

Oakland County Medical Control Authority
System Protocols - Hazardous Materials Medical Response Team
CHLORINE AND RELATED COMPOUNDS

Date: September 2022

Section 11-4

Chlorine and Related Compounds

FORMS: Found in liquid and gaseous forms. Colorless to amber-colored liquid, and greenish-yellow gas with a characteristic odor. Some solid compounds may generate chlorine when in contact with water. Phosgene (COCl₂) and Nitrogen Dioxide (NO₂) are related compounds.

THERMAL DECOMPOSITION PRODUCTS: Reacts with water to form hydrochloric and hypochlorous acid. Chlorine reacts with carbon monoxide to form phosgene. Slightly water-soluble toxicants Phosgene (COCl₂) and Nitrogen Dioxide (NO₂) may produce prolonged exposure. Toxic substances are formed when combustibles burn in chlorine.

ROUTES OF EXPOSURE: Skin and eye, inhalation, ingestion

TARGET ORGANS: *Primary* - Skin, eyes, respiratory system
Secondary - Central nervous system, cardiovascular system, gastrointestinal system, renal, hepatic, metabolism

LIFE THREAT: Severe respiratory tract irritant that may cause pulmonary edema. Skin, eye and mucous membranes irritant. Patients may have delayed life threatening symptoms (Chlorine or Phosgene).

SIGNS AND SYMPTOMS:

CNS: Decreased level of consciousness to coma. Headache and dizziness.

Eye: Chemical conjunctivitis with lacrimation. Severe and painful irritation and burns.

Cardiovascular: Cardiovascular collapse and possible ventricular arrhythmias.

Respiratory: Acute or delayed non cardiogenic pulmonary edema, dyspnea and tachypnea. Upper airway irritation and burns to the mucous membranes and lungs. Cough, choking or burning sensation, rhinitis, sinusitis, rhinorrhea, pneumonitis and pneumonia.

Gastrointestinal: Nausea and vomiting

Skin: Irritation and chemical burns. Cyanosis. Possible frostbite secondary to exposure to expanding gas.

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Renal:	Kidney damage
Hepatic:	Liver damage
Other:	Metabolic acidosis

Pre-Medical Control
PARAMEDIC

1. Follow **General HAZMAT Treatment** protocol.
2. Follow **HAZMAT Eye Irrigation** protocol as indicated.
3. Follow **Emergency Airway Procedure** as indicated.
4. For Bronchospasm administer Albuterol 2.5 mg/3 ml NS nebulized.
5. For other respiratory symptoms (burning sensation) administer 5 ml NS nebulized.
6. If the other respiratory symptoms persists, administer 5 ml ½ strength Sodium Bicarbonate (2.5 ml Sodium Bicarbonate (1 meq/ml) mixed with 2.5 ml Sterile Water) nebulized.
7. Consider CPAP.