

CYANIDE FACT SHEET

North Carolina Division of Public Health • Occupational and Environmental Epidemiology Branch

Chemical Information

- In solid form cyanide is found as a white, granular or crystal solid.
- In gaseous form cyanide is colorless or pale-blue.
- Both gaseous and solid forms of cyanide have an almond-like odor. Only some can smell cyanide.
- Extremely toxic via inhalation and ingestion
- Less toxic via dermal contact
- Commonly found as hydrogen cyanide, sodium cyanide and potassium cyanide.

Regulatory Standards

- The Occupational Safety & Health Administration (OSHA) set the PEL for cyanide exposures in the workplace at $11\text{mg}/\text{m}^3$ calculated as an 8-hour time-weighted average.
- The National Institute for Occupational Safety and Health (NIOSH) set a STEL for cyanide exposures in the workplace at $5\text{mg}/\text{m}^3$ calculated as a 15-min time-weighted average.

Hazards Identification

Acute Exposure:

- Exposure to levels $100\text{mg}/\text{m}^3$ or greater can result in brain and heart damage and even cause coma and death.
- Exposure to levels between $6\text{-}49\text{mg}/\text{m}^3$ can cause weakness, headache, nausea, increased rate of respiration and eye and skin irritation.
- After ingestion, pulmonary edema and lactic acidosis can occur.

Chronic Exposure:

- May cause the following health effects:
 - Upper respiratory tract irritation
 - Dermal irritation or ulceration
 - Nausea, vomiting and violent, recurring abdominal pain
 - Effects on the central nervous system such as headaches, dizziness, numbness, tremor and loss of visual acuity
 - Permanent mental and motor impairment along with progressive mental deterioration
 - Enlargement of the thyroid gland and altered thyroid function

Stability & Reactivity

- Solid cyanide (cyanide salts) reacts with water or any acid to form hydrogen cyanide.
- Reacts explosively with chlorates and nitrogen chloride.
- Hydrogen cyanide is flammable.
- Hydrogen cyanide reacts violently with acetaldehyde, alkaline chemicals and other oxidizing chemicals.
- Can deteriorate some plastics, rubber and coatings.

Handling & Storage

- Hydrogen cyanide stored longer than 90 days is hazardous unless it is regularly stabilized and maintained. The gas can form explosive mixtures with air.
- Hydrogen cyanide containers should be stored at a maximum temperature of 5°C or 41°F .
- Cyanide salts should be kept covered or in exhaust hood when not in use. Store in a cool, dry, well-ventilated location.
- Stored away from other acids, water and carbon dioxide.

Glossary

PEL - The Occupational Health and Safety Administration defines Permissible Exposure Levels (PELs) as threshold levels for the workplace that are applicable to exposure periods of eight hours.

STEL - The National Institute for Occupational Safety and Health defines Short Term Exposure Limit (STELs) as a 15-minute TWA exposure which should not be exceeded at any time during a workday.

Time weighted average (TWA) - The maximum average exposure to a hazardous contaminant to which workers may be exposed without experiencing significant adverse health effects over said period.

