Hazardous Materials Medical Response Team Procedures

**Methemoglobinemia**

METEMOGLOBINEMIA should be suspected in patients who have been exposed to Nitrogen Oxides. METEMOGLOBINEMIA 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**

(MFR/BLS/LALS/ALS)
1. Follow General HazMat Treatment Protocol.

(LALS/ALS)
Aggressive airway management may be necessary!

1. Oral tracheal or nasal tracheal intubation is indicated in the unconscious or respiratory arrest patient.
2. Start IV of D5W TKO.

**Orders to Expect**

(ALS)
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. 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.
Washtenaw/Livingston MCA

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 Protocol 3-06.

Treat hypotension according to Protocol 5-08.

**SPECIAL CONSIDERATIONS:**

The following drugs may cause further damage and should be avoided:
- Expectorants, Sedatives.

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