



Section: ALS Hazardous Materials  
Subject: ADULT CHEMICAL TREATMENT GUIDE 3A: GRAY  
Section #: 346.06  
Issue Date: March 21, 2011  
Revision Date:  
Approved By: 

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1. Covered Substances
  - a. Dinitrobenzene (DNB)
  - b. Nitrogen products and other products causing Methemoglobinemia
2. Signs and Symptoms
  - a. Methemoglobinemia is characterized by:
    - i. Chocolate-brown colored blood, CNS depression, headache, dizziness, ataxia, vertigo, tinnitus, dyspnea, tachypnea, violent coughing, choking, upper airway spasm, edema of the glottis, ABD pain, hypotension, heart blocks, ventricular dysrhythmias, seizures (rare), pallor, cyanosis, and cardiovascular collapse.
3. General Supportive Care
  - a. Ensure that personnel are using appropriate PPE.
    - i. Obtain HIT assistance if needed.
  - b. Decontamination:
    - i. Remove the patient from the hazardous area.
      1. If victims can walk, lead them out of the Hot Zone to the Decon Zone.
      2. Victims who are unable to walk may be removed on backboards or gurneys; if these are not available carefully drag victims to safety.
      3. Consider appropriate management of chemically contaminated children, such as measures to reduce separation anxiety.
    - ii. Victims who are able may assist with their own decontamination.
      1. Remove contaminated clothing while flushing exposed areas.
      2. Double-bag contaminated clothing and personal belongings.
      3. If indicated, irrigate exposed or irritated eyes with plain water or saline for at least 15 minutes.
        - a. Remove contact lenses if easily removable.
        - b. Continue irrigation while transferring the victim to the Support Zone.
    - iii. In case of ingestion, do not induce emesis.
  - c. Initiate medical / trauma supportive care as indicated.
  - d. Initiate high-flow / high-concentration O<sub>2</sub> (preferably 100% via NRBM).
  - e. *Contact Poison Information Center (1-800-222-1222).*
  - f. If nitrogen product ingestion and the victim is alert, asymptomatic, and has a gag reflex; administer **activated charcoal** 1.0 gm/kg.
    - i. A soda can and a straw may be of assistance when offering charcoal to a child.
4. Paramedic Level Care
  - a. Dinitrobenzene will sensitize the myocardium to catecholamines, so place the patient in a calm reassuring environment if possible.
    - i. If dysrhythmias develop, treat with the indicated HCFR protocol.
  - b. For seizures, follow appropriate HCFR protocol.
  - c. Treat hypotension with vasopressors rather than with fluids unless there are signs and symptoms of hypovolemic shock.
    - i. **Dopamine** starting at 5.0 mcg/kg/min IV and titrating to SBP > 100 mmHg in adults or the lower end of the normal range adjusted for age in pediatric patients (max dose 20 mcg/kg/min).

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5. MSOT – Medic Level Care
  - a. If the patient is dyspneic with a normal SpO<sub>2</sub>, cyanotic, and has chocolate-brown colored blood, administer **Methylene Blue** (1% solution) 1.0 mg/kg slow IV over 5 minutes, followed by saline 30 ml as a flush to decrease pain at the site.
  - b. If cyanosis persists after one hour, and the patient has not already been transported, consult with Medic-1 regarding the possibility of a repeat dose of **Methylene Blue** (1% solution) 1.0 mg/kg slow IV over 5 minutes, followed by saline 30 ml as a flush to decrease pain at the site.
  - c. Treat hypotension with vasopressors rather than with fluids unless there are signs and symptoms of hypovolemic shock.
    - i. **Phenylephrine** (Neo-synephrine™)
      1. *Adults*: 100 – 180 mcg/min IV as a brief initial infusion until the blood pressure stabilizes, with dosage titrated to a mean arterial pressure (MAP) of 75 – 100 mmHg.
        - a. The usual maintenance infusion rate ranges between 40 and 60 mcg/min IV.
      2. *Pediatrics*: 20 mcg/kg IV bolus, followed by an initial IV infusion of 0.1 – 0.5 mcg/kg/min, with dosage titrated to a mean arterial pressure (MAP) of 75 – 100 mmHg.
6. Quality Assurance Points
  - a. Toxic gases and vapors (such as oxides of nitrogen and carbon monoxide) may be released in a fire involving dinitrobenzene.
  - b. When faced with hypoxia that is refractory to good oxygenation in the HazMat setting, assess closely for methemoglobinemia.
  - c. Symptoms of methemoglobinemia may be immediate or may be delayed for up to 72 hours.
  - d. Side effects of **Methylene Blue** include nausea, ABD and precordial pain, dizziness, headache, profuse sweating, mental confusion, and the formation of methemoglobin.