

Hazardous Materials Medical Response Team Procedures

General Hazardous Materials Treatment Protocol

In general, standard Washtenaw/Livingston County Protocols should be used in treating a patient exposed to hazardous materials. The following procedure should be followed when responding to a hazardous materials incident.

Contact Medical Control as soon as possible. If possible contact should be made as soon as arriving on a scene. Be prepared to provide the following information:

- Name and form of the chemical(s) involved
- Amount of chemical(s)
- Routes of exposure
- Number of victims

Any updated information should be relayed to Medical Control as soon as possible.

Procedure:

Pre-radio Contact

1. Initially follow standard pre-hospital decontamination procedures.
2. For patients that are unconscious or exhibit signs of an altered LOC follow Altered Level of Consciousness protocol.
3. In the case of potential spinal injury follow Spine Injury and Assessment Protocol.
4. In the case of eye contamination follow the HazMat Eye Irrigation Protocol.

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Implement	02/99	04/05		

Hazardous Materials Medical Response Team Procedures

Ammonia (Liquid & Gas)

FORMS: Gas (anhydrous) and liquid (aqueous solutions, variable concentrations).

ROUTES OF EXPOSURE: Skin and eye, inhalation, ingestion.

SIGNS AND SYMPTOMS:

- Cardiovascular:** Ventricular arrhythmias and hypotension.
- Respiratory:** Acute pulmonary edema, bronchospasm, stridor, cough, dyspnea and chest pain. Respiratory tract irritation with possible laryngeal edema.
- CNS:** Stupor, lethargy and coma. Seizures may be present.
- Gastrointestinal:** G.I. bleeding due to liquefaction necrosis of the G.I. tract.
- Eye:** Chemical conjunctivitis with vapors, necrosis and blindness with liquids and anhydrous gas exposures.
- Other:** Respiratory damage can be severe with potential fatal results. Respiratory symptoms may be delayed.

Procedure:

Pre-radio Contact

1. Follow General HazMat Treatment Protocol
2. Monitor for shock and pulmonary edema.
3. Anticipate seizures. Treat according to Seizure protocol.
4. If ingested and the patient is completely alert give 8 oz. of water for dilution.

Aggressive airway management may be necessary!

5. Oral tracheal or nasal tracheal intubation is indicated in the unconscious patient.
6. Start IV NS TKO.
7. Monitor lung sounds and if patient is wheezing administer Albuterol 2.5 mg in 3 ml normal saline hand held nebulizer. Repeat as needed.

Other

Treat dysrhythmias. Consider drug therapy for pulmonary edema

Treat seizures.

Hazardous Materials Medical Response Team Procedures
Cyanide Poisoning

FORMS: Gas (hydrogen cyanide), liquid (solutions of cyanide salts), and solids (cyanide salts). Hydrogen cyanide gas may be formed when acid is added to a cyanide salt or a nitrile, or as a product of combustion of burning plastics, wool and other synthetic products.

ROUTES OF EXPOSURE: Skin and eye, inhalation, ingestion

SIGNS AND SYMPTOMS:

Cardiovascular: At first, pulse decreases and BP rises. At later stages, arrhythmias and cardiovascular collapse may occur. Palpitations and tightness of the chest may be felt.

Respiratory: Can cause immediate respiratory arrest. Initially, respiratory rate and depth are increased; at later stages respirations become slow and gasping. Signs of pulmonary edema may be present.

CNS: Can cause immediate coma. Early symptoms can include weakness, headache, confusion. Seizures are common.

Gastrointestinal: Nausea, vomiting and salivation.

Eye: Chemical conjunctivitis.

Skin: Dermatitis and, in some cases, ulcers. Pale or reddish color. Cyanosis is not usually present.

Other: Can be rapidly fatal without early symptoms. Smaller doses may have a delayed onset of symptoms.

Procedure:

Pre Radio Contact

1. Follow General HazMat Treatment Protocol.
2. Administer oxygen 10-15 I via non-rebreather mask.
3. Monitor for shock and pulmonary edema.
4. Anticipate seizures
5. **Caution: Responders must protect themselves from secondary contamination due to offgassing and body fluids.**
6. Transport with good ventilation and appropriate respiratory protection.
7. If ingested, administer Activated Charcoal 30 - 100 G as a suspension in 1 cup of water.
8. Oral tracheal or nasal tracheal intubation is indicated in the unconscious or respiratory arrest patient.
9. Start IV NS.

In the symptomatic patient with a significant exposure administer treatment in the following order. (Use the Cyanide Antidote Kit)

10. Amyl Nitrite: Break pearls into gauze sponge and hold under patient's nose or Ambu intake valve for 15 to 30 seconds/minute until sodium nitrite solution is ready.

Orders to Expect

1. Sodium Nitrite (3% IV solution):
Adult: 10 ml at 2.5 to 5 ml/minute, or 0.35 ml/kg slow IV push over 2-3 minutes.
Child: 0.2 ml/kg, not to exceed 10 ml IV push
2. Sodium Thiosulfate (25 % solution):
Adult: 12.5 gm (50 cc of 25 % solution) IV push over 10-20 minutes or as an infusion in 100ml D5W.
Child: 1.6 to 1.8 ml/kg of 25% solution IV push

Monitor Blood Pressure during administration of both.

3. Repeat antidote at 50% of initial dose if symptoms persist after 20 minutes. If symptoms worsen after treatment consider NITRITE TOXICITY causing METHEMOGLOBINEMIA.
4. See Methemoglobinemia Protocol for administration of Methylene Blue.

Contact Medical Control.

Cyanide Poisoning

Other

Treat dysrhythmias according to cardiac protocols.

Consider drug therapy for pulmonary edema and follow Acute CHF/Pulmonary Edema Protocol.

Treat seizures according to Seizure Protocol.

8-03a

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Hazardous Materials Medical Response Team Procedures

Eye Irrigation

Eye irrigation should be performed on all patients with a significant exposure to a gas or when the eye is contaminated by a substance.

Procedure :

Pre-Radio Contact

1. Remove contact lenses.
2. Eyes should be flushed immediately with 1000cc of Normal Saline minimum for each eye.
3. Use Tetracaine hydrochloride 0.5% 1 - 2 drops in each eye.
4. Insert an irrigation lens into each eye.
5. Hook lenses up to Normal Saline and irrigate with minimum of 1000 cc for each eye.
6. If the chemical the patient was exposed to creates a potential for secondary exposure, care should be taken to contain the run-off.

SPECIAL CONSIDERATIONS:

Care should be taken that the patient does not rub eyes after administration of Tetracaine as damage can occur.

If available, perform a pH test pre and post treatment until a pH of 7 or neutral is reached.

8-04

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Hazardous Materials Medical Response Team Procedures

Hydrogen Fluoride
(Fluoric acid, Hydrofluoric acid, Fluorine monohydride)

FORMS: Gas, liquid. (Fluoride salts in the presence of acids may generate Hydrogen Sulfide).

ROUTES OF EXPOSURE: Skin and eye, inhalation, ingestion.

SIGNS AND SYMPTOMS:

- Cardiovascular:** Hypovolemic shock and circulatory collapse. Tachycardia with weak pulse. Dysrhythmias related to hypocalcemia.
- Respiratory:** Acute pulmonary edema, asphyxia and chemical pneumonitis. Upper airway obstruction with stridor, pain and cough due to edema.
- CNS:** Symptoms of hypoxia, stupor, lethargy and coma.
- Gastrointestinal:** Acute toxicity results in burns to the mouth, esophagus, stomach and lower G.I. tract. Nausea, vomiting and diarrhea, possibly containing blood.
- Eye:** Chemical conjunctivitis, opacification of the cornea and blindness.
- Skin:** Severe pain with normal looking skin surface. Burn is in lower skin layers. Bone may be involved. Damage may be severe with no outward signs, except patient will complain of intense pain.
- Other:** Hydrogen fluoride will form hydrofluoric acid upon contact with water, such as in the respiratory system. It binds with the calcium in bones and cause **extreme** pain. Both hypocalcemia and hyperkalemia can be associated with cardiac complications.

Procedure:

Pre-Radio Contact

1. Follow General HazMat Treatment Protocol.
2. Monitor for shock and pulmonary edema.
3. Anticipate seizures.
4. **Do not attempt to neutralize because of exothermic chemical reaction!**

Aggressive airway management may be necessary!

5. Oral tracheal or nasal tracheal intubation is indicated in the unconscious or respiratory arrest patient.
6. Start IV NS.

General Treatment

7. Dysrhythmias may be treated with IV injections of Calcium Gluconate. 1 gm of 10% solution IVP in flushed line.
8. In addition to Calcium Gluconate treatment, pain may also be treated per the Pain Management Protocol.

Orders to Expect

1. Pain relief is usually used as an end point for Calcium Gluconate treatment.
2. Medical Control may also order Magnesium Sulfate for treatment of dysrhythmias.

Hydrogen Fluoride

(Fluoric acid, Hydrofluoric acid, Fluorine monohydride)

Inhalation Exposure

1. Add 5ml Calcium Gluconate 10% to 20ml sterile water. Use 5ml for nebulizer.

Skin Exposure

1. Prepare a Calcium Gluconate gel by mixing 1 amp of 10% Calcium Gluconate per ounce of K-Y jelly.
2. Vigorously massage the burned areas with gel until pain is relieved.

Ingestion Exposure

1. **Do not induce emesis or administer Activated Charcoal.**
2. If patient is alert and able to swallow give 4-8 oz. of water.

Eye Exposure

1. Follow HazMat Eye Irrigation protocol.

Other

Treat dysrhythmias according to SEM Regional Cardiac Protocols (3-01 through 3-13).

Hyperkalemia presents initially with peaked T-waves and may progress to widening of the complex, with either tachy- or bradyarrhythmias.

Hypocalcemia produces Q-T prolongation, which can progress into frank arrhythmias.

SPECIAL CONSIDERATIONS:

The patient who has a significant exposure and is experiencing severe complications has a very poor prognosis. Treatment should be geared towards calcium replacement and care should be given to prevent the possibility of secondary contamination.

Hazardous Materials Medical Response Team Procedures

Hydrogen Sulfide, Sulfides and Mercaptans

FORMS: Gas (hydrogen sulfide, methyl & short-chain alkyl mercaptans), liquid (other mercaptans).

ROUTES OF EXPOSURE: Skin and eye contact, inhalation, skin absorption.

SIGNS AND SYMPTOMS:

Cardiovascular:	Cardiovascular collapse, tachycardia and arrhythmias.
Respiratory:	Irritation of respiratory tract, cough, dyspnea and tachypnea. Respiratory arrest and pulmonary edema may be present.
CNS:	Headache, confusion, dizziness, excitement, tiredness and a garlic taste in mouth. Decreased LOC, coma and seizures.
Eye:	Chemical conjunctivitis, lacrimation and photophobia.
Skin:	Dermatitis, sweating and local pain. Cyanosis may be present.
Other:	Symptoms may be delayed. The ability to detect the product by smell may be lost after a short exposure time.

Procedure:

Pre-Radio Contact

1. Follow General HazMat Treatment Protocol
2. Monitor for shock and pulmonary edema.
3. Anticipate seizures.
4. Administer oxygen 10-15 l via non-rebreather mask.
5. Oral tracheal or nasal tracheal intubation is indicated in the unconscious or respiratory arrest patient.
6. Start IV NS.

Place patient on cardiac monitor and treat dysrhythmias according to cardiac protocols (3-01 through 3-13).

Treat seizures according to Seizure Protocol. Treat hypotension according to Non-Traumatic Hypotension Protocol. In the symptomatic patient with significant exposure administer treatment in the following order. (Use the Cyanide Poisoning Kit)

Sodium Thiosulfate is not effective for Hydrogen Sulfide exposure.

1. Amyl Nitrite: Break pearls into gauze sponge and hold under patient's nose or Ambu intake valve for 15 to 30 seconds/minute until sodium nitrite solution is ready.

Orders to Expect

1. Sodium Nitrite (3 % IV solution):
Adult: 10 ml at 2.5 to 5 ml/minute, or 0.35 ml/kg slow IV push over 2-3 minutes.
Child: 0.2 ml/kg not to exceed 10 ml.
2. Repeat antidote at 50% of initial dose if symptoms persist after 20 minutes. If symptoms worsen after treatment consider the possibility of NITRITE TOXICITY causing METHEMOGLOBINEMIA greater than 25%.

Contact Medical Control.

Washtenaw/Livingston MCA

HEMS

Hydrogen Sulfide, Sulfides, and Mercaptans

SPECIAL CONSIDERATIONS:

Due to chemical characteristics consider hypothermia/frostbite. Treat according to Protocol 4-05.

If symptoms are mild, including eye and throat irritation, headache, nausea or dizziness, supportive care will suffice.

In severe cases observe for delayed onset of pulmonary edema.

8-06a

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Hazardous Materials Medical Response Team Procedures

Methemoglobinemia

METHEMOGLOBINEMIA should be suspected in patients who have been exposed to Nitrogen Oxides. METHEMOGLOBINEMIA can also be induced when treating a patient with Cyanide Poisoning.

FORMS: Gas, liquid and solid. Substances tend to be brown or yellow in color, especially when impure.

ROUTES OF EXPOSURE: Skin and eye, inhalation, ingestion

SIGNS AND SYMPTOMS:

- Cardiovascular:** Cardiovascular collapse with a rapid and weak pulse. Can show a reflex bradycardia.
- Respiratory:** With most agents a mild and transient cough is the only symptom at the time of exposure. A delayed onset of dyspnea, rapid respirations, violent coughing and pulmonary edema follows. Some agents work immediately on the upper airway, resulting in pain and choking, spasm of the glottis, temporary reflex arrest of breathing and cause upper airway obstruction from spasm or edema of the glottis.
- CNS:** Fatigue, restlessness and decreasing LOC are usually delayed signs.
- Gastrointestinal:** Burning of the mucous membranes, nausea, vomiting and abdominal pain.
- Eye:** Chemical conjunctivitis.
- Skin:** Irritation of moist skin areas. Pallor and prominent cyanosis.
- Other:** With most products, symptoms will be delayed for 5 to 72 hours. Certain products or high concentrations can bring on symptoms immediately. Blood may be a "chocolate brown" color.

Procedure :

Pre Radio Contact

1. Follow General HazMat Treatment Protocol.
2. Monitor for shock and pulmonary edema.

Aggressive airway management may be necessary!

3. Oral tracheal or nasal tracheal intubation is indicated in the unconscious or respiratory arrest patient.
4. Start IV NS TKO.

Orders to Expect

In the symptomatic patient with a significant exposure administer treatment in the following order.

1. Methylene Blue (1% solution - 10 mg/ml): 1 to 2 mg/kg slow IV push over 10 minutes (equivalent to 0.1 to 0.2 ml/kg, or a total of 5 to 20 ml). Total dose should not exceed 7 mg/kg **in adults or pediatrics**. Observe for elevated BP, nausea, disorientation.
2. Repeat dose in 30 - 60 minutes if cyanosis or severe symptoms persist.
3. Oxygen for at least 2 hours following Methylene Blue administration.

Methemoglobinemia

WARNING! Methylene Blue is itself toxic and may produce disorientation, elevated BP, nausea, diarrhea and delayed hemolytic anemia.

Once patient is stable rule out other causes for METHEMOGLOBINEMIA.

Other

Treat dysrhythmias according to SEM Regional Cardiac Protocols (3-01 through 3-13).

Consider drug therapy for pulmonary edema and follow Acute CHF/Pulmonary Edema Protocol.

Treat hypotension according to Non-Traumatic Hypotension Protocol.

SPECIAL CONSIDERATIONS:

The following drugs may cause further damage and should be avoided:

Expectorants, Sedatives.

8-08a

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Hazardous Materials Medical Response Team Procedures

Organophosphate Poisoning

FORMS: Liquids, solids (dusts, wettable powders) and aerosols.

ROUTES OF EXPOSURE: Skin and eye, inhalation, ingestion, skin absorption

SIGNS AND SYMPTOMS:

- Cardiovascular:** Bradycardia, ventricular arrhythmias, A-V blocks and hypotension
- Respiratory:** Respiratory failure, prominent wheezing, acute pulmonary edema, bronchial secretions, dyspnea and tightness of the chest.
- Gastrointestinal:** Nausea/vomiting/diarrhea, abdominal cramps, excessive salivation, urination and defecation.
- Eye:** Lacrimation, blurred vision and constricted pupils.
- Skin:** Pale, cyanotic skin with excessive diaphoresis.
- Other:** SLUDGE (salivation, lacrimation, urination, defecation, G.I. pain and emesis) syndrome.

Procedure:

Pre-Radio Contact

1. Follow General HazMat Treatment Protocol.
2. If ingested, administer Activated Charcoal 30-100 gm as a suspension in 1 cup of water.
3. Oral tracheal or nasal tracheal intubation is indicated in the unconscious or respiratory arrest patient.
4. Start IV NS TKO. Use fluid resuscitation cautiously to treat hypotension if signs of hypotension are present. **WATCH FOR SIGNS OF PULMONARY EDEMA!**

In general, cardiac dysrhythmias and seizures can be corrected with atropine therapy. **Follow dysrhythmia and seizure protocols.**

Lasix is not effective in treating pulmonary edema!

DO NOT TREAT IF ASYMPTOMATIC!

Organophosphate Poisoning

In general, Atropine therapy is indicated if one or more of the following signs are present:

- Altered mental status or seizures
- Nausea/vomiting/diarrhea or abdominal cramps
- Pupillary constriction
- Salivation
- Diaphoresis
- Respiratory distress, wheezing, pulmonary edema
- Significant arrhythmia (particularly bradycardia)
- Other medical conditions may cause these symptoms and should be ruled out first.

Pre-Radio Contact

Orders to Expect

In the symptomatic patient with significant exposure administer treatment in the following order:

1. Atropine:

Adult test dose: 2-4 mg IV push or IM

Child test dose: 0.05 mg/kg IV push or IM

Initial dosing should be given as soon as possible.

An initial IM dose may speed time to treatment.

Pralidoxime (2-PAM)

Adult: 1 to 2 gm slow IV (200 mg/min) over 15 minutes.

Child: 20 to 40 mg/kg (4ml/kg/min)

If there is no improvement the treatment can be repeated within one hour if symptomatic.

If no effect (which helps confirm the diagnosis) the dose may be doubled q10 minutes until SLUDGE symptoms are relieved. The goal of Atropine therapy is to clear bronchial spasms. **There is no max. dose in Organophosphate Poisoning.**

Pupillary dilation is an early response and can't be used to guide therapy. Tachycardia is not a contraindication to Atropine therapy and may actually lessen as the hypoxia resolves with drying up of the secretions and clearing of the bronchospasm. The patient must be observed carefully for ventricular arrhythmias secondary to hypoxia, especially when administering atropine. In massive organophosphate overdoses huge amounts of atropine may be needed.

Other:

Seizures are generally relieved after atropinization. If not, follow Seizure Protocol.

SPECIAL CONSIDERATIONS:

In cases of skin absorption atropine may not reverse respiratory paralysis. Do not give aminophylline, theophylline, morphine, furosemide or succinylcholine.

8-09a

Hazardous Materials Medical Response Team Procedures

Sodium Hydroxide

FORMS: **A caustic agent** found as solids in pellets, flakes, lumps or sticks and liquid. Used as an acid neutralizer in petroleum refining, in cleaning agents, paint removers, solvents and in water treatment processes. Part of the manufacturing process of cellulose, paper, textiles and plastics.

ROUTES OF EXPOSURE: Skin and eye contact, inhalation, ingestion

TARGET ORGANS: *Primary* – Skin, eyes, respiratory system, gastrointestinal system
Secondary – Central nervous system, cardiovascular system

LIFE THREAT: Severe tissue irritant that may cause upper airway burns and edema, pulmonary edema and skin burns. May cause GI perforation, hemorrhage and peritonitis leading to circulatory collapse.

SIGNS AND SYMPTOMS:

- Cardiovascular:** Tachycardia, hypotension and shock.
- Respiratory:** Dyspnea, tachypnea, sneezing, coughing, stridor, burns, upper airway edema and pulmonary edema.
- CNS:** Apathy, mental confusion, blurred vision and tremors.
- Gastrointestinal:** Nausea, vomiting, hemorrhage, perforation, abdominal pain, painful swallowing, profuse salivation, and burns to the mouth, esophagus, stomach and gastrointestinal tract may occur.
- Eye:** Chemical conjunctivitis, corneal ulceration, severe scarring, permanent blindness.
- Skin:** Deep tissue chemical burns, skin rash (in milder cases), cold and clammy skin with cyanosis or pale color.

Symptom Onset for Acute Exposure:

Immediate. Some symptoms such as pulmonary edema, GI perforation and cardiovascular collapse possibly delayed.

Procedure:

Pre-Radio Contact

1. Follow General HazMat Treatment protocol.
2. Watch for signs of pulmonary edema and shock.
3. Do not attempt to neutralize **with an acid** because of exothermic chemical reaction.
4. **Dilute ingestions orally with water in alert patient.**
5. **Remove clothing for liquid dermal exposure – rapid body wash with water.**

Aggressive airway management may be necessary!

6. Oral tracheal or nasal tracheal intubation for airway control in the patient with **respiratory distress due to upper airway turns**, unconscious or in respiratory arrest.
7. Start IV NS if hypotensive.

Sodium Hydroxide

Pre-Radio Contact

General Treatment

8. Refer to HazMat Eye Irrigation protocol for eye exposure.
9. Pain may be treated per the Pain Management Protocol.

Hazardous Materials Medical Response Team Procedures

Chlorine and Related Compounds

FORMS: Found in liquid and gaseous forms. Colorless to amber-colored liquid, and greenish-yellow gas with a characteristic odor. Some solid compounds may generate chlorine when in contact with water.

ROUTES OF EXPOSURE: Skin and eye, inhalation, ingestion

TARGET ORGANS: *Primary* - Skin, eyes, respiratory system
Secondary - Central nervous system, cardiovascular system, gastrointestinal system, renal, hepatic, metabolism

LIFE THREAT: Severe respiratory tract irritant that may cause pulmonary edema. Skin, eye and mucous membranes irritant.

SIGNS AND SYMPTOMS:

Cardiovascular: Cardiovascular collapse and possible ventricular arrhythmias.

Respiratory: Acute or delayed non cardiogenic pulmonary edema, dyspnea and tachypnea. Upper airway irritation and burns to the mucous membranes and lungs. Cough, choking sensation, rhinitis, sinusitis, rhinorrhea, pneumonitis and pneumonia.

CNS: Decreased level of consciousness to coma. Headache and dizziness.

Gastrointestinal: Nausea and vomiting

Eye: Chemical conjunctivitis with lacrimation. Severe and painful irritation and burns.

Skin: Irritation and chemical burns. Cyanosis. Possible frostbite secondary to exposure to expanding gas.

Renal: Kidney damage

Hepatic: Liver damage

Other: Metabolic acidosis

Thermal Decomposition Products include:

Reacts with water to form hydrochloric and hypochlorous acid. Reacts with carbon monoxide to form phosgene. Toxic substances are formed when combustibles burn in chlorine.

Procedure:

Pre-Radio Contact

1. Follow general HazMat treatment protocol.
2. Flush contaminated skin/eyes.
3. Monitor for pulmonary edema/shock.

Aggressive airway management may be necessary!

4. Oral tracheal or nasal tracheal intubation.
5. Start IV NS for hypotension.

6. Place patient on cardiac monitor according to protocol.
7. Treat hypotension according to Hypothermia Protocol.
8. Consider drug therapy for pulmonary edema.
9. Consider dopamine for hypotension and no signs of hypovolemia (5mcg/kg/min).
10. Follow HazMat Eye Irrigation protocol.

Hazardous Materials Medical Response Team Procedures

Hazardous Materials Medication Box and Exchange Procedure

EMS Service Stock

1. Each EMS provider will be responsible for the security and storage of the supply of hazardous material drug boxes for their ALS vehicles.
2. All drugs, needles, syringes and supplies will be stored in a securely locked, temperature controlled location in the base station. Drug boxes will remain sealed at all times except when in actual use.
3. Hazardous materials drug boxes are to be inspected on the first of each month by the hazardous materials paramedic supervisor for the expiration date listed on the label. Expiring or used drug boxes are to be taken to the emergency department within 7 days for exchange as follows: HVA exchanges with the UMMC emergency department, LCEMS exchanges with the SJMH emergency department.
4. Hazardous Materials Drug Boxes are to be inspected daily by the EMS provider supervisor for evidence of loss, theft, discrepancy and expiration date. It is recommended that this inspection be included in a standard documented check list.

Hospital Stock/Expired/Used Box Exchange

1. Any replacement hazardous material drug box must be maintained in a locked area, under the control of hospital staff available 24 hours per day. This area will be located in the emergency department of the participating hospital. Appropriate record keeping and security measures are required at each exchange site to insure that only appropriately licensed and authorized personnel have access to medications and other related supplies.
2. Hazardous materials drug boxes stocked in the emergency department will be checked regularly by pharmacy staff for expiration and updated as needed.
3. Expiring/used drug boxes will be exchanged for an updated drug box in the emergency department. At the time of exchange, the paramedic will notify the charge nurse. If present, the white pharmacy lock will be removed and the drug box supplies with morphine and diazepam from ER supplies and the green lock applied.

Use/Replacement/Exchange

1. Hazardous Materials Drug Boxes will only be opened by a paramedic who has met the criteria for hazardous materials protocol training and who is responding to a hazardous material incident. The broken green numbered lock will be placed in the drug box to be delivered when exchanging the boxes.
2. Use of any supplies contained in the Hazardous Materials Drug Box will be documented on the Hazardous Materials Incident report and submitted with the used drug box.
3. In cases of contamination of the drug box it should be treated as any other contaminated object even if the means destruction of the box. Prior to disposal, the narcotics should be destroyed and attested to by a witness and documented on the run report.

Hazardous Materials Medication Box and Exchange Procedure

Box Cleaning

1. All empty containers and packaging and used materials will be properly disposed of on site by the Hazardous Materials team which used the drug box.
2. The EMS crew, using standard hard surface decontamination techniques, will clean any blood or body fluid contamination to the exterior of the drug box.
3. If there is blood or body fluid or hazardous material contamination to the interior of the box, or to any unused materials or packaging, the EMS crew will contact the receiving hospital pharmacy or emergency department staff for direction in cleaning and disposal of contaminated materials.
4. All unused, uncontaminated supplies will be returned to the drug box.
5. Any used hazardous materials drug box should be relocked with the red numbered lock contained in the box prior to return to a participating facility.
6. In the event that controlled substances are prepared for use and not used or the entire contents of a container are not used, the remaining medication will be appropriately wasted by EMS personnel in the presence of licensed personnel. The following will be recorded on the Documentation of Use form:
 1. The name and amount of the medication wasted
 2. The initials of the EMS personnel and hospital personnel witnessing the waste
7. In the event of a serious hazardous materials incident the boxes may have to be left at the participating facilities for several days for restocking. This is due to the large quantities of drugs carried in the drug boxes that are not considered Anormal@ supplies in the pharmacy or emergency department.
8. Should a delay in refilling the boxes occur the pharmacy restocking the boxes will call the respective EMS facility to arrange a pick up of the restocked drug boxes.

Expiration of Drugs/Solutions

1. All items in a Hazardous Materials Drug Box will have expiration dates not less than 120 days after the box is prepared, provided that the products are available with a 120 day dating.
2. Each Hazardous Materials Drug Box will have a label securely attached to the outside of the box containing the following information:
 1. The name of the participating hospital pharmacy which restocked the box
 2. The date the box was restocked
 3. The printed name and initials of the pharmacists or pharmacy technician who inventoried and restocked the box
 4. The expiration date is the last day of the month of the earliest expiring medication. The box will include the month/day/year in the AUse or Replace by _____@ section.
 5. The red and green lock numbers
 6. The box number
3. After the inventory/restocking is complete, a red lock bearing the number appearing on the external label will be replaced in the box to be used by the Hazardous Materials team member after it has been issued.
4. Expired, unopened drug boxes are to be exchanged within seven (7) days of the AUse or Replace by@ date.

Hazardous Materials Medication Box and Exchange Procedure

Discrepancies

1. DEFINITION: For purposes of this policy a Adiscrepancy@ is any breakage, expiration, shortage, theft or diversion of a Hazardous Materials Drug Box or any contents thereof.
2. A standard AMEDICATION DISCREPANCY REPORT@ will be completed each time a discrepancy occurs. The form may be initiated by either pre-hospital or hospital staff discovering the discrepancy. The person initiating the report will be responsible for distributing the forms as required.
3. The Medical Control copy of the discrepancy report will be sent to the medical control authority in which the discrepancy occurred, which will serve as the central filing point.
4. A copy of the Hazardous Materials Incident Report on which the discrepancy occurred/was discovered is to be attached to each copy of the discrepancy report where applicable.
5. The participating hospital pharmacist is to be notified immediately if controlled substances are involved in a discrepancy. The participating hospital pharmacist will determine if the discrepancy constitutes a diversion of controlled substances.
6. In addition, the following are to be notified of controlled substance diversion:
 1. The medical control authority in which the diversion occurred
 2. Drug Enforcement Agency (DEA)
 3. Michigan State Board of Pharmacy
 4. Appropriate local law enforcement agency
 5. Michigan Department of Consumer and Industry Services

8-I2b

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Implement	12/00	10/01		

**HAZARDOUS MATERIAL MEDICATION BOX
MEDICATION SUPPLIES USE/REPLACEMENT LIST**

Agency/Unit#: _____ **Base Hospital:** _____

Incident #: _____ **EMS Crew (Names):** _____

MEDICATION	UNIT/SIZE	QNTY	USED	CHRG
Activated Charcoal (Liqua Char) 50gm	Bottle 50gm	2		
Albuterol 2.5mg/3ml	Vial 3ml	10		
Amylnitrate 0.3ml Inhalant	Inhalant 0.3ml	24		
Atropine 0.4mg/ml	Vial 20ml	25		
Calcium Gluconate 10%	Vial 10ml	10		
Cyanide Antidote Kit	Kit	1		
Dextrose 5%	Bag 100ml	10		
Dextrose 5%	Bag 250ml	1		
Dopamine 200mg/5ml	Vial 5ml	5		
Furosemide 10mg/1ml	Vial 4ml	5		
Mag. Sulfate 50%	Vial 10ml	2		
Methylene Blue 1%	Amp 100mg	3		
Naloxone 1mg/ml	Amp 2mg	8		
Nitroglycerin 0.4mg/tab	Bottle	1		
Tetracaine 0.5%	Bottle	2		
Pralidoxime Chloride	Vial 1gm	10		
Sodium Bicarbonate 50meg/50ml	Vial 50ml	2		
Sodium Chloride 0.9%	Bag 250ml	1		
CONTROLLED SUBSTANCES	UNIT/SIZE	QNTY	USED	CHRG
Fentanyl 50 mcg/ml	Vial/Amp 2 ml	2		
Morphine 10mg/1ml	Ampule 10mg	8		
Valium 10mg/2ml	Vial 2ml	5		

MISCELLANEOUS	UNIT/SIZE	QNTY	USED	CHRG
Alcohol Preps		10		
Blunt Cannulas	18g 1"	6		
K-Y Jelly (water soluble) foil packet		24		
IV Tubing 60gtt/ml (minidrip) w/Y Site Pre-Pierced Reseal		2		
Medication Additive Labels		6		
Nebulizer		2		
pH paper	Roll	1		
Needles	21g 1.5"	6		
Needles	23g 1.5"	6		
Red Lock		1		
Sterile Water	Bottle 20ml	10		
Syringe 1ml	Syringe 1ml	6		
Syringe 3ml	Syringe 3ml	6		
Syringe 10ml	Syringe 10ml	6		
Syringe 30ml	Syringe 30ml	6		
Vial Adapters		3		
Medication Supply Use/Replacement Form				
Discrepancy/Incident Report Form				

COMPLETE ALL INFORMATION

Date: _____

Patient's Name: _____

Complete Address: _____

(include Zip) _____

Ordering Hospital: _____

Ordering Physician: _____

Replacing Hospital: _____

Receiving Physician _____

Signature: _____

Date: _____

REPLACING PHARMACIST'S STATEMENT

The medications in the sealed SEM EMS Medication Box # _____ have been distributed according to the Medication/Use and Replacement Policy of the participating Medical Control Authority. All medications are in the correct concentration, dosage form, volume, amount, and not expired.

Signature of Replacing Pharmacist: _____

Date: _____ Hospital: _____

PRESCRIPTION NUMBER: _____

WITNESS: _____

MEDIC: _____

Distribution

(Responsibility of the EMS personnel completing the exchange) Replacing Hospital Pharmacy (Must be presented at time of exchange along with the used drug box and any clean, unused supplies from opened IV kits.) All requests for information from this document by other agencies are to be directed to the Medical Control Authority. The EMS crew completing the exchange must also provide a photocopy of the run report form if this form is presented for exchange at a facility other than the hospital to which the patient was transported.

PARAMEDIC'S STATEMENT

SEM EMS Medication Box # _____ has been opened and the above noted medication(s) used as prescribed. I accept pharmacy sealed SEM EMS Medication Box # _____ sealed with breakaway tag number _____

Signature of Accepting Paramedic: _____

Date: _____ Agency/Unit#: _____

Hazardous Materials Medication Box Configuration BOX LAYOUT

Atropine Sulfate 0.4mg/ml 20ml 12 Multidose Vial	
Atropine Sulfate 0.4mg/ml 20ml 8 Multidose Vial	Atropine Sulfate 0.4mg/ml 20ml 5 Multidose Vial
Sodium Bicarbonate 50 meq/ 50 ml bottle 2 ea Dopamine 200 mg/5ml 5 Single Dose Vials	

TOP DRAWER (Front of Box)

Methylene Blue 1% 100 mg 1 Amp	Methylene Blue 1% 100 mg 1 Amp	Methylene Blue 1% 100 mg 1 Amp	Mag Sulfate 50% 10 ml (5 x 2ml) 2 Vials Pralidoxime Chloride 1 gram 1 Vial	Pralidoxime Chloride 1 gram 3 Vials	Albuterol 2.5 mg/3ml 5 Vials	Furosemide 10 mg/1ml 4ml 3 Vials	Blunt Cannula 18g-1" Qty 6 Vial Adapter Qty 3	Medication Additive Labels 6
Diazepam 10mg/2ml 5 Vials	Morphine 10 mg/ml 8 Ampules	Naloxone 1 mg/ml 2ml 8 Glass Ampules	Nitro-Tab (0.4mg) 25 1 Bottle Alcohol Preps 10 Red Seal 1	Fentanyl 50 mcg/ml 2 ml 2 Vials/Amp	Albuterol 2.5 mg/3ml 5 Vials	Furosemide 10 mg/1ml 4ml 2 Vials	Needles 21g 6 Needles	Needles 23g – 6

SECOND DRAWER (Front of Box)

Tetracaine 0.5% Opth Drops 2 Bottles	Amylnitrate 0.3 ml inhalant 24	Calcium Gluconate 10% 10 ml 5 Vials	Calcium Gluconate 10% 10 ml 5 Vials	Sterile Water 20 ml 5 Bottles	Sterile Water 20 ml 5 Bottles	K-Y Jelly 3g water soluble 24 Foil Packet	pH paper 1 Roll
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THIRD DRAWER (Front of Box)

5% Dextrose 100 ml – 10 Bags 5% Dextrose 250 ml – 1 Bag 0.9% Sodium Chloride 250 ml – 1 Bag Cyanide Antidote Kit (Taylor Pharm) – 1 Kit IV set 60 gtt/ml (minidrip) w/ Y Site pre-pierced - 2 Sets Nebulizer – 2 50 gram Liqui-Char Activated Charcoal – 2 Bottles Syringe 1 ml – 6 Syringe 3 ml – 6 Syringe 10 ml – 6 Syringe 30 ml – 6 Pralidoxime Chloride (box of 6) 1 gram Vials Medication Supply Use/Replacement Form Discrepancy / Incident Report Form
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