

**Washtenaw/Livingston MCA, HEMS MCA**  
**System Protocols - Hazardous Materials Medical Response Team**  
**CHLORINE AND RELATED COMPOUNDS**

Date: April 24, 2019

Section 11-4

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***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 (COCl<sub>2</sub>) and Nitrogen Dioxide (NO<sub>2</sub>) 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 (COCl<sub>2</sub>) and Nitrogen Dioxide (NO<sub>2</sub>) 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.

**Renal:** Kidney damage

**Hepatic:** Liver damage

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**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 persist, 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.