

Chemical Clinical Guidelines



A Quick Guide for the Management of Chemical Disasters for Emergency Department Personnel

Rev. May 2013



Center for Emergency Preparedness
and Disaster Response

YALE NEW HAVEN
HEALTH

www.ynhhs.org/cepdr

Emergency Information in Chemical Emergencies

ORGANIZATION	PHONE NUMBER
Poison Control Center	(800) 222-1222
Centers for Disease Control And Prevention (CDC)	(800) CDC-INFO (800) 232-4636
CHEM-TREC	1-800-424-9300
<i>[Insert organization-specific contacts here. e.g., employee health department]</i>	

Chemical Management Websites

ORGANIZATION	PHONE NUMBER
CDC: NIOSH Pocket Guide to Chemical Hazards	www.cdc.gov/niosh/npg/default.html
HHS Chemical Hazards Medical Management	www.chemm.nlm.nih.gov
U.S. National Library of Medicine, Wireless Information System for Emergency Responders (WISER)	http://webwiser.nlm.nih.gov/getHomeData.do?sessionId=8CB5C89342A32A77417566195497D475
Emergency Response Guidebook (ERG)	http://wwwapps.tc.gc.ca/saf-sec-sur/3/erg-gmu/erg/ergmenu.aspx



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Introduction:

This guide is a quick reference for the hospital's initial response to chemical emergencies. Based on the word **DISASTER***, it facilitates the ongoing qualitative and quantitative assessment of the incident.

D	Detection
I	ICS
S	Safety/Security
A	Assessment
S	Support
T	Triage and Treatment
E	Evacuate
R	Recovery

This guide includes components of the Hospital Incident Command System (HICS) version IV and utilizes components of MASS, START and JumpSTART triage systems. This reference guide provides a framework for a coordinated, effective hospital response to a chemical incident.

In chemical incidents, victims may incur conventional injuries, as well as injuries due to chemical exposure. In most instances of a chemical incident, the severity of chemical contamination the victims receive depends on the type and strength of the chemical(s), the route and amount of contamination, the duration of contamination. Additional factors include the level of protection the victims were wearing, atmospheric conditions, amount of time until initial decontamination, method of initial decontamination, and several other variables.

Be aware that in a chemical incident, the first victims will probably arrive by some means other than EMS and may not have completed any method of decontamination.

** The mnemonic, D-I-S-A-S-T-E-R, is taken from the National Disaster Life Support program and is used with the gracious permission of the American Medical Association and the National Disaster Life Support Educational Foundation.*

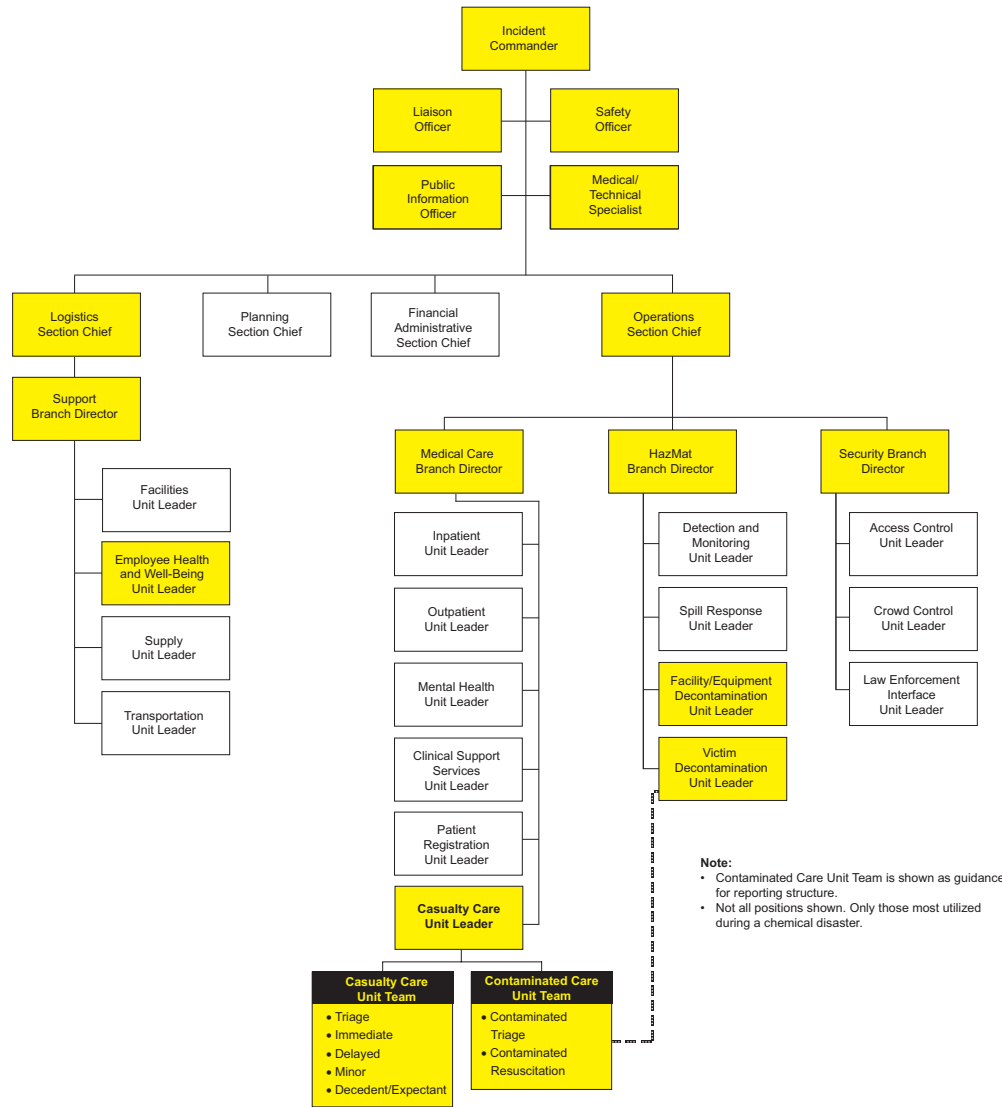
<p>DETECTION</p> <p>In most instances of a chemical incident, the severity of the victims depends on the type and strength of the chemical(s), the route and amount of contamination, the duration of contamination. Additional factors include the level of protection the victims were wearing, atmospheric conditions, amount of time until initial decontamination, method of initial decontamination and several other variables.</p> <p>Announced Event (e.g., Local Dispatch, EMS, FD, PD)</p> <p>ED Charge Nurse or Physician</p> <ul style="list-style-type: none"> • Obtain as much pertinent information as possible such as: <ul style="list-style-type: none"> – Type, time, and scope of the event – Type of exposure – Type of chemical agent – Estimated number of victims being sent to your ED – Types and severity of injuries – Type and extent of pre-hospital decontamination and treatment – Estimated time of arrival of the first victim – Contact information for the reporting person or agency – Additional patient specific medical information • In consultation with senior ED physician, determine hazard, PPE, and decontamination requirement through the hazard risk assessment (See Appendix 1, 3 and 4) <p>Unannounced Event victim(s) self report to Emergency Department)</p> <p>ED Charge Nurse or Physician</p> <ul style="list-style-type: none"> • Move the victim(s) to the decontamination area • Begin to obtain as much pertinent information as possible (see above) 	<p>D – Detection</p>
	<p>I – Incident Command System</p>
	<p>S – Safety and Security</p>
	<p>A – Assessment</p>
	<p>S – Support</p>
	<p>T – Triage and Treatment</p>
<p>Be aware that the first victims of a chemical event may arrive by some means other than EMS and may not have completed any method of decontamination.</p>	<p>E – Evacuate</p>
	<p>R – Recovery</p>
	<p>Appendices</p>

INCIDENT COMMAND SYSTEM

Upon notification or determination of a chemical event affecting a large number of patients:

Incident Commander (Administrator-on-Duty)

- Activate HICS positions as needed
- Activate Disaster Plan (EOP) if appropriate



Modified from CEMSA Hospital Incident Command System (HICS)
www.emsa.ca.gov/hics

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Appendices

<p>SAFETY AND SECURITY</p> <hr/> <p>Upon notification or determination of a chemical event affecting a large number of patients:</p> <p>ED Charge Nurse (in consultation with senior ED physician):</p> <ul style="list-style-type: none"> Establishes contaminated and non-contaminated triage areas, immediate, delayed and minor treatment units in accordance with ED emergency operation plan Assign Medical Decon Team for contaminated triage unit and to ambulatory and non-ambulatory decontamination areas as needed (See Appendix 5) Ensure all personnel who may be exposed to contaminated patients don level C PPE <p>Employee Health and Well-Being Unit Leader:</p> <ul style="list-style-type: none"> Ensure that all personnel who could potentially be exposed to a contaminant are protected by appropriate level of PPE (determined by hazard risk assessment (See Appendix 1)) All personnel must have completed a medical screening (See Appendix 2) before donning PPE if it includes N-95 or Level C PPE Ensure all persons using PPE are evaluated after doffing of Level C PPE and receive medical screening and appropriate rehabilitation (See Appendix 2) according to policy <p>Security Branch Director:</p> <ul style="list-style-type: none"> Assess security needs and capabilities Follow guidance from Operations Section Chief regarding control of all ingress/egress points of the Emergency Department Consider screening at entrances and secure other access points into the hospital to prevent contamination of the facility Establish and secure traffic routes for vehicles delivering victims from the event Donned in the appropriate level of PPE, provide security for staff, victims and their personal belongings inside the Hospital Decontamination Zone <p>Safety Officer:</p> <ul style="list-style-type: none"> Implement decontamination operations and safety measures including staff, patient and facility protection Conduct ongoing analysis of safety issues related to staff, patients, and facility, and implement corrective actions to address If appropriate, ensures that follow-up swabbing and testing is completed to validate the effectiveness of the decontamination process 	<p>D – Detection</p>
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	<p>A – Assessment</p>
	<p>S – Support</p>
	<p>T – Triage and Treatment</p>
	<p>E – Evacuate</p>
	<p>R – Recovery</p>
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<p>ASSESSMENT</p> <hr/> <p>Upon notification or determination of a chemical event affecting a large number of patients:</p> <p>Medical/Technical Specialist (Toxicologist):</p> <ul style="list-style-type: none"> • Once the chemical agent is known, uses at least three authoritative references to determine the hazard (See Appendix 1) • Provides guidance to the Command Staff and Operations Section Chief regarding: <ul style="list-style-type: none"> – Potential for injury from the chemical agent – Preventive measures to protect against cross-contamination of staff, patients and visitors – Hazard specific patient treatment guidance <p>Operations Section Chief:</p> <ul style="list-style-type: none"> • Works with Medical/Technical Specialist, Safety Officer, and Logistics Section Chief to develop safety plan designed to limit the risk of cross-contamination • Shares information and plans with Branch and Unit Leaders to assure safety and control plans are properly and completely implemented <p>Casualty Care Unit Leader:</p> <ul style="list-style-type: none"> • Assesses ongoing patient needs and capacities and reports to Medical Care Branch Director • Assesses ongoing resource needs including radiation response specific resources and reports to Operations Section Chief • Assess need for additional bed capacity due to patient surge and reports to Operations Section Chief <hr/> <p>NOTES:</p> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>	<p>D – Detection</p>
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<p>SUPPORT</p> <p>Upon notification or determination of a chemical event affecting a large number of patients:</p> <p>Incident Commander:</p> <ul style="list-style-type: none"> • Consider need to activate Emergency Operations Plan • Notifies senior hospital administrator of the situation • Activate HICS positions as indicated • Establish operational periods and the schedule for briefings <p>Casualty Care Unit Leader:</p> <ul style="list-style-type: none"> • Maintain contact with the regional EMS communications center • Ensure appropriate personal protection procedures are followed by all staff, patients, and visitors • Establishes area(s) for the cohorting of patients with the signs and/or symptoms associated with the presumed or known chemical agent (See Appendix 7) • Requests assistance from the laboratory department for evidence collection, if necessary <p>Inpatient Unit Leader:</p> <ul style="list-style-type: none"> • Provides for early patient discharge, if indicated • Promotes rapid admission of victims to appropriate care areas <p>Logistic Section Chief:</p> <ul style="list-style-type: none"> • Ensures an adequate supply of all resources necessary for patient care activities <hr/> <p>NOTES:</p> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>	<p>D – Detection</p>
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<p>TRIAGE AND TREATMENT</p> <hr/> <p>Upon notification or determination of a chemical event affecting a large number of patients:</p> <p>Operations Section Chief:</p> <ul style="list-style-type: none"> • Works with Medical/Technical Specialist to develop contamination control guidelines designed to provide safety for staff, patients, visitors and victims • Shares information and plans with department managers to ensure treatment plans are properly and completely implemented <p>Contaminated Triage Unit Team:</p> <ul style="list-style-type: none"> • Triage arriving contaminated patients via MASS/START triage system to Contaminated Treatment Areas (See Appendix 5 and 6) • Directs contaminated patients with immediately life-threatening problems to Contaminated Resuscitation Unit before decontamination • Ensures that every triaged patient has an appropriate triage tag <p>Triage Unit (After decontamination):</p> <ul style="list-style-type: none"> • Sorts decontaminated patients and uncontaminated patients via MASS/START triage system to “clean” units in Treatment Areas • Ensures that every triaged patient has an appropriate triage tag and emergency patient record • <p>Casualty Care Unit Leader</p> <ul style="list-style-type: none"> • Works with Medical/Technical Specialist to ensure appropriate hazard specific treatment guidance is implemented (see Appendix 7) • Ensures that contaminated victims with immediately life-threatening injuries receive life-saving treatment to stabilize the victims as needed according to the principles of ABLIS, ACLS, ADLS, AHLS, ATLS, PALS, and/or APLS before decontamination, including: <ul style="list-style-type: none"> – Maintain C-spine precautions, if appropriate – Secure airway, provide ventilation with 100% oxygen – IV fluid resuscitation – Any life-saving antidotes as indicated or as resources are available (See Appendix 8) 	<p>D – Detection</p>
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<p>TRIAGE AND TREATMENT</p> <hr/> <p>Upon notification or determination of a chemical event affecting a large number of patients:</p> <p>Casualty Care Unit Leader <i>(continued)</i>:</p> <ul style="list-style-type: none"> Utilizes area(s) for the cohorting of patients with signs and/or symptoms associated with the presumed or known chemical agent Ensures that the “worried well” who cannot accept normal assurances are referred to outpatient mental health clinics <p>Treatment Unit Team:</p> <ul style="list-style-type: none"> Ensures appropriate supportive care of patients according to principles of ABLs, ACLS, ADLS and/or ATLS (See Appendix 7 and 8) Ensures appropriate specific antidotal and supportive treatment of patients Ensures resource conservation: <ul style="list-style-type: none"> (1) Only imaging studies and lab tests that will change immediate management may be ordered (2) Decision to order by supervising physician only Ensures that decedents remains are not disturbed in terrorism-related events (= forensic evidence) Preserves forensic evidence (clothing, clinical samples, etc.) where possible <p>Inpatient Unit Leader:</p> <ul style="list-style-type: none"> Assures continued care for inpatients Manages the inpatient care areas Provides for early patient discharge, if indicated Promotes rapid admission of victims to appropriate care areas <hr/> <p>NOTES:</p> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>	<p>D – Detection</p>
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<p>EVACUATE</p> <p>Upon notification or determination of a chemical event affecting a large number of patients:</p> <p>Casualty Care Unit Leader:</p> <ul style="list-style-type: none"> In consultation with the senior Emergency Department Physician: <ul style="list-style-type: none"> Prepare the ED by making prompt disposition decisions: <ol style="list-style-type: none"> Admission to hospital, ICU and operating Secondary distribution to another facility for definitive care (e.g., pediatric, burn*) Ensure that supervising physicians make prompt decisions regarding discharge home when appropriate Ensure that patients exposed to agents that may result in delayed effects are aware of symptoms for follow-up <p>Inpatient Unit Leader:</p> <ul style="list-style-type: none"> In consultation with the Medical Care Branch Director: <ul style="list-style-type: none"> Prepare the various inpatient units by considering early discharge or patient transfer Executes clinical disposition orders <p><i>*Most burn patients may be safely transferred to a Burn Center in the first 24 hours.</i></p>	<p>D – Detection</p>
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<p style="text-align: center;">EMERGENCY EVACUATION OF THE EMERGENCY DEPARTMENT</p>	<p>E – Evacuate</p>
<p>If the Emergency Department becomes contaminated to the point where non-victims are showing signs of chemical contamination, the entire Emergency Department may need to be evacuated to the <i>EXTERIOR</i> of the facility. Never evacuate contaminated victims or staff further inside the building!</p>	<p>R – Recovery</p>
	<p>Appendices</p>

<p>RECOVERY</p> <hr/> <p>Upon notification or determination of a chemical event affecting a large number of patients:</p> <p>Medical/Technical Specialist:</p> <ul style="list-style-type: none"> • Ensure contaminated areas and equipment are properly decontaminated or disposed of as necessary • Coordinates with state and federal authorities for decontamination of facilities as necessary <p>Behavioral Health Unit Leader:</p> <ul style="list-style-type: none"> • Aid recovery by addressing the behavioral health needs of patients, families, significant others and health-care personnel in accordance with institutional policies • If needed, enlist the services of: <ul style="list-style-type: none"> – Social Services Department – Pastoral Care Department – Department of Psychiatry – Child Life Specialists – Employee Assistance Services – Other, outside behavioral health services <p>Casualty Care Unit Leader:</p> <ul style="list-style-type: none"> • Monitor staff for signs/symptoms of illness or injury • Relieve staff showing signs of excessive fatigue or stress <ul style="list-style-type: none"> – All staff coming from a decontamination area receive rehabilitation including a post decon medical evaluation and appropriate rest and rehydration • Monitor decontamination zone staffing patterns and adjust according to anticipated needs • Ensure all equipment and resources are cleaned appropriately and restored to pre-event status <hr/> <p>NOTES:</p> <hr/> <hr/> <hr/> <hr/>	<p>D – Detection</p>
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Appendices

- Appendix 1:** Hazard Risk Assessment Worksheet
- Appendix 2:** Medical Screening Form
- Appendix 3:** Wet and Dry Decontamination Processes
- Appendix 4:** Recommended ED Personnel, Equipment, Supplies, and Pharmaceuticals in Chemical Emergencies
- Appendix 5:** Triage of Potentially Contaminated Patients in Chemical Emergencies
- Appendix 6:** START/JumpSTART Triage System
- Appendix 7:** Symptoms and Treatment of Hazardous Materials and Chemical Toxicities
- Appendix 8:** Chemical Antidotes
- Appendix 9:** Abbreviations

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Appendix 1: Hazard Risk Assessment Worksheet

Hazard Risk Assessment Worksheet

Instructions: Using the scenario provided, use three (3) chemical information resources to complete this worksheet. Use this worksheet to determine the appropriate level of PPE required to protect an individual from the stated chemical.

Product: _____ **Physical State:** _____

Hazards	Values
Flash Point/Flammability <i>Definition: Minimum temperature which liquid forms enough vapor to ignite/ease with which substance will ignite</i>	
IDLH <i>Definition: Immediate danger to life and health – maximum exposure which person could escape within 30 minutes without ill effects</i>	
Vapor Density <i>Definition: Density of gas relative to the density of air which by definition is 1 at 68° F (may be referred to as RGasD in some references)</i>	
Water Solubility <i>Definition: Solubility in water at 68° F, % by weight (i.e., g/100mL)</i>	
Physical Properties	Description
Health Effects	Inhalation
	Ingestion
	Skin Contact
	Eye Contact
	Other
Personal Protection	Respiratory Protection
	Skin Protection
	Eye Protection
	Level of PPE necessary

Appendix 2: Medical Screening Form (continued)

POST ENTRY MEDICAL MONITORING	
EXCLUSION CRITERIA	The following is based on NFPA 471:
<p>The following exclusion criteria is based on NFPA 471:</p> <p>Temperature:</p> <ul style="list-style-type: none"> • 95.5° F (oral) or 100.5° F (core) • <97.0° F (oral) or 98.0° F (core) <p>Heart Rate:</p> <ul style="list-style-type: none"> • >70% of Max heart rate (Max heart rate=220 – age) <p>Respiration:</p> <ul style="list-style-type: none"> • >24 per minute <p>Blood Pressure (BP):</p> <ul style="list-style-type: none"> • >105 Diastolic <p>Assess the following:</p> <ul style="list-style-type: none"> • History <ul style="list-style-type: none"> – Recent medical problems (chest pain, dizziness, respiratory problems, etc.) – Presence of nausea, vomiting, diarrhea, fever, upper respiratory illness within the 72 hours • Medications <ul style="list-style-type: none"> – New prescription medications / over the counter medications taken within the past 72 hours • Other <ul style="list-style-type: none"> – Alcohol within the past 6 hours, pregnancy, altered mental status, skin rashes, sores 	<p>The following is based on NFPA 471:</p> <ul style="list-style-type: none"> • Monitor vital signs every 5-10 minutes until member returns to 85% of maximum pulse rate • If vital signs have not returned to within 10% of baseline, perform orthostatic vital signs • Body weight loss >than 3% of positive orthostatic • Greater than 85% of maximum pulse after 10 minutes • Temperature >than 101° F (oral) or >102° F (core) • Other: signs/symptoms of heart related illness, nausea, vomiting, altered mental status, etc. <hr/> <p>Immediate medical follow-up is necessary if:</p> <ul style="list-style-type: none"> • Oral temperature is greater than 102° F (38.9° C) • Oral temperature is greater than 101° F (38.3° C) if other symptoms present • Irregular pulse • Resting pulse is greater than 120 • Systolic BP >200 after rehab • Diastolic pressure >130 anytime • Any signs of difficulty breathing • Any signs of mental status change

Appendix 3: Wet and dry decontamination processes

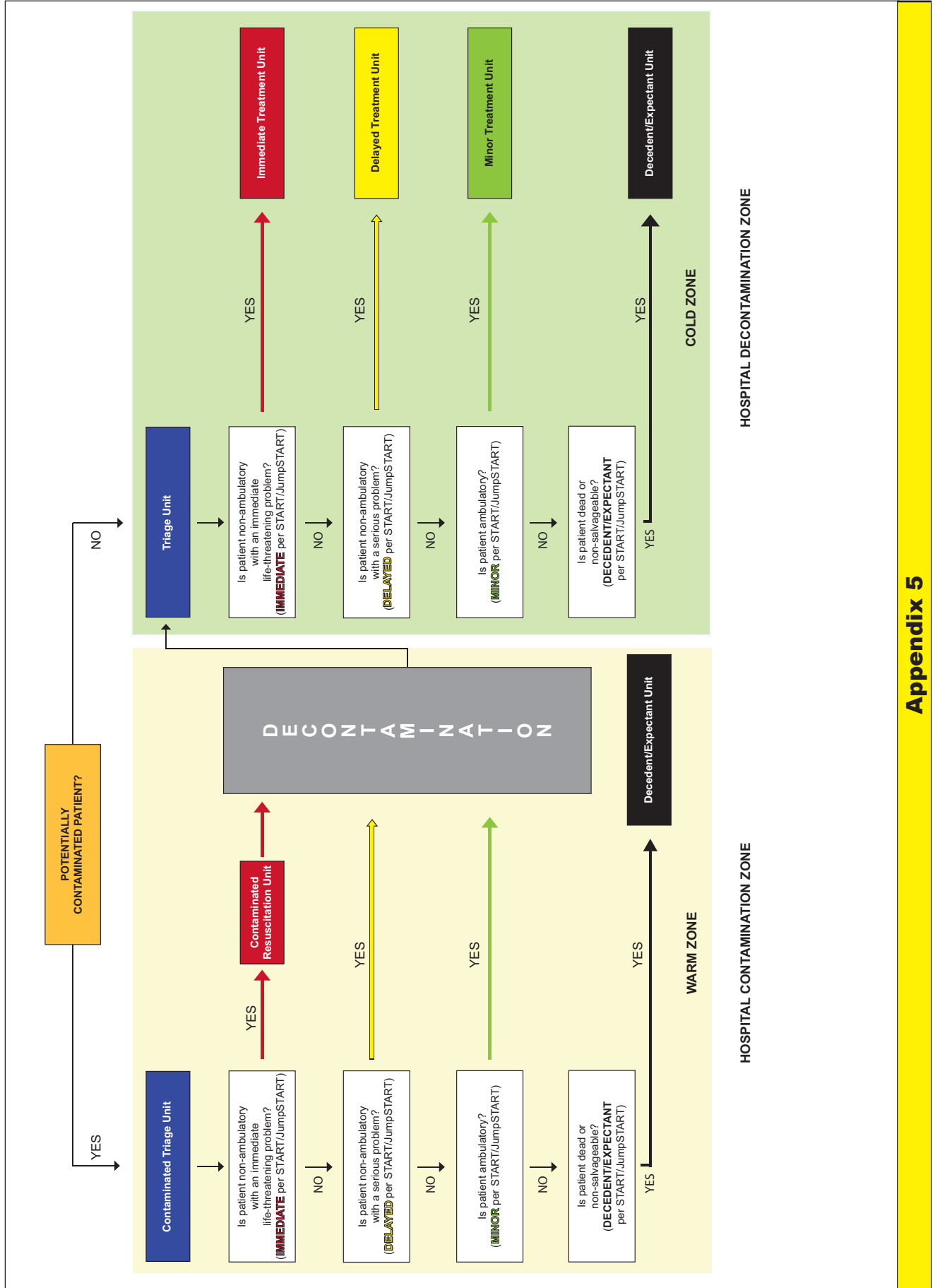
Decontamination Type		Vapor		Liquid, Solid or Indeterminate	
		Dry		Wet	
Patient Type	Ambulatory	Non-Ambulatory	Ambulatory	Non-Ambulatory	
<p>Steps in process (Not all chemical exposures require decontamination. Implement decontamination in consultation with medical toxicologist or the Poison Control Center.)</p>	<ol style="list-style-type: none"> 1. Remove clothing, personal articles* (1 min) 2. Secure items in labeled air-tight plastic bags (1 min) 3. Don gown (1 min) 	<ol style="list-style-type: none"> 1. Remove clothing, personal articles* (1 min) 2. Secure items in labeled air-tight plastic bags (1 min) 3. Don gown (1 min) 	<ol style="list-style-type: none"> 1. Remove clothing, personal articles* (1 min) 2. Secure items in labeled air-tight plastic bags (1 min) 3. Rinse with tepid water (1 min) 4. Wash with soap and tepid water (3 min) 5. Rinse with tepid water (2 min) 6. Towel dry (1 min) 7. Don gown (1 min) 	<ol style="list-style-type: none"> 1. Remove clothing, personal articles* (1 min) 2. Secure items in labeled air-tight plastic bags (1 min) 3. Rinse with tepid water (1 min) 4. Wash with soap and tepid water (3 min) 5. Rinse with tepid water (2 min) 6. Towel dry (1 min) 7. Don gown (1 min) 	
<p>Personnel requirements (May vary with scale of incident)</p>	<ul style="list-style-type: none"> • 2 persons to assist • 1 supervisor 	<ul style="list-style-type: none"> • 3 persons to assist patient to perform • 1 supervisor 	<ul style="list-style-type: none"> • 2 persons to assist • 1 supervisor 	<ul style="list-style-type: none"> • 3 persons to assist patient to perform • 1 supervisor 	
<p>* Including triage tags</p>					

Appendix 4: Recommended ED Personnel, Equipment, Supplies, and Pharmaceuticals in Chemical Emergencies

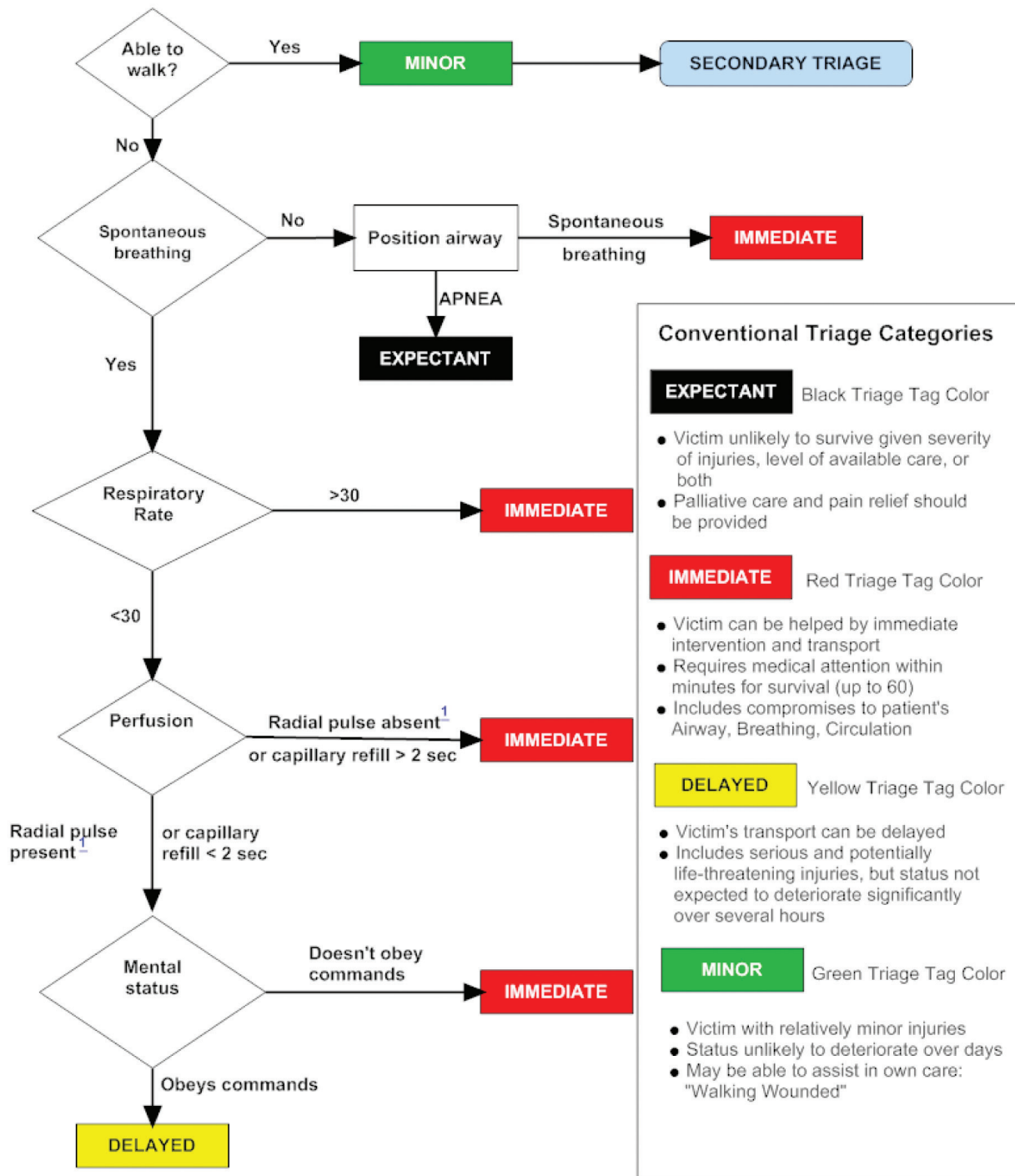
Equipment		Supplies		Pharmaceuticals
Unit/Leader	Equipment	Supplies	Supplies	Pharmaceuticals
Contaminated Triage Unit Leader = ED Nurse	<ul style="list-style-type: none"> Stretchers Mass casualty triage tags 	<ul style="list-style-type: none"> Pre-numbered triage tags, indelible pens 	<ul style="list-style-type: none"> NONE 	<ul style="list-style-type: none"> NONE
Contaminated Resuscitation Unit Leader = ED Physician	<ul style="list-style-type: none"> Stretchers Portable O₂ tanks, suction unit Airway equipment, bag-valve-masks Portable pulse oximeters, cardiac monitors 	<ul style="list-style-type: none"> Airway and suction supplies (including laryngeal mask airways) O₂ masks and tubing IV supplies, central venous access kits Intraosseous kits 	<ul style="list-style-type: none"> Specific antidotes RSI medications Parenteral opioid analgesics 	<ul style="list-style-type: none"> Specific antidotes RSI medications Parenteral opioid analgesics
Decontamination Unit Leader = ED Nurse	<ul style="list-style-type: none"> Hampers for used towels Trash containers 	<ul style="list-style-type: none"> Clear plastic bags for patient belongings Indelible pens Soap, surgical scrub brushes Towels, patient gowns, blankets 	<ul style="list-style-type: none"> NONE 	<ul style="list-style-type: none"> NONE
Contaminated Deceased/Expectant Unit = ED Nurse	<ul style="list-style-type: none"> Stretchers 	<ul style="list-style-type: none"> Body bags 	<ul style="list-style-type: none"> Parenteral opioid analgesics 	<ul style="list-style-type: none"> Parenteral opioid analgesics
Triage Unit Leader = ED Physician	<ul style="list-style-type: none"> Stretchers, chairs, table Mass casualty triage tags, ED records Vital sign equipment 	<ul style="list-style-type: none"> Pre-numbered triage tags, indelible pens Pre-numbered ED records Clipboards for ED records 	<ul style="list-style-type: none"> NONE 	<ul style="list-style-type: none"> NONE
Immediate Treatment Unit Leader = Most Senior ED Physician	<ul style="list-style-type: none"> Stretchers with O₂ Airway and suction equipment Bag-valve-masks, ventilators Pulse oximeters, cardiac monitors for transport Rapid infuser Portable radiography units Warming blankets 	<ul style="list-style-type: none"> Airway and suction supplies O₂ masks and tubing, nebulizer supplies IV supplies, central venous access kits Intraosseous kits Foley catheters, nasogastric tubes Burn care supplies 	<ul style="list-style-type: none"> Specific antidotes RSI medications Bronchodilators Parenteral opioid analgesics Topical ophthalmic analgesics Tetanus prophylaxis 	<ul style="list-style-type: none"> Specific antidotes RSI medications Bronchodilators Parenteral opioid analgesics Topical ophthalmic analgesics Tetanus prophylaxis
Delayed Treatment Unit Leader = ED Physician	<ul style="list-style-type: none"> Stretchers with O₂ suction Airway equipment Pulse oximeters, cardiac monitors for transport Portable radiography units 	<ul style="list-style-type: none"> Airway and suction supplies O₂ masks and tubing, nebulizer supplies IV supplies, central venous access kits Foley catheters, nasogastric tubes Burn care supplies 	<ul style="list-style-type: none"> Specific antidotes Bronchodilators Parenteral opioid analgesics Topical ophthalmic analgesics Tetanus prophylaxis Oral rehydration fluid 	<ul style="list-style-type: none"> Specific antidotes Bronchodilators Parenteral opioid analgesics Topical ophthalmic analgesics Tetanus prophylaxis
Minor Treatment Unit Leader = ED Physician	<ul style="list-style-type: none"> Stretchers with O₂ suction Crash cart Pulse oximeters, cardiac monitors for transport Ophthalmoscopes Slit lamp, wood's lamp 	<ul style="list-style-type: none"> Airway and suction supplies O₂ masks and tubing, nebulizer supplies Eye care supplies Burn care supplies 	<ul style="list-style-type: none"> Bronchodilators (MDIs) Parenteral opioid analgesics, oral analgesics Topical ophthalmic analgesics and antibiotics Tetanus prophylaxis 	<ul style="list-style-type: none"> Bronchodilators (MDIs) Parenteral opioid analgesics, oral analgesics Topical ophthalmic analgesics and antibiotics Tetanus prophylaxis
Expectant/Decedent Unit Leader = Nurse	<ul style="list-style-type: none"> Stretchers 	<ul style="list-style-type: none"> Body bags 	<ul style="list-style-type: none"> Parenteral opioid analgesics 	<ul style="list-style-type: none"> Parenteral opioid analgesics

Appendix 4

Appendix 5: Triage of potentially contaminated patients in chemical emergencies

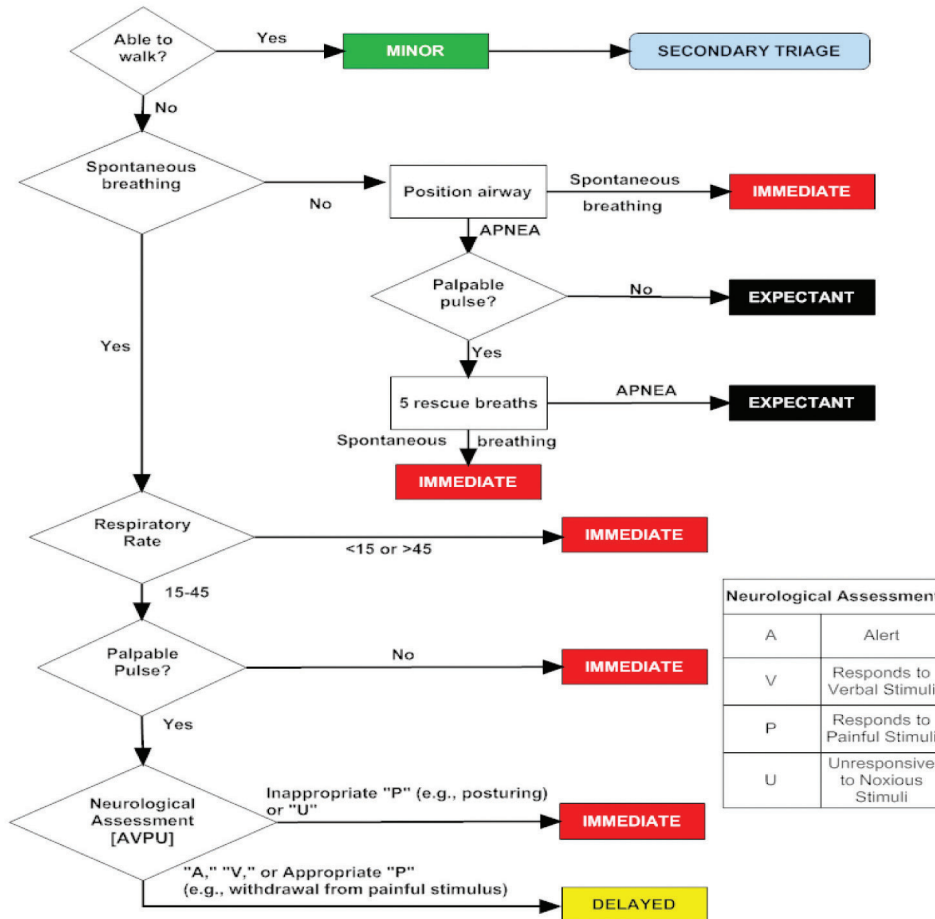


START Adult Triage System



Adapted from <http://www.start-triage.com/>

JumpSTART Pediatric Triage System



Use JumpSTART if the Patient appears to be a child.

Use an adult system, such as START, if the patient appears to be a young adult.

Conventional Triage Categories	
EXPECTANT	Black Triage Tag Color
<ul style="list-style-type: none"> Victim unlikely to survive given severity of injuries, level of available care, or both Palliative care and pain relief should be provided 	
IMMEDIATE	Red Triage Tag Color
<ul style="list-style-type: none"> Victim can be helped by immediate intervention and transport Requires medical attention within minutes for survival (up to 60) Includes compromises to patient's Airway, Breathing, Circulation 	
DELAYED	Yellow Triage Tag Color
<ul style="list-style-type: none"> Victim's transport can be delayed Includes serious and potentially life-threatening injuries, but status not expected to deteriorate significantly over several hours 	
MINOR	Green Triage Tag Color
<ul style="list-style-type: none"> Victim with relatively minor injuries Status unlikely to deteriorate over days May be able to assist in own care: "Walking Wounded" 	

Appendix 7: Symptoms and treatment of hazardous materials and chemical toxidromes

Notify your state and local authorities of any hazardous materials, incidents or suspected terrorist activity immediately. For assistance in identifying toxidromes, treating patients and locating antidotes, contact the local Poison Control Center (1-800-222-1222). STAT consultation with a Medical Toxicologist will assist you in prevention of responder injury and optimization of patient care resource allocation.

Toxidrome	Typical toxicants	Predominant route of exposure	Typical symptoms	Treatment	Specific antidote(s)
Irritant Gas: Highly Water-Soluble	Ammonia, formaldehyde, hydrogen chloride, sulfur dioxide	Inhalation	May cause mucous membrane and upper airway inflammation, edema and corrosion. Symptoms include irritation, burning, coughing, airway swelling, stridor, laryngospasm, aphonia, shortness of breath and respiratory arrest. Abnormal breath sounds, eye irritation and runny nose may also be present.	Remove clothing, and decontaminate those reporting skin/mucous membrane/eye irritation. Oxygen and supportive care as needed, early intubation for airway edema, positive pressure ventilation for pulmonary edema; consider water rinse for chemicals dissolved in perspiration on skin.	In general, none. Some agents may form acids upon dissolving on or in tissue fluids. Consult the Poison Control Center to consider a potential role for inhaled 4.2% sodium bicarbonate in the context of a specific event, agent or patient.
Irritant Gas: Moderately Water-Soluble	Chlorine	Inhalation	May cause inflammation, edema and corrosion of the upper airway and the lungs. Symptoms include irritation, burning, coughing, wheezing, shortness of breath, noncardiogenic pulmonary edema and respiratory arrest. Airway swelling, stridor, laryngospasm and aphonia are less likely than above. Abnormal breath sounds, eye irritation and runny nose may also be present.	Remove clothing, and decontaminate those reporting skin/mucous membrane/eye irritation. Administer oxygen. Supportive care. Endotracheal intubation may be required. Administer albuterol for bronchospasm. Admit those with significant exposure for 24-hour observation since delayed effects may occur. Consider nebulized sodium bicarbonate: 3cc of 4.2% for symptomatic chlorine exposure.	In general, none. Consult the Poison Control Center to consider a potential role for inhaled 4.2% sodium bicarbonate in the context of a specific event, agent or patient.

Appendix 7 (continued): Symptoms and treatment of hazardous materials and chemical toxidromes

Toxidrome	Typical toxicants	Predominant route of exposure	Typical symptoms	Treatment	Specific antidote(s)
Irritant Gas: Slightly Water-Soluble	Phosgene, nitrogen dioxide	Inhalation	Local irritant and corrosive effects. Symptoms include mild airway irritation. Coughing, wheezing and shortness of breath due to noncardiogenic pulmonary edema may lead to respiratory arrest. Abnormal breath sounds, eye irritation and runny nose may also be present.	Remove clothing, and decontaminate those reporting skin/mucous membrane/eye irritation. Administer oxygen. Supportive care. Endotracheal intubation may be required. Administer albuterol for bronchospasm. Admit those with significant exposure for 24-hour observation since delayed pulmonary edema may occur.	In general, none. Consult the Poison Control Center to refine treatment in the context of a specific event, agent or patient.
Asphyxiant: Simple Asphyxiant	Carbon dioxide, methane, nitrogen, propane	Inhalation	Displacement of oxygen from the ambient atmosphere, thereby decreasing the oxygen available to the lungs. Symptoms include shortness of breath, air hunger, rapid heart rate, chest pain, dysrhythmias, nausea/vomiting, confusion/combativeness, syncope, coma and respiratory arrest.	Remove clothing to eliminate odors. Administer oxygen. Supportive care. Endotracheal intubation may be required.	Oxygen

Appendix 7 (continued): Symptoms and treatment of hazardous materials and chemical toxidromes

Toxidrome	Typical toxicants	Predominant route of exposure	Typical symptoms	Treatment	Specific antidote(s)
<p>Asphyxiant: Systemic (Chemical) Asphyxiant</p>	<p>Isobutyl nitrite, carbon monoxide, hydrogen cyanide, hydrogen sulfide, hydrogen azide</p>	<p>Inhalation</p>	<p>Interference with oxygen transport and/or utilization within the blood and/or other tissues. Symptoms include: shortness of breath, rapid heart rate, chest pain, dysrhythmias, pallor, diaphoresis, nausea/vomiting, confusion/combativeness, syncope, coma, respiratory arrest, vasodilation, hypotension or headache. Agents causing methemoglobinemia may result in bluish skin or chocolate-colored blood. Conjunctivitis and the odor of rotten eggs may indicate hydrogen sulfide poisoning. Carbon monoxide may present with flu-like symptoms; cherry-red skin is a post-mortem finding.</p>	<p>Remove clothing to minimize odor, and decontaminate those contaminated with persistent contaminants. Perform eye decontamination as indicated. Administer oxygen. Supportive care. Endotracheal intubation may be required. Antidote(s) may be required. Pulse oximetry may be falsely normal under some circumstances. Patients exposed to fires (especially in a confined space) may suffer from concomitant carbon monoxide and cyanide poisoning. Ingested cyanide or sulfide salts may react with gastric acid to form toxic gas.</p>	<ul style="list-style-type: none"> • Oxygen For specific conditions additional antidotes may be indicated. <p>Selected examples:</p> <ul style="list-style-type: none"> • Carbon monoxide - Hyperbaric oxygen • Methemoglobinemia - Methylene blue • Cyanide - Amyl nitrite, sodium nitrite and/or sodium thiosulfate - Alternatively hydroxocobalamin • Hydrogen sulfide - Possible roles for nitrite(s) and/or hyperbaric oxygen • No antidote to azides is known. Contact the Poison Control Center. (See Table 4)

Appendix 7 (continued): Symptoms and treatment of hazardous materials and chemical toxidromes

Toxidrome	Typical toxicants	Predominant route of exposure	Typical symptoms	Treatment	Specific antidote(s)
<p>Cholinergic: Pesticides</p>	<p>Organophosphate pesticides (dichlorvos, chlorpyrifos, guthion, parathion)</p> <p>Carbamate insecticides (carbaryl)</p>	<p>Skin and mucous membranes</p>	<p>Causes inhibition of acetylcholinesterase. Symptoms include:</p> <p>Peripheral Nervous System- Muscarinic: Diarrhea, Urination, Miosis, Bradycardia, Bronchorrhea, Bronchospasm, Emesis, Lacrimation, Salivation, Sweating</p> <p>Nicotinic: Mydriasis, Tachycardia, Weakness, Hypertension, Hyperglycemia, Fasciculations</p> <p>Central Nervous System: Confusion, Convulsions and Coma</p>	<p>Remove clothing. Decontaminate those exposed to mists, liquids, etc. Administer oxygen. Immediate or early administration of antidotes may be required. Supportive care. Early endotracheal intubation may be required. Administer albuterol for bronchospasm after antidotal therapy - do not delay definitive treatment in order to administer albuterol.</p>	<p>Administration of adequate atropine will block the effects of excess acetylcholine on its receptors and may be indicated for organophosphate and carbamate exposures. Administration of 2-PAM. 2-PAM is generally not indicated for carbamate poisoning. Diazepam may prevent or terminate seizures. Pretreatment of responders with pyridostigmine may be indicated in some circumstances. (See Table 4)</p>
<p>Cholinergic: Nerve Agents</p>	<p>Organophosphate nerve agents ("G" agents, soman, sarin, tabun, VX, etc.)</p>	<p>Inhalation and/or skin and mucous membranes</p>	<p>Same as cholinergic pesticides</p>	<p>Same as cholinergic pesticides. Nerve agents are generally more rapid, prompt administration of atropine and 2-PAM should be considered.</p>	<p>Same as cholinergic pesticides</p>

Appendix 7 (continued): Symptoms and treatment of hazardous materials and chemical toxidromes

Toxidrome	Typical toxicants	Predominant route of exposure	Typical symptoms	Treatment	Specific antidote(s)
Corrosive	<p>Acids (hydrochloric acid, nitric acid, sulfuric acid, etc.)</p> <p>Bases (ammonium hydroxide, potassium hydroxide, sodium hydroxide, etc.)</p>	Skin and mucous membranes	<p>Irritant and corrosive local effects that cause burns of exposed tissues. Symptoms include:</p> <p>Respiratory: irritation, burns, edema of the airway and lungs, laryngospasm, dysphonia/aphonia</p> <p>Cardiovascular: tachycardia, hypovolemia, hypotension, dysrhythmia</p> <p>Nervous system: confusion, coma, methemoglobinemia (some oxidizers) or hypocalcemia (phosphorous)</p> <p>Skin, GI system, eyes and mucous membranes: local corrosive effects, perforation</p> <p>Acids: coagulation necrosis</p> <p>Bases: liquefaction necrosis</p>	<p>Remove clothing, and decontaminate with large amounts of water (or, for eyes, use sterile saline and Morgan lenses with topical anesthesia if available). In general, chemical burn blisters should be broken to release any entrapped chemical. Administer oxygen for respiratory contamination. Supportive care. Early endotracheal intubation may be required. Administer albuterol for bronchospasm.</p>	<p>Hydrofluoric acid exposure is a special case for which topical, systemic or inhaled calcium salts may be indicated. Contact the Poison Control Center. (See Table 4)</p>

Appendix 7 (continued): Symptoms and treatment of hazardous materials and chemical toxidromes

Toxidrome	Typical toxicants	Predominant route of exposure	Typical symptoms	Treatment	Specific antidote(s)
Corrosive	Hydrogen fluoride (hydrofluoric acid)	Inhalation, skin/eye contact or ingestion	Irritating to skin, eyes and mucous membranes. Inhalation may cause respiratory irritation or hemorrhage. Systemic effects include nausea, vomiting, gastric pain, cardiac arrhythmia. Dermal effects include pain, redness and deep, slow healing burns with pain out of proportion to physical appearance. Exposure to dilute solution (10%) may result in delayed onset of symptoms (~6 hours post exposure). Hypocalcemia may result from dermal exposure and may cause tetany, decreased myocardial contractility and cardiovascular collapse.	Remove clothing as secondary contamination or off-gassing may occur. Supportive care and/or endotracheal intubation may be required. Treat arrhythmias per ACLS protocol. Irrigate irritated eyes with water or saline for at least 20 minutes. DO NOT induce emesis. DO NOT administer activated charcoal. Treat ingestions with 4-8 oz. milk or water. Contact the Poison Control Center.	Treat hypocalcemia with calcium gluconate or calcium chloride 10% solution IV. Treat skin exposures with topical calcium gluconate gel. If pain persists >30 min. with calcium gluconate, intra-arterial treatment may be indicated. Inhalation burns may require treatment with nebulized calcium gluconate 2.5%.

Appendix 7 (continued): Symptoms and treatment of hazardous materials and chemical toxidromes

Toxidrome	Typical toxicants	Predominant route of exposure	Typical symptoms	Treatment	Specific antidote(s)
Hydrocarbons and Halogenated Hydrocarbons	Chloroform, gasoline, propane, toluene, trichloroethylene	Inhalation of gases or vapors	Inhalation can cause sleepiness to the point of narcosis (stupor and/or coma) and cardiac irritability. Hypoxia, narcosis, coma, sudden cardiac death due to myocardial sensitization to endogenous catecholamines. Aspiration or chemical pneumonitis. Cough, hypoxemia; nausea and vomiting if ingested. Defatting dermatitis.	Remove clothing, and decontaminate with water and mild liquid detergent (or, for eyes, use sterile saline and Morgan lenses with topical anesthesia if available). Administer oxygen as indicated. Supportive care. Avoid epinephrine where possible due to myocardial sensitization. Endotracheal intubation may be required.	Beta-blocker may be indicated for significant, persistent ventricular irritability induced by hydrocarbons. Consult a toxicologist and keep patients calm.
Blister Agents (Vesicants)	Sulfur mustard (mustard gas, "H" agents)	Skin, eyes, inhalation. Damages DNA.	Delayed symptoms within 2 to 48 hours. Red, itching skin leading to blisters. Irritated eyes, runny nose, hoarseness, cough, diarrhea, fever, nausea, vomiting. Bone marrow suppression may occur days later (radiomimetic effect).	Remove clothes that may be contaminated. Immediately wash area thoroughly, and flush eyes. Treatment is supportive.	No antidote. Granulocyte colony stimulating factor for bone marrow suppression.
Blister Agents (Vesicants)	Nitrogen mustard (HN)	Skin, eyes, inhalation. Damages DNA.	Delayed symptoms within several hours after exposure. Similar symptoms to sulfur mustard.	Remove clothes that may be contaminated. Immediately wash area thoroughly, and flush eyes. Treatment is supportive.	No antidote. Granulocyte colony stimulating factor for bone marrow suppression.
Blister Agents (Vesicants)	Lewisite (L)	Exposure through skin, eyes, inhalation.	Delayed symptoms within several hours after exposure. Similar symptoms to sulfur mustard. Can produce arsenic-like effects (low blood pressure, vomiting, diarrhea).	Remove clothes that may be contaminated. Immediately wash area thoroughly, and flush eyes. Treatment is supportive.	Rapid topical administration of dimercaprol may prevent effects.

Appendix 7

Appendix 7 (continued): Symptoms and treatment of hazardous materials and chemical toxidromes

Toxidrome	Typical toxicants	Predominant route of exposure	Typical symptoms	Treatment	Specific antidote(s)
Bilister Agents (Vesicants)	Phosgene oxime (CX)	Exposure through skin, eyes, inhalation causes severe irritation.	Immediately irritating, almost unbearable pain upon contact. Severe itching followed by blanching, then red rings. Hives within 24 hrs, followed by skin becoming brown with scab formation. Does not cause blisters. Effect on eyes and lungs similar to sulfur mustard.	Remove clothes that may be contaminated. Immediately wash area thoroughly, and flush eyes. Treatment is supportive.	No antidote.
Biological Toxins	Botulinum	Foodborne: 12-72 hours (range: 2 hours - 8 days) Inhalational: 12-80 hours	Ptosis; symmetrical, descending, flaccid paralysis. Generally afebrile, with normal sensation and mental status. Can progress to airway obstruction and respiratory failure. Dry mouth, blurry vision, diplopia, dysarthria, dysphonia, dysphagia. Foodborne: possible nausea, vomiting, abdominal cramps, diarrhea.	Supportive care.	Contact the State Department of Public Health and the Centers for Disease Control and Prevention for sample analysis and potential specific antidote (botulinum toxin).
Biological Toxins	Ricin (toxin from castor bean)	Inhalation: 4-8 hours Ingestion: 1-4 hours	Ingestion: abdominal pain, vomiting, diarrhea, dehydration, hypovolemic shock.	Supportive care. Possible role for activated charcoal.	

Appendix 7 (continued): Symptoms and treatment of hazardous materials and chemical toxidromes

Toxidrome	Typical toxicants	Predominant route of exposure	Typical symptoms	Treatment	Specific antidote(s)
Other	Hydrazines (jet or rocket fuel, INH)	Corrosive or irritating to the eyes, skin, nose, mucous membranes, throat and respiratory system	Seizures	Supportive care. Benzodiazepines, barbiturates and or propofol.	Pyridoxine (vitamin B6)
Other	Methanol (solvent or fuel)	Toxic exposure may occur by ingestion, inhalation or dermal routes	Intoxication, acidosis, visual symptoms	Supportive care. Dialysis may be indicated. Folate should be supplemented.	Fomepizole or ethanol will block metabolism to toxic metabolites.
Other	Ethylene glycol (antifreeze, other)	Most exposures occur from the ingestion of antifreeze	Intoxication, acidosis, crystaluria, renal failure	Supportive care. Dialysis may be indicated. Pyridoxine thiamine should be supplemented.	Fomepizole or ethanol will block metabolism to toxic metabolites.
Other	Arsine (semiconductor manufacture, other)	Inhalation; Arsine is a highly toxic gas at extremely low concentrations	Hemolysis	Supportive care. Exchange transfusion for plasma free hemoglobin level above 1.5g/dl	No antidote.

Appendix 8: Chemical Antidotes

Notify your state and local authorities of any hazardous materials, incidents or suspected terrorist activity immediately. For assistance in identifying toxidromes, treating patients and locating antidotes, contact the local Poison Center (1-800-222-1222). STAT consultation with a Medical Toxicologist will assist you in prevention of responder injury and optimization of patient care resource allocation.

Antidote		Guidelines	Dose: Adult	Dose: Pediatric
Amyl Nitrite	Nitrites induce methemoglobinemia to facilitate removal of cyanide from cytochrome oxidase. Use caution in dosing to avoid hypoxemia. Amyl nitrite is volatile and flammable. Avoid accidental inhalation. May cause hypotension.	Temporizing measure only while initiating IV therapy with sodium nitrite. Snap 1 ampoule, and hold in patient's inspired air stream for 30 seconds every minute until sodium nitrite is available.	Same as adult	
Atropine	Nitrites induce methemoglobinemia to facilitate removal of cyanide from cytochrome oxidase. Use caution in dosing to avoid hypoxemia. Amyl nitrite is volatile and flammable. Avoid accidental inhalation. May cause hypotension. Blocks effects of acetylcholine excess. Potentially lifesaving. Titrate to respiratory signs and symptoms, not pupillary size. Treat only for symptoms, not potential exposure in asymptomatic patients, unless directed by a medical toxicologist/poison center. IV route preferred, but may be given IM. Endotracheal intubation and/or airway suction may also be indicated in severe poisoning. IV route preferred; may be administered IM.	1-5 mg IV. Double the dose each 3-5 minutes until bronchorrhea resolves. For severe poisoning, use 3-5 mg doses. See notes below. <ul style="list-style-type: none"> Mild symptoms: 2 mg IV/IM initial dose Moderate symptoms: 4-6 mg IV/IM initial dose Severe symptoms: 6 mg IV/IM initial dose, then titrate Ongoing treatment: Reevaluate frequently. Titrate additional atropine to respiratory signs and symptoms. If no response to initial dose, double dose, and proceed as above. 	50 mcg/kg IV doubled as for adult dose (minimum dose 0.1 mg, maximum initial dose 0.5 mg). IV route preferred; maybe administered IM.	
Diazepam	Raises seizure threshold. Other benzodiazepines may be substituted.	Initial dose: 5-10 mg IV, then as indicated for seizures. May necessitate endotracheal intubation. Phenytoin and derivatives are not likely to terminate toxins induced seizures.	1 month to 5 years old for status epilepticus, 0.2-0.5 mg/kg IV every 15-30 min. x 2-3 doses.	
Fomepizole (4-methyl pyrazole)	Inhibits metabolism of methanol or ethylene glycol to toxic metabolites via inhibition of alcohol dehydrogenase.	Loading dose: 15 mg/kg IV. Follow in 12 hours by 10 mg/kg for 4 doses. All doses should be administered as slow IV infusion over 30 minutes. If treatment > 48 hours is required, dose 15 mg/kg each 12 hours until toxic alcohol is cleared (levels < 25 mg/dL in the absence of acid-base disturbance). Dose each 4 hours during hemodialysis. If last dose was >6 hours from initiation of dialysis, give dose at initiation of dialysis.	Same as adult dose.	

Appendix 8

Appendix 8: (continued): Chemical Antidotes

Antidote	Guidelines	Dose: Adult	Dose: Pediatric
Hydroxocobalamin	A form of vitamin B12. Preferred treatment if available. Will color mucus membranes and body fluids red. DO NOT INFUSE at the same time or site WITH SODIUM THIOSULFATE.	Initial dose: 70 mg/kg IV (not to exceed 5 g initial dose) infused over 30 minutes. May be given IV push in cardiac arrest.	Initial dose: 70 mg/kg IV (not to exceed 5 g initial dose) infused over 30 minutes. May be given IV push in cardiac arrest.
Methylene Blue	May cause additional methemoglobinemia, especially at high doses. Those without cardiorespiratory symptoms and/or methoglobin <30% rarely require treatment – contradiction: known glucose-6 phosphate dehydrogenase deficiency.	1-2 mg/kg IV x 1 25-50 mg/m ² IV x 1. May repeat in 30-60 minutes for persistent symptoms.	0.3-1 mg/kg IV over 5 min followed by a 30 cc IV fluid flush. Repeat dosing may be required.
Pralidoxime (2-PAM)	Reverses binding of poison to acetylcholinesterase. Administration in the absence of poisoning may cause complications including hypertension. IV route preferable to IM route.	1-2 g IV infusion over 30 min followed by up to 500 mg/hr for severely poisoned patients. <ul style="list-style-type: none">Mild symptoms: 600 mg IV/IM initial doseModerate symptoms: 1200 mg IV/IM initial doseSevere symptoms: 1800 mg IV/IM initial dose, then repeat in consultation with toxicologist/poison centerOngoing treatment: Reevaluate frequently. Titrate additional pralidoxime in consultation with toxicologist/poison center for patients with persistent signs of poisoning.	20-50 mg/kg (maximum dose 1-2 g) IV infusion over 30-60 min, then 10-20 mg/kg/hr (maximum dose 500 mg/hr). IV route preferred. May be administered IM.
Pyridoxine (Vitamin B-6)	Cofactor for pyridoxal phosphate. Co-administer benzodiazepine of choice.	Maximum dose 5 g or 70 mg/kg infused IV at 0.5 g/min until seizures terminate, then infuse remainder over 4-6 hours. Inhaled 4.2% sodium bicarbonate (3 ml in nebulizer) may improve patient comfort.	0.5 g/min until seizures terminate, then infuse remainder over 4-6 hours. Maximum dose not to exceed 70 mg/kg.

Appendix 8: (continued): Chemical Antidotes

Antidote	Guidelines	Dose: Adult	Dose: Pediatric
Sodium Nitrite	May cause hypotension.	300 mg IV (10 ml of 3% solution) administered at 2.5-5 ml/min. One half of the initial dose may be repeated in 2 hours for inadequate clinical improvement or for prophylaxis. Reduce dose to 0.13-0.33 ml/kg if significant anemia present. Follow immediately with sodium thiosulfate as below.	3% solution 6-8 ml/m ² (maximum 300 mg) IV infused over 2-5 min. (0.2 ml/kg of 3% sodium nitrite = 6 mg/kg). Follow immediately with sodium thiosulfate as below.
Sodium Thiosulfate	May cause nausea and vomiting. May use same IV catheter and vein as for sodium nitrite administration.	12.5 g (50 ml of 25% solution) IV. May repeat at half the initial dose if symptoms recur or at 2 hours for prophylaxis.	7g/m ² (0.5 g/kg) (2ml/kg) of 25% solution IV (maximum dose 12.5 g). May repeat at half the initial dose if symptoms recur or at 2 hours for prophylaxis.

Appendix 9: Abbreviations

ABLS	Advance Burn Life Support
ACA	Ambulatory Care Area
ADLS	Advance Disaster Life Support
AHLS	Advanced Hazard Life Support
AOC	Administrator-on-Call
APLS	Advanced Pediatric Life Support
APR	Air Purifying Respirator
ATLS	Advance Trauma Life Support
CCUL	Casualty Care Unit Leader
CDC	Centers for Disease Control and Prevention
CTUT	Contaminated Triage Unit Team
DHHS	Department of Health and Human Services
DPH	Department of Public Health
ED	Emergency Department
EMP	Emergency Management Plan
EMS	Emergency Medical Services
EOC	Emergency Operations Center
EOP	Emergency Operations Plan
FDA	Food and Drug Administration
HICS	Hospital Incident Command System
ICS	Incident Command System
ILS	Influenza-Like Illness
PALS	Pediatric Advanced Life Support
PAPR	Powered-Air Purifying Respirators
PPE	Personal Protective Equipment
SBD	Security Branch Director
TUT	Treatment Unit Team
WHO	World Health Organization



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