



**R7DHRE**  
**Hazardous**  
**Materials**  
**Guideline:**  
**Riot**  
**Control**  
**Agents**



# REGION VII DISASTER HEALTH RESPONSE ECOSYSTEM (R7DHRE) CHEMICAL SPECIALTY TEAM

Call Your Poison Center for Immediate Assistance: 1-800-222-1222

## Hazardous Materials Guideline: Riot Control Agents

This document is intended as a supplement for discussion with your local poison center or toxicologist.

### 1.0 BACKGROUND

**1.1 Description:** This guideline covers capsaicin (“pepper spray”) and the military agents CN (2-chloroacetophenone, not cyanide), CS (o-chlorobenzylidene malononitrile), and CR (dibenzoxazepine). Capsaicin is a liquid while the military agents are aerosolized powders.

**1.2 Mechanism of Injury:** All four agents cause irritation and pain on contact with skin and mucous membranes; capsaicin by the release of substance P and the military agents by a variety of mechanisms.

**1.3 Routes of Exposure:** Inhalation, Ocular, Dermal.

### 2.0 PROVIDER SAFETY

**2.1 Personal Protective Equipment (PPE) – Decontamination Team:** Personnel decontaminating patients must wear **full-body chemical-resistant clothing and respiratory protection**. Respiratory protection may consist of either:

- 2.1.1** A positive pressure air or oxygen source, such as an air-line respirator or a Self-Contained Breathing Apparatus (SCBA) or
- 2.1.2** A filtered air respirator (including Powered Air Purifying Respirators (PAPRs)) with filters capable of adsorbing the chemicals in question.
- 2.1.3** A positive pressure air or oxygen source is preferred if there is doubt as to the identity of the chemical in question or if there may be exposure to a level of riot control agents which would overwhelm the filter.

**2.2 Personal Protective Equipment (PPE) – Treatment Team:** Personnel treating patients who have been adequately decontaminated need no additional PPE other than universal precautions since there is no serious risk of secondary contamination.

## 2.3 Patient Decontamination:

- 2.3.1 Persons contaminated with vapors, liquids or solids pose a risk of secondary contamination from off-gassing of vapors and direct contact with the chemical.
- 2.3.2 Brush any powder or solids from the skin, hair, and clothes of victims.
- 2.3.3 Remove ALL clothing and jewelry. Double bag clothing and jewelry to prevent off-gassing.
- 2.3.4 Decontamination is best accomplished by irrigation with copious amounts of water. Be alert that when decontaminating the military agents CS and CR with water, irritation symptoms may temporarily increase.
  - 2.3.4.1 Wash skin and hair with plain water for a minimum of 15-30 minutes. Washing with soap after washing with plain water is recommended, especially for oily or otherwise adherent chemicals. Washing with water alone (for a longer period of time) might be acceptable if soap is not available.
  - 2.3.4.2 Some references state that a solution of 5-10% sodium bicarbonate (NaHCO<sub>3</sub>) is better than water for skin decontamination for the agents CS and CR. There are not large-scale studies confirming this approach.
- 2.3.5 Remove contact lenses if it can be done without additional trauma to the eye. Irrigate eyes for a minimum of 15 minutes. Continue irrigation until eye pH is neutral (7 to 8).
- 2.3.6 Watch for hypothermia in children and the elderly, when decontamination is done with un-heated water, or during cold weather.

## 3.0 SIGNS & SYMPTOMS

- 3.1 Severity of symptoms will depend upon the concentration of the chemical to which the person is exposed and the duration of exposure.
- 3.2 Inhalation: Irritation and burning of the eyes, nose, throat, upper airway, and lungs. Rhinorrhea, sneezing and epistaxis. Cough, bronchoconstriction, shortness of breath and a suffocating feeling. Taste changes. Though rare, severe exposure might cause caustic burns to upper airway, upper airway obstructions and damage to the alveoli leading to pulmonary edema, decreased oxygenation and systemic hypoxia.
- 3.3 Dermal: Inflammation, dermatitis, and skin vesicles can occur. Chemical burns may occur, which can be severe. It has been reported with both CS and CR that when the skin exposed to either of these two chemicals comes in contact with water hours after exposure, dermal irritation, pain and burning symptoms have returned.
- 3.4 Ocular: Irritation, sharp pain and burning sensation. Lacrimation, conjunctivitis, blepharospasm, lid edema, photophobia. Patients can develop visual impairment or temporary blindness. Getting the liquid or powder directly in eye can cause burns, corneal opacity, or permanent corneal damage.

**3.5 Ingestion:** Ingestion of food or drink contaminated with these agents may cause nausea, vomiting, diarrhea, and abdominal pain.

## 4.0 DIAGNOSTICS

**4.1** Riot control agents poisoning is a clinical diagnosis and there is no specific diagnostic testing. Any diagnostic evaluation should be based on signs and symptoms of irritation or corrosive effects.

## 5.0 TREATMENT

**5.1 General:** **Treatment is mainly decontamination and supportive care** including basic and advanced life support. There is no specific antidote for riot control agents poisoning.

**5.2 Dermal:** **Treatment is the same as that for thermal burns.**

**5.3 Ocular:** Irrigate eyes to a neutral pH. Perform a thorough eye exam: test visual acuity and perform fluorescein and slit lamp examinations. Ophthalmology consultation may be necessary. Immediately consult an ophthalmologist for patients who have corneal injuries.

**5.4 Ingestion:** **Do NOT give activated charcoal or induce emesis.** Consider dilution by giving 2 to 4 ounces of milk or water orally ONLY to patients who are conscious, able to swallow, and can protect their airway.

**5.5 Inhalation:** Maintain the patient's airway, with endotracheal intubation or cricothyroidotomy if necessary. Endotracheal intubation should be performed only under direct visualization because of edema and potential damage to the oropharynx. Support oxygenation and ventilation as necessary. Use standard treatments for pulmonary edema (diuretics, PEEP, etc.) and bronchospasm (inhaled bronchodilators; consider corticosteroids).

**Disclaimer:** This guideline is intended to be an informational reference only and should not be used as a substitute for consultation with a poison center or toxicologist, and/or the clinical judgement of the bedside team.

Initial author: Edward Bottei, MD, FACMT; revised by Dan McCabe, MD and the R7DHRE Chemical Specialty Team

DO NOT REVISE. Contact Kathy Jacobitz at the Nebraska Regional Poison Center ([kjacobitz@nebraskamed.com](mailto:kjacobitz@nebraskamed.com)) for permission to modify or to provide suggestions for updates. Check <https://www.regionviidhre.com/chemical-team> for the latest version.

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