

## EMS Subspecialty Certification Review Course

### 1.3.7.1.2 Cyanide

2025



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## Cyanide

- Hydrogen cyanide (HCN) is a product of combustion of certain materials.
- High in:
  - Plastics
  - Wool
  - Silk
  - Synthetic rubber
  - Polyurethane
  - Asphalt



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## Pathophysiology

- Cyanide can be inhaled, ingested or absorbed (rarely).
  - Ingestion more common with suicide/murder
  - “Don’t let the enemy get the information out of you”
- Toxicity depends on:
  - Route
  - Dose
  - Duration of exposure



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## Signs and Symptoms

### Low levels

- Dyspnea
- Headache
- Nausea
- Anxiety
- Altered mental status

### High levels

- Hyperpnea
- Loss of consciousness
- Seizures
- Apnea
- Death within minutes

High oxygen consumption tissues are most susceptible

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## Consider CN Toxicity

- At various stages, the symptoms of CN poisoning are similar to those experienced when hiking or climbing at altitudes
- Classic scenario is hemodynamic and respiratory compromise not responsive to oxygen despite expectation
- History is key: Suspect co-inhalation with any smoke inhalation
- Markedly elevated lactate
  - Some suggest > 10
- Unreliable indicators:
  - Cherry red skin/flushing
  - Bright red venous blood



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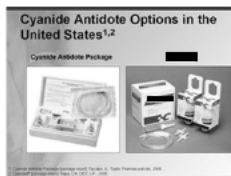
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## Cyanide Treatment

- Antidotes available:
  - Cyanide Antidote Kit:\*
  - Amyl nitrite
  - Sodium nitrite
  - Sodium thiosulfate
- Hydroxocobalamin (First Choice)

Review this for historical interest



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## Hydroxocobalamin

- Precursor to cyanocobalamin (a form of Vitamin B<sub>12</sub>).
  - Hydroxocobalamin combines with cyanide forming renally excreted cyanocobalamin
  - Does not inhibit Hgb function (no oxidation of Hgb)
- Minimal side effect profile
  - Reddish skin and urine
  - Allergic reaction
  - Hypertension
- Prohibitively expensive for some systems
  - Especially to replace multiple expired doses



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