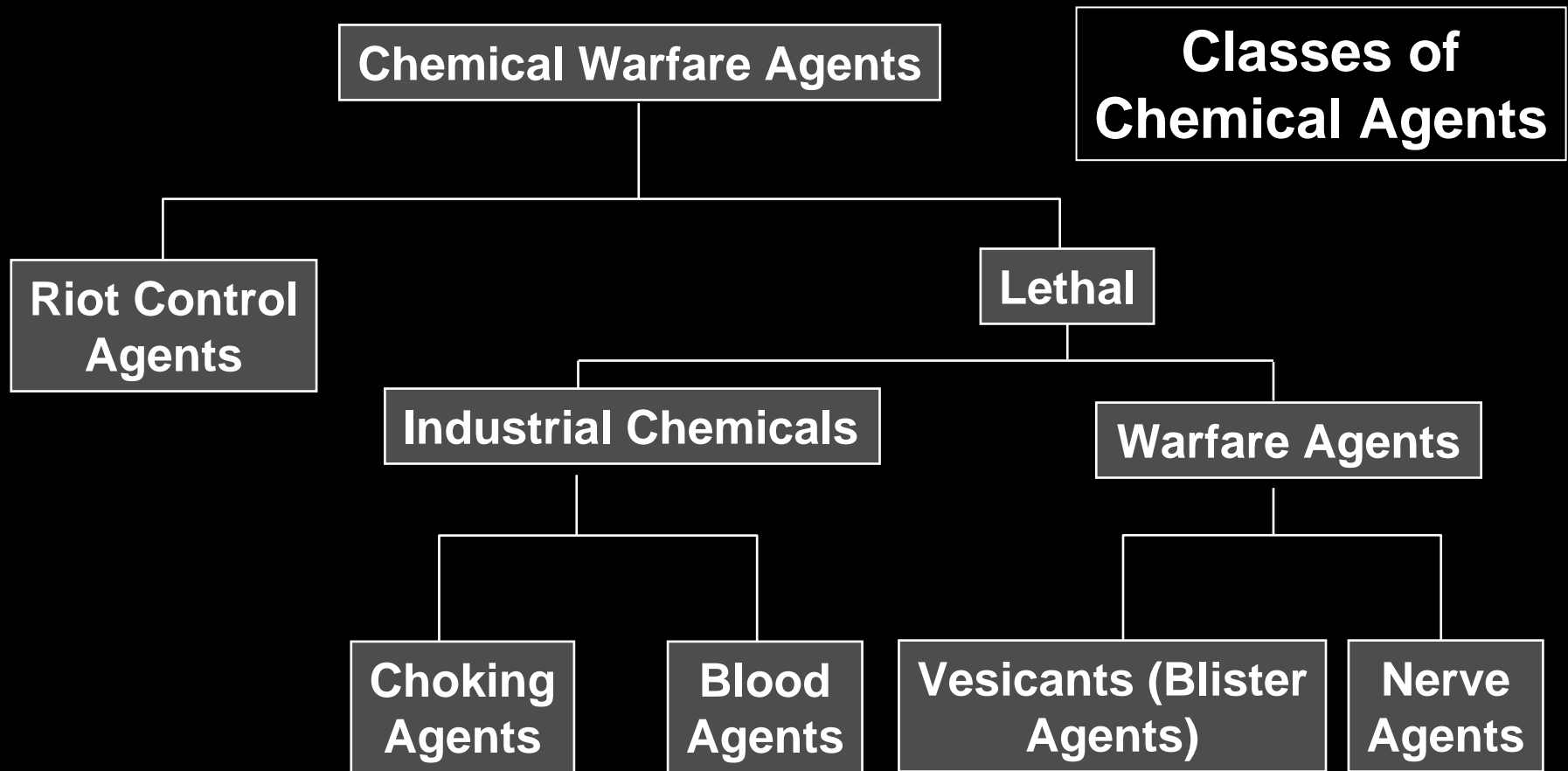
“Chemical emergencies can’t happen here...”

Where is this? a) Iraq b) Bhopal c) Chernobyl d) somewhere else



Potential agents of terrorism

EP for Chemical Emergencies



EP for Chemical Emergencies

Nerve Agents

Sarin (GB)

Soman (GD)

Tabun (GA)

VX

EP for Chemical Emergencies

- Nerve agents
 - Sarin released in Tokyo subway (1995)
 - 12 dead
 - Nearly 6,000 converge on local hospitals *and clinics*



A Tokyo Fire Department chemical expert emerging from the subway station today was found with sarin.

EP for Chemical Emergencies

- Nerve agents: human insecticides
 - Symptoms vary with exposure
 - Mild – eye pain, runny nose, shortness of breath
 - Moderate – increased shortness of breath, nausea, vomiting, diarrhea, weakness
 - Severe – loss of consciousness, seizures, paralysis, inability to breathe

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- Nerve agents: unique characteristics
 - Copious secretions – salivation, lacrimation
 - Muscle twitching
 - Miosis – pinpoint pupils
- Other symptoms – **SLUDGE**
 - Urination/defecation
 - Gastrointestinal pain and gas
 - Vomiting
 - Seizures, coma

Blister Agents

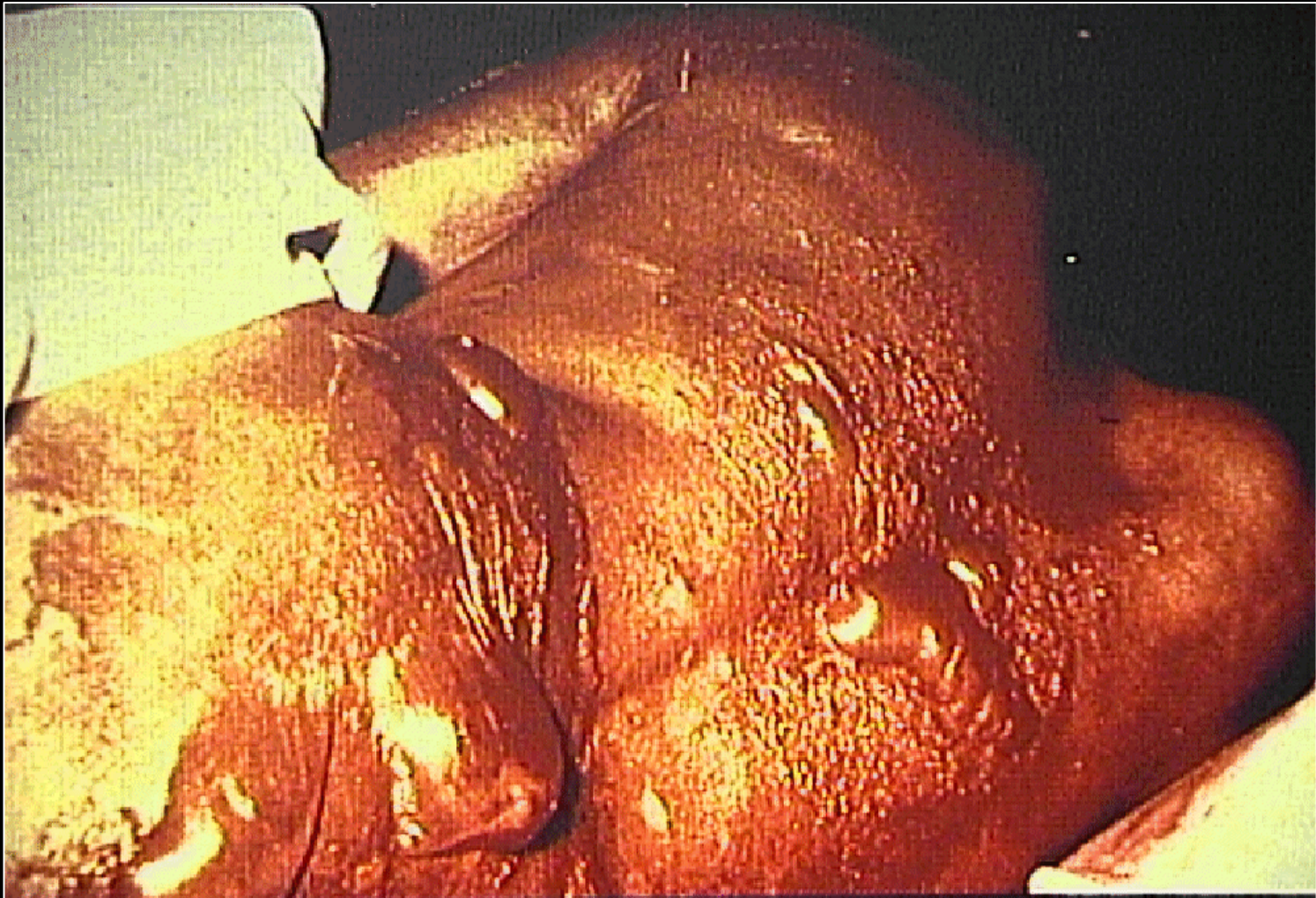
Lewisite (L)

Mustard gas (H)

EP for Chemical Emergencies

- Vesicant effects
 - Redness, blistering of skin
 - Eye irritation & corneal damage
 - Respiratory symptoms
 - Cough
 - Shortness of breath
 - Respiratory distress

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Asphyxiants

aka “blood agents”

Cyanide

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- Asphyxiants: effects
 - Rapid-acting
 - Cyanosis
 - Possible cherry red skin, frostbite effects
 - Lips, eyes & skin
 - Increasing respiratory distress, gasping for air
 - Confusion, nausea
 - Violent convulsions, loss of consciousness
 - Death can occur within 15 minutes

Choking Agents

Chlorine

Phosgene

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- Chlorine
 - Often appears as a greenish-yellow vapor
 - Odor similar to bleach
 - Signs and symptoms
 - Irritation of eyes, nose, throat
 - Coughing
 - Shortness of breath

Riot Control

Mace

Tear Gas

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- Riot control agents
 - Irritating agents, “lacrimators” (= tear gas)
 - Symptoms
 - Eyes: burning, tearing, eyelid spasm, redness
 - Airways: burning, coughing, shortness of breath
 - Skin: burning, redness

Chemical spill in your Center

EP for Chemical Emergencies

- Hazardous Materials Spills
 - In advance
 - Have a supply of “spill kits”
 - Have Material Safety Data Sheets (MSDS) accessible to all staff
 - First steps
 - Safety first!
 - Isolate scene, deny entry
 - Notify supervisor, call 911
 - Alert staff to keep away, not to touch the material or walk into it
 - Confine the spill, if possible
 - Determine if available staff can safely clean up the spill, or if emergency personnel should be notified

EP for Chemical Emergencies

- Hazardous Materials Spills
 - For minor spills (up to 200 cc or less than a cupful)
 - Follow Center procedures
 - Isolate spill area
 - Read MSDS to identify special precautions
 - Small group with a spill kit should clean area
 - Document actions
 - For major spills (more than 200 cc or more than cupful)
 - Call for help
 - Dial 911 if a life is at risk
 - For *all* major spills, first notify the NYS Department of Environmental Conservation Hotline (1-800-457-7362)
 - Follow-up calls are made with Regional Offices (see “Print and Post” chart)
 - Follow Center procedures
 - Institute basic decontamination

New York State Department of Environmental Conservation

Regional Offices

Region	Counties/boroughs covered	Phone contact
STATE	HOTLINE – all spills should initially be reported to this number	1-800-457-7362
Region 1	Nassau, Suffolk	1-631-444-0204
Region 2	Bronx, Brooklyn, Manhattan, Queens, Staten Island	1-718-482-4900
Region 3	Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster, Westchester	1-845-256-3000
Region 4	Albany, Delaware, Columbia, Greene, Montgomery, Otsego, Rensselaer, Schenectady, Schoharie	1-518-357-2234
Region 5	Clinton, Essex, Franklin, Fulton, Hamilton, Saratoga, Warren, Washington	1-518-897-1200
Region 6	Jefferson, Herkimer, Lewis, Oneida, St. Lawrence	1-315-785-2239
Region 7	Broome, Cayuga, Chenango, Cortland, Madison, Onondaga, Oswego, Tioga, Tompkins	1-315-426-7400
Region 8	Genesee, Livingston, Monroe, Ontario, Orleans, Schuyler, Seneca, Steuben, Wayne, Yates	1-585-226-2466
Region 9	Allegany, Cattaraugus, Chautauqua, Chemung, Erie, Niagara, Wyoming	1-716-851-7000

In our Center,

**Material Safety Data Sheets
(MSDS) are located:**

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Department of Environmental Conservation

1-800-457-7362

Poison Control

1-800-222-1222

Basic Decontamination

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- Self-decontamination
 - Concerning symptoms: eyes watering, skin stinging, difficulty breathing
 - First steps: strip immediately and wash
 - Look for a hose, fountain, or any source of water, and wash with soap if possible
 - Do not scrub chemical into your skin
 - Seek emergency medical attention

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- Basic decontamination of others
 - Self-assist – Able/cooperative victims may assist with their own decon
 - Undress – Remove, double-bag clothing & personal belongings
 - Shoes and socks
 - Remove constrictive items (e.g. bracelets, rings) ASAP
 - Irrigate the skin
 - All exposed/irritated skin and hair
 - Pay close attention to skin folds/creases, groin, feet
 - Plain water
 - At least 3-5 minutes
 - For oily/adherent chemicals → use mild soap on skin and hair
 - Irrigate the eyes
 - Flush exposed or irritated eyes with plain water or saline
 - At least 5 minutes
 - Remove contact lenses if easily removable without additional trauma to eye

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- Basic decontamination includes
 - Ensure your safety
 - Remove victim from area of release/spill, towards fresh air
 - Isolate the area
 - Check the Material Safety Data Sheet (MSDS) to assist with remedial actions
 - Assist the HAZMAT response team as directed
 - Complete an incident report

EP for Chemical Emergencies

- In cases of ingestion
 - Do not induce emesis
 - Victims who are conscious/able to swallow should be given 4-8 ounces of water
 - Obtain medical care immediately
 - Contact Poison Control: 1-800-222-1222

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- Chemical agent Tx
 - Antidotes – not many!
 - Nerve agents
 - Cyanide kits
 - British Anti-Lewisite



EP for Chemical Emergencies

- The basics: what to do if...
 - Major emergency *outside your Center*
 - Stay in
 - Stay calm
 - Stay tuned
 - Major emergency *in your Center*
 - Leave without entering contaminated area, if possible & indicated
 - Requires having evacuation procedures
 - Identify all possible exit routes
 - Emergency decontamination
 - Don't forget the basics: removing outer layers of clothing eliminates 80-90% of contamination
 - Sources of water: bathroom, bucket of water, hose, fountain

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- Other mitigation strategies
 - Become familiar with community resources
 - Up-to-date contacts: hospital, fire, EMS
 - Nearest decontamination center
 - Nearest swimming pool/large body of water
 - Become familiar with local risks (HVA!)
 - Industry
 - Power-plants
 - Major roadways
 - Rail lines

EP for Chemical Emergencies



Chemical emergencies in the news

Dead birds in Austin, TX



EP for Chemical Emergencies

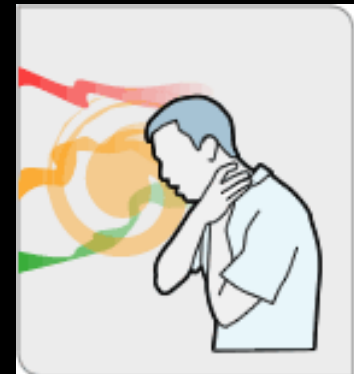
- Austin dead birds
 - 63 grackles, pigeons and sparrows “found dead”
 - Most found on Congress Avenue (leads to the Capitol)
 - “Lockdown” of downtown
 - “It's not uncommon for birds to die in groups,” Austin assistant city manager for public safety said. “What's uncommon is for it to happen in the downtown area.”
 - Early-morning passers-by: birds first began acting strange – wandering aimlessly in the street, attempting to fly and making crash landings – and then dropped like flies

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- Austin dead birds
 - Human illness
 - No human illness or injury officially reported
 - Austin-Travis County EMS: two officers on scene reported feeling sick this morning
 - No one transported to hospital
 - EDs: no unusual ailments
 - Director of Austin's Department of Health and Human Services: “There is currently not a threat to the public health.”

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- Possible signs of chemical threat
 - Many people suffering from
 - Watery eyes
 - Twitching
 - Choking, having trouble breathing
 - Losing coordination
 - Many sick or dead birds, fish or small animals



EP for Chemical Emergencies

- Outcome
 - Texas A&M U. aviary pathologists: parasites, cold killed birds
 - Temps had dropped from about 50 to 40 degrees in 6 hours, parasites found in muscles, tissues and brains
 - None had food in crops, gizzards (hadn't eaten in 24-36 hours)
 - Executive director of the Texas Veterinary Medical Diagnostic Laboratory: “We eliminated our biggest concern: that there was a toxin or something that might be transmitted to humans. These birds were sick and stressed from parasites and then there was this sudden drop in temperature and that's what pushed them over the cliff.”
 - “We found no evidence that anyone should be concerned about a public health issue.”

Train derailis in Kentucky



Train derailis in Kentucky

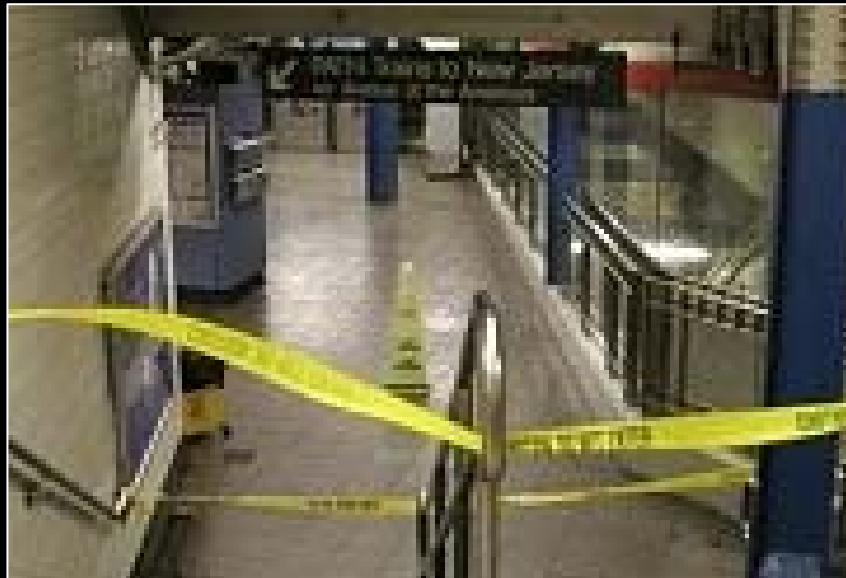
- 12 cars carrying flammable liquid derailed, exploded
- 18 miles of I-65 closed, >500 evacuated from nearby homes, businesses & a school within one mile radius
- Others advised to shelter-in-place
 - Stay indoors
 - Close all doors/windows
 - Shut off units that draw outside air
- 15 of 80 cars were carrying hazardous materials
 - Twelve of those derailed
 - All of them were involved in the fire
- 19 treated at local hospital

Train derailis in Kentucky

- Chemicals involved: cyclohexane, ethyloxate
 - Both volatile, but neither a “serious health threat”
 - Two other cars carried hazardous materials (not near fire)
 - Others HAZMATs: aniline, butadiene, chlorine sulfuric acid
- EPA: “Early indications are that air quality is not bad”
- “No reason to believe this was anything but an accident”
- County resident: “There was fire at least 500 feet in the air. I've never seen such a fire. It was huge.”
- Smelled the fumes “even though they were blowing away from [his] home.”
- “You can taste it and feel it in your lungs when you go outside,” he said.

(Worse) Odor strikes NYC

- Odor of mercaptan
- Detected over most of Manhattan
- Evacuations, calls to DOH/OEM



Odor strikes NYC

- Outcome
 - Source not identified
 - Minimal human effect
 - CHCANYS alerts CHCs 25 minutes before Hospital Association

CHCANYS EP offices!



Chemical release following fire at Biolab plant

Conyers, GA (<25 miles from downtown Atlanta) May 25, 2004



EP for Chemical Emergencies

Questions? Contact us!

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