

Interim Guidelines for Public Safety, Emergency Medical Service and Health Care Personnel In Chemical Terrorism Events
Oregon Department of Human Services, Public Health Service

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- ❖ At a suspected chemical terrorism site, only properly trained HAZMAT personnel wearing Level A personal protective equipment (PPE) may enter the contaminated Hot Zone. All patients and rescuers in the hot zone must be decontaminated prior to leaving the warm zone or transporting.
- ❖ Properly trained HAZMAT and First Responder personnel in the decontamination Warm Zone must wear no less than Level B PPE while decontaminating victims and transporting them to the on-site safe area, Cold Zone, for emergency medical treatment
- ❖ Properly trained medical personnel in the Cold Zone, medical transport personnel, and Emergency Department/Intensive Care Unit personnel should wear no less than Level D PPE. Level C PPE may be required during patient handling to prevent secondary exposure from off-gassing via exhalation, body secretions, and contaminated patients who self-transported or were inadequately decontaminated.

NOTE: PPE components are described on the back of this sheet.

Agent Type	Effects	Onset	Odor and/or Color	Early Recognition or Signs & Symptoms
Nerve e.g. organophosphate pesticides (sarin, malathion), tabun, soman, VX	Chemicals are volatile at ambient temperatures. Readily absorbed through eyes, lungs, skin. Cholinesterase inhibitors that disable enzymes responsible for nerve impulse transmission. Systemic poison	Vapor: Seconds Liquid: minutes to hours	No odor or slight fruit or camphor. Colorless, amber, or brown liquid	Miosis, blurred vision, lacrimation, diaphoresis, fasciculation, dyspnea, chest tightness, abdominal cramps, nausea, vomiting, diarrhea, seizures, loss of consciousness, respiratory failure, arrhythmia, ataxia
Chemical Asphyxiants (Blood Agents) e.g. cyanide, cyanogen chloride, hydrogen cyanide	Inhalation. Rapid acting agents that interfere with oxygen utilization. Systemic poisoning.	seconds	Bitter almond, mild garlic, or unnoticeable odor. Olfactory fatigue Colorless gas or liquid.	Headaches. Gasping for air. Loss of consciousness, respiratory/cardiac arrest. High/low heartbeat, dizziness, nausea, vomiting, HA, drowsiness, hallucinations, seizures. Cyanogen chloride may cause eye, respiratory tract and exposed skin burning.
Blister (Vesicants) sulfur mustard nitrogen mustard, lewisite, phosgene oxime	Absorbed through eyes, lungs, skin. Agents destroy different substances with cells of living tissues causing blisters on skin and damage to eyes, mucous membranes, respiratory tract, and internal organs. Systemic poisons.	Lewisite: immediate Mustard: immediate-delayed Phosgene Oxime: immediate	A variety of odors including garlic, fishy, soapy, fruity, or no odor. Colorless to dark liquid. Lewisite: geranium Mustard: garlic, mustard	Immediate pain with blisters later. Erythema, severe itching/burning, chem. burns, necrosis. Conjunctivitis, corneal opacity. Nose, throat, lung irritation to marked airway damage. Dry cough. Epitaxis. Nausea, vomiting, diarrhea, hyperexcitability, convulsions.
Tear (Lacrimators) e.g. chloropicrin, tear gas, mace	Burning, stinging of eyes, nose, airways, skin.	seconds	A variety of odors including apple blossoms, chloroform, flypaper, benzene, soured fruit, and pepper. Yellow or colorless solid or liquid.	Eye, nose throat, respiratory tract irritation, tearing, coughing, vomiting, pulmonary edema.
Choking (Pulmonary) e.g. phosgene, chlorine, methylisocyanate, vinyl chloride Ammonia (pulmonary/respiratory and eye irritant)	Rapidly absorbed agents that damage the respiratory tract and cause severe pulmonary edema. Phosgene oxime is systemic. Ammonia and chlorine liquids can cause frostbite	Immediate	Phosgene: new-mown hay, irritating odor, colorless gas. Chlorine: greenish-yellow gas, irritating odor. Ammonia: colorless, highly irritating gas with pungent, suffocating odor.	Agents are irritating and corrosive to eyes, skin, and respiratory tract. Shortness of breath, rapid breathing, coughing, wheezing, rales, hemoptysis, stridor, frothy secretions (2-24 hours), cyanosis, upper airway swelling, pulmonary edema, lung collapse, tachycardia, initial hypertension, hypotension, possible cardiovascular collapse, nausea/vomiting, skin burns/blisters.
Unknown Agent	Severe local effects, e.g. irritation & burning Severe systemic effects, e.g. organ damage	Variable and/or Unknown	Variable and/or unknown gas, vapor, and/or oily or adherent chemical.	Respiratory, cardiovascular, and/or neurologic complications. Skin and/or eye irritation or burns.

ADDITIONAL INFORMATION:

1. **Treatment Protocols:** For details on treatment, please see your local EMS and Medical Protocols or acceptable national standards. Treatment may vary by location depending on training and the availability of antidotes.
2. **Signs/Symptoms** depend on dose and route of exposure. Because of their body weight ratios, greater lung surface areas, and inhalation rates, children are more vulnerable to these chemicals, and especially to corrosives because of their small airways.
3. **Personal Protective Equipment:** The following lists constitute the minimum standards for each level of personal protective equipment. More information about PPE requirements and appropriate levels of PPE for chemical exposures may be obtained from the Occupational Safety and Health Administration (OSHA) at www.osha-slc.gov/dts/osta/otm/otm_viii/otm_viii_1.html. The National Institute of Occupational Safety and Health has information on NIOSH-approved respirators in terrorism events at www.cdc.gov/niosh/npptl/scbasite.html.
 - a. **Level A:** a positive pressure self-contained breathing apparatus (SCBA) and a fully encapsulating, chemical protective suit.
 - b. **Level B:** an SCBA and a hooded chemical-resistant suit, butyl outer and SilverShield® inner gloves, and chemical resistant boots.
 - c. **Level C:** a full-face air purifying, canister-equipped respirator, hooded chemical-resistant suit, butyl outer and SilverShield® inner gloves, and chemical resistant boots.
 - d. **Level D:** coveralls or nuisance contamination resistance clothing, SilverShield® or nitrile gloves, safety glasses or chemical splash goggles, chemical resistant boots or shoes, if indicated.
4. **Patient Decontamination:** All patients require rapid decontamination. Contaminated clothing can trap hazardous vapor. Decontaminate victims by removing all of their clothing, at least to the undergarments, and/or applying copious amounts of water. Individuals exposed to gas or vapors without skin or eye irritation do not need additional decontamination and are not likely to be secondary contamination risk.
 - a. **Eyes:** copious irrigation with saline, water, eye solutions
 - b. **Skin:** copious flush with water, followed by soap and water wash/shampoo
 - c. **Wounds:** surgical irrigation solution
5. **Personnel Decontamination:** Bring into fresh air. Remove any contaminated clothing, Skin: soap/water wash; Eyes: copious irrigation with saline, water, eye solutions.
6. **Equipment Decontamination:** Use 5% hypochlorite for all military grade chemicals (do not dilute with water). Use water for ammonia and unknown contaminants.

FOR 24-HOUR EMERGENCY MEDICAL INFORMATION:

Oregon Poison Center 1-800-222-1222

ChemTrec Emergency Response 1-800-424-9300

REFERENCES FOR CHEMICAL AGENTS AND MEDICAL MANAGEMENT GUIDELINE INFORMATION:

Centers for Disease Control and Prevention (CDC)	(800) 311-3435	or http://www.bt.cdc.gov/Agent/AgentlistChem.asp
Agency for Toxic Substances and Disease Registry (ATSDR)	(888) 422-8737	or http://www.atsdr.cdc.gov/mmg.html
Multnomah County Emergency Medical Services	(503) 988-3220	or http://www.multnomah.lib.or.us/health/officer/ems/protocols.html
US Army Soldier and Biological Chemical Command (SBCCOM)	(410) 436-3674	or http://hld.sbccom.army.mil/ip/bca_qr.htm and http://chemdef.apgea.army.mil/textbook/contents.asp