Medical Management of HAZMAT Patients Standing Order

INCLUSION

Suspected Hazardous Material Exposure with or without symptoms

EXCLUSION

Patient with medical complaint likely unrelated to hazardous materials

Assess Scene:

- Assess for contamination, need for decontamination, and inform Incident Commander (IC).
- Do not enter the hot zone or contaminated area without proper training & PPE
- The IC structure, need for decontamination, and procedure for decontamination should be determined by agency SOP.

Assess Toxidrome → **Pre-Decon Treatment** → **Decontamination** → **Post-Decon Treatment**

Cholinergic Syndrome	Organophospate SO	**Decon procedures will very based on the substance & symptoms encountered.**	Organophospate SO
Primary Respiratory Cardio-pulmonary Symptoms	Chlorine Gas SO	Two Standing Orders exist to guide decon procedures:	Chlorine Gas SO
	Carbonmonoxide SO		Carbonmonoxide SO
	Cyanide SO	**General Decon SO**	Cyanide SO
	Hydrocarbon SO	**Eye Decon SO**	Hydrocarbon SO
Skin Symptoms	Hydrofloric Acid SO	The need for decon as well as the decon procedures will be determined by the IC and agency SOPs	Hydrofloric Acid SO
No Initial Symptoms	Radiation/Nuclear SO		Radiation/Nuclear SO

SPECIAL NOTE:

- Although Poison Control my give advice regarding the management of patients with toxic exposures, they do not have the ability to provide online medical direction or give orders for the medical management of patients. Therefore all contact with the poison control center must occur through an appropriate Medical Direction Authority

Organophosphate/Carbamate/Nerve Agent Standing Order

INC

Suspected Organophosphate, Carbamate, or Nerve Agent exposure
AND
Symptoms of **mild, moderate, or severe** toxicity

EXCL

Suspected Organophosphate, Carbamate, or Nerve Agent exposure
AND
No evidence of toxicity

Decontamination

The specific decon procedures required for an incident should be determined by the IC or their designee. Medical guidance for decon procedures is as follows:

- Administration of antidote therapy should not delay decontamination except for patients with cardiac arrest/dysrhythmia

General Decon SO

Eye Decon SO

Age > 10

TOXMEDIC

- Mild - Contact Med Direction
- Mod – 2 x antidote kit*
- Severe – 3 x antidote kits*

(If Antidote Kit not available: 1-2mg Atropine IM)

Age < 10

TOXMEDIC

- Mild - Contact Med Direction
- Mod - Contact Med Direction
- Severe - 1 x antidote kit*

(If antidote kit not available: 0.05 mg/kg Atropine IM)

Decontamination

TOXMEDIC

Supportive Care:
- Cardiac monitor, IV, supplemental O2, BVM or ETI if indicated

Continued Antidote Therapy:
- Administer Atropine, every 5min as needed to control all symptoms:
  - **Age>10:** 1-2mg IV/IO* - **Age≤10:** 0.05mg/kg IV/IO
- Administer Benzodiazepines IF seizures activity:
  - Midazolam/Versed per Seizure SO

- If needed, contact Medical Direction Authority and request a Poison Control dual patch or consult for assistance.
- Inform receiving facility of toxic exposure, setting, and decon procedures.

SPECIAL NOTE:

Mild Symptoms: Dim vision, Lacrimation, Rhinorrhea, Nausea
Moderate Symptoms: Urinary Incontinence, Wheezing, Vomiting, Fasciculations, Bradycardia
Severe Symptoms: Unconscious, Seizures, Respiratory Distress

*Antidote Kits: Several different auto injector kits are available for treatment of cholinergic syndrome. All contain 1mg of atropine and 600mg of 2-PAM (pralidoxime). Some commonly used kits include Mark I & Duodote™

Chlorine Gas
Standing Order

INC

Suspected chlorine gas inhalation or exposure
AND
Symptoms of pulmonary or eye toxicity

EXCL

Suspected chlorine gas inhalation or exposure
AND
No evidence of toxicity

Decontamination

The specific decon procedures required for an incident should be determined by the IC or their designee. Medical guidance for decon procedures is as follows:

- Administration of antidote therapy should not delay decontamination except for patients with cardiac arrest/dysrhythmia
- Remove clothing
- Full dry & wet skin decon is usually not necessary.
- Eye decon if eye irritation occurs.

Eye Decon SO

Age ≥ 10

TOXMEDIC

- Perform primary survey
- Provide supplemental O2 and/or assist ventilation with BVM or ETI if needed

Age < 10

TOXMEDIC

- Perform primary survey
- Provide supplemental O2 and/or assist ventilation with BVM or ETI if needed

Decontamination

TOXMEDIC

Supportive Care:
- Cardiac monitor, IV bolus @20ml/kg, supplemental O2, BVM if indicated. If severe respiratory distress consider supporting ventilation with CPAP, BVM or Airway Management Protocol

Antidote Therapy:
- If bronchospasm, administer: Albuterol 2.5mg nebulized repeat x 2 for continued bronchospasm

- If needed, contact Medical Direction Authority and request a Poison Control dual patch or consult for assistance.
- Inform receiving facility of toxic exposure, setting, and decon procedures.

SPECIAL NOTE:

Chlorine Gas

Properties: water soluble irritant gas which when dissolved produces hydrochloric acid and hypochloric acid. These acids cause irritation of mucous membranes.

Symptoms: coughing, choking, dyspnea, wheezing, lacrimanation, burning sensation in eyes/armpits/etc. Severe cases may progress to pulmonary edema and resulting respiratory failure.

Sources: pools, pool pumps, pool service trucks, water treatment plants, rail cars, commercial trucks, etc.

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Carbon Monoxide (CO) & Simple Asphyxiant Toxicity Standing Order

INCLUSION

Suspected Carbon Monoxide (CO) exposure

EXCLUSION

None

Decontamination

The specific decon procedures required for an incident should be determined by the IC or their designee. Medical guidance for decon procedures is as follows:

General:

• Carbon Monoxide (CO) and Simple Asphyxiants are gases. Removal of the victim from the source will likely be the only decon measure required for isolated exposures.

ORDERS

PRE-DECON ORDERS:

- Remove from source

Decontamination (If Indicated)

ORDERS

POST-DECON ORDERS:

• Supportive Care: vital signs, primary & secondary survey, cardiac monitor, IV access

• Antidote Therapy: High flow oxygen, consider Airway Management Protocol if insufficient oxygen/ventilation despite high flow O2.

• Dysrhythmias: Treat per ACLS guidelines

• If needed, contact Medical Direction Authority and request a Poison Control dual patch or consult for assistance.
• Inform receiving facility of toxic exposure, setting, and decon procedures.

SPECIAL NOTE:

- Severe exposure: altered mental status, dyspnea/respiratory failure, seizure, hypotension/tachycardia, cardiac dysrhythmias; Mild exposure: headache, nausea, mild tachypnea
- Carbon Monoxide (CO) Toxicity: Carbon Monoxide binds to the oxygen binding sites of hemoglobin(Hb) decreasing the ability of Hb to both carry and release O2 causing systemic hypoxia.
- Simple Asphyxiants decrease the inhaled concentration of Oxygen. Examples include: carbon dioxide, nitrogen, etc.

- Effective 4-16-2014

Cyanide Toxicity Standing Order

INCLUSION

Suspected cyanide exposure and MAJOR* symptoms

EXCLUSION

Suspected cyanide exposure and MINOR* symptoms

Decontamination

The specific decon procedures required for an incident should be determined by the IC or their designee. Medical guidance for decon procedures is as follows:

• Administration of antidote therapy should not delay decontamination except for patients with cardiac arrest/dysrhythmia

General Decon SO

Eye Decon SO

ORDERS (Pre-Decon)

• Supply max flow Oxygen via non-rebreather mask
• BVM ventilation if necessary

Decontamination (If Indicated)

ORDERS (Post-Decon)

• Supportive Care: vital signs, primary & secondary survey, IV access, Cardiac monitor (Dysrhythmia: treat per ACLS)
• If possible draw a “rainbow” of blood collection tubes prior to administration of cyanokit.
• If respiratory failure consider using Airway Management Protocol

Age ≥ 10

TOXMEDIC

• Cyanokit (hydroxycobalamin):
- Reconstitute each vial with 100ml of saline
- Administer 2 vials using IV tubing included in kit and infuse over 15min

Age < 10

TOXMEDIC

• Cyanokit (hydroxycobalamin):
- Reconstitute each vial with 100ml of saline
- Administer 70mg/kg using IV tubing included in kit
- Each vial in 100ml of NS creates 250mg/ml of solution

• If needed, contact Medical Direction Authority and request a Poison Control dual patch or consult for assistance.
• Inform receiving facility of toxic exposure, setting, and decon procedures.

SPECIAL NOTE:

• Symptoms:
- **Major Symptoms:** include altered LOC, loss of consciousness, dyspnea/respiratory failure, seizures, hypotension/tachycardia and cardiac dysrhythmias.
- **Minor Symptoms:** include headache, nausea and mild tachypnea.

• Cyanokit Information: Each vial contain 2.5g of hydroxycobalamin. The medication is red in color. It cannot be infused in the same tubing as multiple other medications. This medication interferes with future diagnostic testing, if possible obtain blood samples when IV is placed.

Effective 4-16-2014

Hydrocarbon Toxicity Standing Order

INCLUSION

Suspected hydrocarbon exposure and MAJOR* symptoms

EXCLUSION

Suspected hydrocarbon exposure and MINOR* symptoms

Decontamination

The specific decon procedures required for an incident should be determined by the IC or their designee. Medical guidance for decon procedures is as follows:

• Administration of antidote therapy should not delay decontamination except for patients with cardiac arrest/dysrhythmia

General:
• Removal from source (only step for gas exposure)

General Decon SO

Eye Decon SO

ORDERS

Initial Care:
- Supply max flow O2 via non-rebreather mask
- BVM ventilation

Decontamination (If Indicated)

ORDERS

• Supportive Care: vital signs, primary & secondary survey, IV access, cardiac monitor

• Hypoxia or hypoventilation unresponsive to high flow O2: Consider use of Airway Management Protocol

• Dysrhythmias: Treat per ACLS guidelines avoiding epinephrine due to sympathomimetic effect of hydrocarbons

• Seizure: Ensure adequate oxygenation(as above). Administer benzo per Seizure SO

• If needed, contact Medical Direction Authority and request a Poison Control dual patch or consult for assistance.
• Inform receiving facility of toxic exposure, setting, and decon procedures.

SPECIAL NOTE:
- Symptoms:
  - **Major Symptoms:** include altered LOC, seizure, coma, cardiac dysrhythmias, hypoxia
  - **Minor symptoms:** include PVCs, eye irritation
- Examples:
  - Aliphatics include: methane, ethane, propane, butane, hexane, cyclohexane. Aliphalitcs from petroleum include: gasoline, mineral spirits, kerosene. Aliphalitcs from pine: include turpentine, pine oil, pine tar. Aromatic hydrocarbons: benzenes, Halogenated hydrocarbons

Effective 4-16-2014

Hydrofluoric Acid (HF) Toxicity Standing Order

INCLUSION

Known or Presumed exposure to Hydrofluoric Acid(HF)

EXCLUSION

Exposure to other acid or base solutions

Decontamination

The specific decon procedures required for an incident should be determined by the IC or their designee. Medical guidance for decon procedures is as follows:

• Administration of antidote therapy should not delay decontamination except for patients with cardiac arrest/dysrhythmia

General Decon SO

Eye Decon SO

Age < 10

TOXMEDIC

Initial Care:
• If unstable (cardiac dysrhythmia or arrest) initiate IV and administer Calcium Gluconate 100mg/kg IVP

Age ≥ 10

TOXMEDIC

Initial Care:
• If unstable (cardiac dysrhythmia or arrest) initiate IV and administer Calcium Gluconate 10-20ml(1-2gm, 1-2 amps) IVP

Decontamination (If Indicated)

TOXMEDIC

POST-DECON ORDERS:

• Supportive Care: vital signs, primary & secondary survey, IV access, cardiac monitor. If pain may use Pain Management SO.

• Continued antidote therapy:
- Administer Calcium Gluconate gel to the affected site. If Calcium gel is not available then mix 10cc of Calcium Cloride solution with one 1oz package of water soluable lube and apply to affected area. If lube unavailable then apply Calcium Gluconate solution directly to wound

• If needed, contact Medical Direction Authority and request a Poison Control dual patch or consult for assistance.
• Inform receiving facility of toxic exposure, setting, and decon procedures.

SPECIAL NOTE:

Calcium Gluconate: Ca-glu is the drug of choice for treatment of HF exposure and toxicity. In the event of cardiac arrest Calcium Chloride may be given. This medication can cause severe peripheral venous irritation and damage therefore administration via peripheral IV should be limited to the management of critical patients.

Effective 4-16-2014

Radiation / Nuclear Standing Order

INCLUSION

Suspected radiation exposure and Major Injury

EXCLUSION

Suspected radiation exposure and Minor Injury

Decontamination

- Decon for a radiation or nuclear event may differ significantly from other decon procedures.
- Identification of contamination and focused removal of contamination may be sufficient.
- Protect yourself:
  - limit time expose
  - Maximize distance
  - Use appropriate shielding (rarely helpful for radioactive material)

ORDERS

PRE-DECON ORDERS:

- Treat life-threatening conditions prior to decon. Treatment and transport of critically injured patients should take precedent over decontamination.

Decontamination (If Indicated)

ORDERS

POST-DECON ORDERS:

- Care of patients with minor injuries

- If needed, contact Medical Direction Authority and request a Poison Control dual patch or consult for assistance.
- Inform receiving facility of toxic exposure, setting, and decon procedures.

SPECIAL NOTE:

Exposure to radiation does not represent an emergency medical condition. Therefore treatment of a traumatic injury or medical condition should take priority over management of exposure to radioactive substance.

Effective 4-16-2014

General Decontamination Standing Order

INCLUSION

All victims with presumed exposure and contamination with a toxic material

EXCLUSION

Victims triaged as Black/Dead may require decon however, decontamination of these victims should NOT be performed emergently

ORDERS

Initial Care: Evaluate ABC's and perform the following if indicated:

- Open Airway
  - Head tilt / jaw thrust
  - Insert OPA or NPA
- Insert Airway device
  - Supraglotic device is recommended over ETI
- Tension pneumothorax
  - Needle decompress
- Antidote autoinjector
- Hemorrhage Control
  - Compressive dressing
  - Tourniquet
- Spinal Immobilization

Chemical

General Considerations:

- Skin Decon - Remove clothing, Wash with water and mild detergent, under ideal conditions for 15 minutes
- Eye Decon (per SO), under ideal conditions for minimum 20 minutes, continue during transport if resources allow.

Biological

General Considerations:

- Skin Decon – Generally not necessary and may be done at home by patient. If required remove clothing, washing from head down with water and mild detergent.
- Eye Decon – generally not indicated

Radiation / Nuclear

****** patient treatment takes priority over decon******
****** use detector to identify contaminants******

General Considerations:

- For field decon of medically stable patients:
  - Cut clothing off and rolling any contamination up in clothing
  - Identify skin contaminants and use moist gauze to remove
  - Continue to wipe until detector reads < 2 x background or skin redness noted

SPECIAL NOTE:

- Transportation via air medical services is contraindicated prior to decontamination
- The DHS does not recommend full decontamination in the field for patients contamination with white powders that may contain Anthrax spores. Rather patients should be instructed to wash their hands and face, return home, change clothes, and shower.
- Effective 4-16-2014

Eye Decontamination Standing Order

- Eye decontamination may start during general decon if victims allow water to rinse out eyes
- This SO should be used AFTER the General Decon process

INCLUSION

All patients with presumed hazardous material exposure and eye irritation

EXCLUSION

Patients with no known exposure to the eye or lack of eye irritation

BLS Or ALS ORDERS

Initial Care: *(NOTE: Initiation of eye irrigation should not be delayed if the advanced medications listed below are not available or a paramedic with advanced training in the use of the techniques listed is not present)*

- Irrigate eyes with tap water or normal saline
- Discontinue when
  - Toxmedic assumes care
  - Patient can not tolerate due to pain
  - 15 min of irrigation has been performed and eyes are no longer irritated

TOXMEDIC ORDERS

- Tetracaine 2gtts into affected eye, may repeat every 5-10min as needed for eye discomfort.
- Place Morgan Lens or other eye irrigation tool under eye lid and irrigate eyes with tap water or normal saline.
- Discontinue when
  - Patient can not tolerate due to pain
  - 15 min of irrigation has been preformed and eyes are no longer irritated

PATIENT CARE DURING EYE DECONTAMINATION:

- If any vital sign abnormalities are present obtain IV access, supply supplemental O2, and cardiac monitor.
- Evaluate for toxidrome and if present treat using toxic exposure SO.

- If needed, contact Medical Direction Authority and request a Poison Control dual patch or consult for assistance.
- Inform receiving facility of toxic exposure, setting, and decon procedures.

SPECIAL NOTE:

Eye Decon should NOT delay further assessment of the patient.
Transportation via air medical services contraindicated prior to decontamination

Effective 4-16-2014