

Cyanide

Information for Healthcare Facilities

Adapted with permission from the Kansas Poison Control.

Last revised: August 2026



Causative Agent

Cyanide is a highly lethal agent. Cyanide can exist at usual room temperature as a gas (such as hydrogen cyanide), solid (sodium cyanide, potassium cyanide, calcium cyanide), or liquid.

Hospital Precautions

Standard precautions once decontaminated. Before decontamination: butyl rubber for skin protection and respiratory protection from off-gassing such as a positive pressure oxygen source (SCBA) or filtered air respirator (PAPRs).

Transmission

Cyanide is volatile from its liquid form and becomes a gas at $>78^{\circ}\text{F}$ that is readily absorbed via the lungs. Cyanide solutions or salts can be ingested if food or water is contaminated. Off-gassing of cyanide vapors can occur from liquids, solids, or vomit from ingested cyanide.

Decontamination

Skin decontamination following exposure to cyanide gas is usually not necessary because cyanide gas is highly volatile. Following exposure to liquid or solid cyanide compounds, contaminated clothing should be removed and the underlying skin washed thoroughly with soap and water. Double bag all clothing and jewelry to prevent off-gassing. Vomit from patients who ingested cyanide salts should also be double bagged to prevent exposure from off-gassing.

Mechanism

Cyanide poisoning inhibits intracellular oxygen utilization leading to the excess production of lactic acid resulting in metabolic acidosis.

Routes

Inhalation, ingestion, dermal, or injection

Symptoms/ Onset

Initial symptoms are nonspecific and include excitement, dizziness, nausea, vomiting, headache, and weakness. Symptoms can progress to shortness of breath, severe anion-gap metabolic acidosis driven by elevated lactic acid, cardiovascular dysfunction and collapse, tetanic spasms or seizures, and loss of consciousness.

Onset is typically abrupt and varies from seconds to up to an hour depending on route of exposure and concentration exposed to (rapid after inhalation, slower following dermal).

Treatment

- Time is critical. Provide treatment with 100% oxygen and antidote administration-given simultaneously with decontamination procedures.
- Cyanokit (hydroxocobalamin) is the first line agent for cyanide toxicity. 5g IV for adults or 70mg/kg for children infused over 15 minutes. A second dose can be administered if needed based on clinical responsiveness.
- If hydroxocobalamin is unavailable, administer sodium nitrite IV 300mg for adults or 0.2mL/kg (6mg/kg) for children over at least 5 minutes. Follow with sodium thiosulfate 12.5g IV for adults or 1mL/kg for children over 10-20 minutes.

There is no known prophylaxis for exposure to cyanide.

REFERENCES

Cyanide Chemical Fact Sheet. Center for Disease Control. September 4, 2024. Available from: [Cyanide | Chemical Emergencies | CDC](#)
Agency for Toxic Substances and Disease Registry (ATSDR). 2024. Toxicological profile for cyanide. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Services. <https://www.cdc.gov/TSP/ToxProfiles/ToxProfiles.aspx?id=72&tid=19>.
Advanced Hazmat Life Support-Provider Manual. 5th ed. Arizona Board of Regents. Advanced Hazmat Life Support International Headquarters-Tuscan, Arizona. 2017.