

Hello,

I am not an Oregonian. As a neighbor in California, I'd like to present some additional facts about CS or more commonly known as tear gas to provide additional scientific background.

Name: chemical compound

CS: 2-chlorobenzylidene malononitrile (o-chlorobenzaldehyde and malononitrile)

CN: 1-chloroacetophenone

CS derivatives:

CS1: CS + 5% silica gel

CS2: CS is microencapsulated with 5% silicone

Committee on Acute Exposure Guideline Levels; Committee on Toxicology; Board on Environmental Studies and Toxicology; Division on Earth and Life Studies; National Research Council. Acute Exposure Guideline Levels for Selected Airborne Chemicals: Volume 16. Washington (DC): National Academies Press (US); 2014 Mar 21. 7, Tear Gas (CS) Available from: <https://www.ncbi.nlm.nih.gov/books/NBK224932/>, they note, "In general, the symptoms resolved rapidly; however, there were reports of effects lasting longer than that predicted. The hand-held spray canisters used by police contain CS dissolved in methyl isobutyl ketone, an industrial solvent and denaturant (Gray 2000; Euripiou et al. 2004). It has, therefore, been proposed that the ketone combined with the CS may result in longer lasting adverse effects than CS preparations without the solvent."

The handheld spray form of CS uses a solvent: methyl isobutyl ketone, which is a known carcinogen and endocrine disruptor:

<https://oehha.ca.gov/proposition-65/chemicals/methyl-isobutyl-ketone-mibk>,
<https://oehha.ca.gov/proposition-65/crn/notice-intent-list-chemicals-estrogen-progestogen-combined-used-menopausal>, <https://oehha.ca.gov/proposition-65/crn/2012-priority-list-development-proposition-65-nrsls-carcinogens-and-madls>

Many of the videos show deployment of CS and being ignited:

<https://twitter.com/MatthewACherry/status/1284189343674888193?s=20>

Igniting CS gas creates harmful byproducts which includes hydrogen cyanide, per this paper:

<https://doi.org/10.1023/A:1022868213115>

The use of micronized silicone in CS1 and CS2 could scratch corneas if not treated in a controlled hospital-like setting.

At the highest exposure levels, if someone was incapacitated and couldn't get away longer-lasting injury would result. The <https://www.ncbi.nlm.nih.gov/books/NBK224932/>, Toxicology report notes adrenal hemorrhage, and even death was observed in rodents at the most extreme exposure levels. 'Lethargy and dyspnea occurred after approximately 5-15 min. Dyspnea persisted for approximately an hour after exposure ceased, and all other signs subsided about 5 min after the rats were removed from the chamber. Histopathologic examinations revealed an increase in the number of Goblet cells in the respiratory tract and conjunctiva, necrosis in the respiratory and gastrointestinal tracts only if particles

had impacted the surface, and an occasional animal with pulmonary edema and hemorrhage in the adrenal glands. The calculated LCT50 was 32,500 mg-min/m³.¹

Additional sources:

<https://www.propublica.org/article/tear-gas-is-way-more-dangerous-than-police-let-on-especially-during-the-coronavirus-pandemic>

<https://www.scientificamerican.com/article/how-tear-gas-works-a-rundown-of-the-chemicals-used-on-crowds/>

Sincerely,

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