

# For Health Professionals

## Health Alerts

### **Health Alert Priority #124 - Probable Cyanide Intoxication In Heroin Users - January 31, 2005**

The Pennsylvania Department of Health (PADOH), and the Philadelphia Department of Public Health (PDPH) are releasing the following information regarding probable Cyanide intoxication in heroin users.

The New Jersey Poison Control Center has reported seven cases of probable cyanide intoxication in heroin users who are currently hospitalized in three different healthcare facilities in central New Jersey.

The first case presented early on January 29, and the most recent case was admitted early on January 30. All reported nasally insufflating heroin. One presented with a lactic acidosis and hypotension and was found to have an elevated pVO<sub>2</sub>, the rest presented with nausea, headache, low potassium and elevated pVO<sub>2</sub>. The venous blood specimens appeared to be arterial although 2 had blood drawn from central venous lines, confirmed by pressure and radiography. The illness is also characterized by agitation, tachypnea, and tachycardia. Venous blood from these case patients has the characteristic appearance of oxygenated blood.

Three of the six received thiosulfate infusions and transiently improved; they rebounded and then all received sodium nitrite after which their pVO<sub>2</sub> levels dropped to within the normal range. Rebound was seen in two of the patients with pVO<sub>2</sub> again over 100.

The source of the heroin has at this time been reported only as from dealers in Easton, PA and Asbury Park, NJ. Laboratory confirmation of cyanide in clinical specimens is pending. Criminal and public health investigations are in progress and the presence of cyanide has not yet been established in heroin used by the case patients. The source of this heroin, and the extent of its distribution are unknown at this time.

Clinicians and emergency medical responders caring for individuals with similar illness and recent history of heroin abuse should consider cyanide intoxication, and initiate empiric therapy if their diagnostic evaluation suggests this diagnosis.

Information about cyanide is available at:

<http://www.emedicine.com/emerg/topic118.htm>  
<http://www.bt.cdc.gov/agent/cyanide/index.asp>  
<http://www.bt.cdc.gov/agent/cyanide/basics/facts.asp>  
<http://www.atsdr.cdc.gov/toxprofiles/tp8.html>  
<http://www.atsdr.cdc.gov/tfacts8.html>  
<http://www.atsdr.cdc.gov/MHMI/mmg8.html>

Goldfrank's Toxicologic Emergencies

Ellenhorn's Medical Toxicology Diagnosis and Treatment of Human Poisoning, 2nd Ed

Contact the Poison Control Center at 1-800-222-1222 or (716) 878-7654 for additional information regarding the diagnosis or treatment of cyanide poisoning.

### **Cyanide Poisoning: Overview**

General Characteristics:

- Toxicity via inhalation, ingestion, or skin contact
- High dose required for toxicity

Route of Exposure:

- Ingestion
- Inhalation
- Dermal Contact

Mechanism of Toxicity:

- Binds to iron in mitochondria inhibiting effect of cytochrome oxidase
- Inability to utilize oxygen results in pure anaerobic metabolism
- Severe lactic acidosis ensues and cell death occurs

Clinical Manifestations:

Low Concentration Exposure

- Anxiety, headache, dizziness, vomiting, hyperventilation, confusion
- Skin becomes flushed. "cherry red" color
- Chronic exposure may cause ataxia and optic neuropathy
- Persistent low concentration exposure may progress to effects below

High Concentration Exposure

- 15 seconds hypernea
- 30 seconds seizures
- 3-5 minutes respiratory arrest
- 6-10 minutes asystole and death

Treatment:

Low Concentration

- Supportive treatment with oxygen and fluids  
(If patient is conscious and breathing antidote is NOT indicated)

### High Concentration Exposure

- Assisted ventilation / intubation will be necessary
- Correct acidosis with Sodium Bicarbonate
- Administer Cyanide Antidote Kit in the following order:
  1. Amyl nitrate (available in perles)
    - a. Crush in gauze and place over face or in bag mask, add additional perles every few minutes
    - b. Give only until IV access and the below meds are available
  2. Sodium Nitrate (10 cc ampule)
    - a. Adult: 300 mg IV over 5 minutes
    - b. Pediatric: 0.2 - 0.3 mg/kg IV
  3. Sodium Thiosulfate (50 cc ampule)
    - a. Adult: 12.5 g IV over 5 minutes
    - b. Pediatric: 0.4 mg/kg IV over 5 minutes

Decontamination: Agents highly volatile, skin decontamination usually not necessary Wet, contaminated clothing should be removed and underlying skin decontaminated with soap and water