



Clinical Practice Guidelines: Toxicology and toxinology/Cyanide

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Purpose	To ensure a consistent approach to the management of cyanide poisoning.
Scope	Applies to Queensland Ambulance Service (QAS) clinical staff.
Health care setting	Pre-hospital assessment and treatment.
Population	Applies to all ages unless stated otherwise.
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Cyanide toxicity is uncommon but can be lethal. It interferes with normal cellular metabolism by blocking mitochondrial oxygen utilisation. Metabolism instead shifts down anaerobic pathways leading to lactate formation.

Exposure to cyanide can occur through inhalation of cyanide containing gas or particles, dermal absorption of cyanide containing liquids or through deliberate ingestions of cyanide compounds.

The most common exposure is smoke inhalation from fires in enclosed spaces. ^[2]

Cyanide is used industrially in metal extraction, refining, electroplating, photography and fumigation. It is a by-product of combustion of any compound containing carbon and nitrogen, such as wool, silk, synthetic rubber, plastics and acrylics. It is also found naturally in foods containing cyanogenic glycosides like amygdalin in apricot, cherry, apple, peach and plum seeds. ^[1]

Clinical features



The onset of clinical features is rapid following inhalation. The majority of deaths are likely to occur shortly after exposure, prior to any opportunity for resuscitation. Following ingestion symptoms should be apparent within one hour.

Clinical features (cont.)



Clinical signs are non-specific and represent progressive cellular hypoxia.

Early signs of exposure include:

- Anxiety
- Nausea and vomiting
- Tachycardia
- Hypertension
- Headache
- Confusion

Signs of significant exposure include

- Dyspnoea
- Hypertension
- Bradycardia
- Altered level of consciousness
- Seizure
- Pulmonary oedema
- Cardiac arrest



Risk assessment

- All patients with suspected or confirmed exposure to cyanide must be transported to hospital for assessment.
- In cases of ingestion, any emesis should be isolated as it may emit hydrogen cyanide gas.
- Appropriate PPE should be worn to avoid self-exposure.

+ Additional information

- Good resuscitative care along standard lines is the mainstay of therapy. ^[1] There may be a role for specific cyanide antidotes in life threatening exposures if available and able to be given early in the time course of toxicity. ^[2]
- The classic ‘cherry red’ complexion described in cyanide poisoning is uncommonly seen, as people with significant toxicity are usually cyanosed. ^[2]
- The breath of people exposed to cyanide is described as having a “bitter almond” odour. This can’t be relied on, as 18% men and 4% women are genetically incapable of appreciating this scent. ^[2]

