

# Riot Control Agents, Nerve Agents, and the Chemical Weapons Convention

By Dan Kaszeta

## What are Riot Control Agents

“Riot control agents” as a term refers to chemical substances used for their irritating effect and selected for their non-lethal nature. The legal definition of “riot control agent” in international law (Article 2, para 7 of the Chemical Weapons Convention) is

“Any chemical not listed in a Schedule, which can produce rapidly in humans sensory irritation or disabling physical effects which disappear within a short time following termination of exposure”

Various national references and academic works give very similar definitions. The most widely used riot control agents are CS (full name 2-chlorobenzalmalonitrile) and OC. CS is widely referred to as a “tear gas” and has been widely used for many decades, although it is technically not a gas. OC is oleoresin capsicum, or so-called “pepper spray” and is derived from chile peppers. In the past other substances such as CA, CN (“mace”), CR, and chlorpicrin have been used as riot control agents. A useful fact sheet is available at <http://emergency.cdc.gov/agent/riotcontrol/factsheet.asp>

Riot control agents are generally non-lethal, although fatalities have occurred with their use in the past. This article (<http://www.ncbi.nlm.nih.gov/pubmed/11746179>) is a good study of the toxicology of riot control agents.

## Riot Control Agents are NOT “Nerve Agents”

In June 2013, National Geographic published an erroneous article stating that “tear gases are nerve agents”. (See: <http://tinyurl.com/TearGasNerve>) Numerous social media posts since 2013 have circulated this belief that tear gas and/or pepper spray are somehow “nerve agents”.

Nerve agents are lethal chemical weapons in the organophosphate family of chemicals. Sarin, also known as GB, is an example of a nerve agent. They work by specifically affecting the chemistry of the human nervous system, in particular the enzyme acetylcholinesterase. As a family of prohibited chemical warfare agents, nerve agents have very specific definitions which do not cover or even relate to riot control agents like CS or pepper spray. For the purposes of definitive closure of this question, let us examine the canonical definitions of the term “nerve agent” from various sources, all of which are more authoritative than a *National Geographic* online article.

**WMD Terms Handbook** (US Dept of Defense)

“Organophosphate ester derivatives of phosphoric acid. Potent inhibitors of the enzyme acetylcholinesterase, causing a disruption in normal neurologic function. Symptoms appear rapidly, with death occurring as rapidly as several minutes. Generally divided into G-series agents and V-series agents.”

**Handbook of Toxicology of Chemical Warfare Agents** (S. Gupta ed. 2009 edition)

These agents are potent anticholinesterase compounds deliberately formulated to induce debilitating effects or death during wartime hostilities and have been used by military authorities of several nations to develop munitions (e.g. Germany during the Nazi era, the USA, the USSR). [page 43]

**Chemical Warfare Agents: Chemistry, Pharmacology, Toxicology, and Therapeutics** (Romano and Lukey, eds., 2<sup>nd</sup> ed 2008)

The nerve agents are the most toxic of the known chemical warfare agents. They are hazards in their liquid and vapor states and can cause death within minutes after exposure. Nerve agents inhibit acetylcholinesterase in tissue and their effects are caused by the resulting excess of acetylcholine. [page 14]

**Textbook of Military Medicine: Medical Aspects of Chemical Warfare** (US Government, 2008)

“According to the widely accepted explanation, nerve agents are compounds that exert their biological effects by inhibiting the enzyme acetylcholinesterase.” [page 156]

These definitions are all similar in content and intent. Nerve agents are very specific chemicals that target a specific substance in the body, the enzyme acetylcholinesterase. There is no evidence whatsoever that any of the riot control agents has any effect at all on acetylcholinesterase. Even a small amount of the least toxic of the nerve agents is quickly fatal without immediate treatment. I defy any correspondent to find any accepted evidence that CS or OC falls within any of these definitions.

**Riot Control Agents are not “Mustard Gas”**

In a number of incidents in the US, Turkey, and Venezuela, various posts on social media conflated the use of riot control agents with “Mustard Gas”. “Mustard Gas” also has a specific definition, although the term “Mustard Gas” itself is bastardized. The substance most commonly referred to is Sulfur Mustard. I wrote a lengthy discussion of Mustard as a chemical warfare agent, available at <https://www.bellingcat.com/resources/articles/2014/10/14/is-it-mustard-or-not-guidelines-for-assessing-claimed-use-of-the-mustard-family-of-blister-agents/>

The most important distinctions to be made are:

- Police agencies do not use Mustard.
- Sulfur Mustard and its variants are oily liquids, not a gas.
- There are few, if any, immediate effects of exposure to Mustard . The onset of symptoms is delayed by many hours, so it is not useful as for fighting riots.
- Mustard contaminates land and equipment, so there would be a tell-tale residue of liquid contamination for days or weeks after use.
- Mustard causes the formation of large fluid-filled blisters that are a distinctive tell-tale indicator of its use.
- Mustard is not a yellow cloud of smoke. (“Mustard” is a nickname, not a description of the colour.”

### **The Status of Riot Control Agents in International Law**

Numerous commentators have raised questions about the legal status of riot control agents and the legality of their use. (See: [twitter.com/AmbiguousBlair/status/630815843278958592](https://twitter.com/AmbiguousBlair/status/630815843278958592) ) It is important explore this issue as false and misleading statements are clouding the discourse.

Riot control agents are banned in warfare, but they are not banned for police use inside countries. The Chemical Weapons Convention (full text at: <https://www.opcw.org/chemical-weapons-convention/download-the-cwc/> ) specifically defines chemical weapons and riot control agents as different things in Article II.

Prohibitions: States party to the CWC agree not to use riot control agents as a method of warfare. This prohibition is not extended beyond this sentence.

Specific exemption: Article II paragraph 9(d) of the CWC (page 19 if you are looking at the OPCW PDF) provides a specific category of exemption. In “purposes not prohibited under this convention” it specifically states: “law enforcement including domestic riot control purposes.”

The bottom line is that states cannot use riot control agents as weapons when they go to war, but they are allowed for police and law enforcement uses.

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**About the author:** Dan Kaszeta is the author of “CBRN and Hazmat Incidents at Major Public Events: Planning and Response” (Wiley, 2012) as well as a number of magazine articles and conference papers. He has 24 years of experience in chemical, biological, radiological, and nuclear (CBRN) defense, having served as an officer in the US Army Chemical Corps, as CBRN advisor for the White House Military Office, and as a specialist in the US Secret Service. He now runs Strongpoint Security, a London-based CBRN and antiterrorism consultancy.