

**Florida Poison Information Center/Jacksonville**  
**At Shands Jacksonville**  
**University of Florida Health Science Center**  
**1-800-222-1222**

**Chloracetophenone (CN)**

**Mechanism of Action**

Chloracetophenone (CN) is one of a class of agents collectively known as riot control agents (tear gases), which cause incapacitation by inducing pain in the eyes, lacrimation, and blepharospasm (cramping of the eyelids). Exposure to these agents may also result in difficulty breathing, burning sensations in the chest, nausea, vomiting and skin irritation. At very high concentrations injury to the skin and mucous membranes can occur.

**Properties**

CN ( $C_6H_5COCH_2Cl$ ) is a white/yellow/grey solid at room temperature with a sharp irritating odor. The detection threshold is  $0.1\text{mg}/\text{m}^3$ . The average incapacitating concentration is  $20\text{-}50\text{mg}/\text{m}^3$ . The average lethal concentration is  $7\text{-}14000\text{mg}/\text{m}^3$ . CN is stable when heated, melts at  $54^\circ\text{C}$ , and has a low vapor pressure. It is dispersed as an aerosol in the form of a white cloud and has the odor of apple blossoms. CN has low water solubility and is not appreciably hydrolyzed in water (as opposed to the more commonly used CS). It can be washed off the skin with water.

**Symptoms**

CN causes almost instantaneous burning of the eyes, tearing and cramping of the eyelid muscles. The difficulty with vision is the primary mechanism for incapacitation. Inhalation may cause a burning sensation in the mouth, throat and chest and result in difficulty breathing. Nausea and vomiting are also common symptoms. Mild irritation of the skin occurs at lower concentrations and more severe burns can occur with more concentrated or prolonged exposure.

Although most exposures do not result in life threatening emergencies, bronchospasm and non-cardiogenic pulmonary edema have been seen. Appropriate life support measures need to be employed in these cases.

**Medical Management**

*Treatment:* Treatment of most exposures requires decontamination (see below) and symptomatic care. Exposures resulting in respiratory distress should be treated with supplemental oxygen and inhaled bronchodilators and may require intubation with mechanical ventilation.

*Decontamination:* Exposed persons should be removed from the offending source to fresh air. Effects on the eyes and respiratory system generally dissipate within 15-30 minutes after cessation of exposure. Rinsing the eyes with copious amounts of water will speed recovery. It is important not to rub the irritated eyes as this may cause mechanical damage in addition to the chemical irritation. Washing the skin with water will remove the residue, but will not inactivate it. Removal of contaminated clothing will aid in preventing re-exposure. Delayed skin erythema can be treated with topical

corticosteroids. Significant ophthalmologic injury should be evaluated by an ophthalmologist.

**Bibliography**

1. Chemical Warfare Agents-Tear Gases. Organisation for the Prohibition of Chemical Weapons
2. Holstege et. Al., Chemical Warfare Nerve Agent Poisonings. Crit Care Clinics 1997
3. Handbook on the Medical aspects of NBC Defensive Operations. Department of the Army

Call the Florida Poison Information Center Network for information and/or to report exposures.



**1-800-222-1222**

**Florida Poison Information Center Network**

**Centers are located in Jacksonville, Tampa, & Miami**