

Appendix

National Center for Environmental Health (2002) developed the following. It can be accessed on the CDC website at <http://www.cdc.gov/nceh/demil/articles/initialtreat.htm#Preparations>.

Environmental Public Health Readiness Branch Chemical Weapons Elimination Team

Emergency Room Procedures in Chemical Hazard Emergencies A Job Aid

Preparations

1. Try to determine agent identity.
2. Break out personal protection equipment, decon supplies, antidotes, etc.
3. Is chemical hazard certain or very likely?
YES:
 - Don personal protective equipment.
 - Set up hot line.
4. Clear and secure all areas which could become contaminated.
5. Prepare to or secure hospital entrances and grounds.
6. Notify local emergency management authorities if needed.
7. If chemical is a military agent and Army has not been informed. call them.
8. If an organophosphate is involved, notify hospital pharmacy that large amounts of atropine and 2-PAM may be needed.

When victim arrives

(Note: A contaminated patient may present at an emergency room without prior warning.)

9. Does chemical hazard exist?
 - Known release/exposure (including late notification)
 - Liquid on victim's skin or clothing
 - Symptoms in victim, EMTs, others
 - Odor (H, L, phosgene, chlorine)
 - M-8 paper, if appropriate

YES: Go to 10.

NO: Handle victim routinely.

10. Hold victim outside until preparations are completed (don personal protective equipment to assist EMT's as necessary).

11. If patient is grossly contaminated (liquid on skin, positive M-8 paper) OR if there is any suspicion of contamination, decontaminate patient before entry into building.

Initial Treatment and Identification of the Chemical Agent

1. Establish airway if necessary.
2. Give artificial respiration if not breathing.
3. Control bleeding if hemorrhaging.
4. Symptoms of cholinesterase poisoning?
 - Pinpoint pupils
 - Difficulty breathing (wheezing, gasping, etc)
 - Local or generalized sweating
 - Fasciculations
 - Copious secretions
 - Nausea, vomiting, diarrhea
 - Convulsions
 - Coma

YES: Go to [NERVE AGENT PROTOCOL](#)

5. History of chlorine poisoning?

YES: Go to [CHLORINE PROTOCOL](#).

6. Burns that began within minutes of poisoning?

YES: Go to 7.

NO: Go to 8.

7. Thermal burn?

YES: Go to 9.

NO: Go to [LEWISITE PROTOCOL](#)

8. Burns or eye irritation beginning 2-12 hours after exposure?

YES: Go to [MUSTARD PROTOCOL](#).

NO: Go to 9.

9. Is phosgene exposure possible?

- Known exposure to phosgene
- Known exposure to hot chlorinated hydrocarbons
- Respiratory discomfort beginning a few hours after exposure

YES: Go to [PHOSGENE PROTOCOL](#).

10. Check other possible chemical exposures:

- Known exposure
- Decreased level of consciousness without head trauma.
- Odor on clothes or breath
- Specific signs or symptoms

PHOSGENE PROTOCOL	MUSTARD PROTOCOL
<p>1. Restrict fluids, chest x-ray, blood gases</p> <p>Results consistent with phosgene poisoning? YES: Go to # 4</p> <p>2. Dyspnea?</p> <p>YES: OXYGEN, positive end-expiratory pressure</p> <p>3. Observe closely for at least 6 hours.</p> <ul style="list-style-type: none">• IF SEVERE DYSPNEA develops, go to 4.• IF MILD DYSPNEA develops after several hours, go to 1. <p>4. Severe dyspnea develops or x-ray or blood gases consistent with phosgene poisoning-</p> <ul style="list-style-type: none">• Admit• Oxygen under positive end-expiratory	<p>1. Airway obstruction?</p> <p>YES: Tracheostomy</p> <p>2. If there are large burns:</p> <p>30. Establish IV line - do not push fluids as for thermal burns.</p> <p>31. Drain vesicles - unroof large blisters and irrigate area with tropical antibiotics.</p> <p>3. Treat other symptoms appropriately:</p> <ul style="list-style-type: none">• Antibiotic eye ointment• Sterile precautions prn• Morphine prn (generally not needed in emergency treatment; might be appropriate for in-patient treatment.)

- pressure
- Restrict fluids
 - Chest x-ray
 - Blood gases
 - Seriously ill list

LEWISITE PROTOCOL

1. Survey extent of injury.
2. Treat affected skin with British Anti-Lewisite (BAL) ointment (if available).
3. Treat affected eyes with BAL ophthalmic ointment (if available).
4. Treat pulmonary/severe effects
 - BAL in oil, 0.5 ml/25 lbs body wt. deep IM to max of 4.0 ml. Repeat q 4 h x 3 (at 4, 8, and 12 hours).
 - Morphine prn
5. Severe poisoning?

YES: Shorten interval for BAL injections to q 2 h.

CHLORINE PROTOCOL

1. Dyspnea?
 - Try bronchodilators
 - Admit
 - Oxygen by mask
 - Chest X-ray
2. Treat other problems and reevaluate (consider phosgene).
3. Respiratory system OK?

YES: Go to 5.
4. Is phosgene poisoning possible?

YES: Go to [PHOSGENE PROTOCOL](#).
5. Give supportive therapy; treat other problems or discharge.

NERVE AGENT PROTOCOL

1. Severe respiratory distress?

YES:

3. Repeat atropine as needed until secretions decrease and breathing easier

- Intubate and ventilate
- ATROPINE
Adults: 6 mg IM or IV
Inf/ped: 0.05 mg/kg IV
- 2-PAM C1
Adults: 600-1000 mg IM or slow IV
Inf/ped: 15 mg/kg slow IV

2. Major secondary symptoms?

NO: Go to 6.

YES:

- ATROPINE
Adults: 4 mg IM or IV
Inf/ped: 0.02 - 0.05 mg/kg IV
- 2-PAM C1
Adults: 600-1000 mg IM or slow IV
Inf/ped: 15 mg/kg
- OPEN IV LINE

Adults: 2 mg IV or IM
Inf/ped: 0.02 - 0.05 mg/kg IV

4. Repeat 2-PAM C1 as needed

Adults: 1.0 gm IV over 20-30 min

Repeat q 1h x 3 prn

Inf/ped: 15 mg/kg slow IV

5. Convulsions?

NO: Go to 6.

YES: DIAZEPAM 10 mg slow IV

Inf/ped: 0.2 mg/kg IV

6. Reevaluate q 3-5 min.

IF SIGNS WORSEN, repeat from 3.

Note: Warn the hospital pharmacy that unusual amounts of atropine and 2-PAM may be needed