

ANIMALS AND GAS EXPOSURE

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<https://i.kym-cdn.com/photos/images/original/000/555/990/5df.jpg>

Background

Tear gas and other gas types (like pepper spray) affect animals in very similar ways to humans, only more severely. The same symptoms you see in humans, can be seen in animals, such as excessive tearing, sneezing, and irritation to the respiratory tract, as well as pain in the eyes, nose, mouth, and lungs.

Animal exposure to diverse types of gases is often overlooked by the literature and the news, however it is known that firefighters may be exposed to a variety of potentially harmful gases during firefighting, including hydrogen cyanide (from combustion of wool, silk, nylon, paper, and polyurethane and polyurethane foam), nitrogen dioxide (from burning of fabrics, cellulose nitrate, and celluloid), hydrogen chloride (from combustion of polyvinyl chloride and some fire-retardant materials), various halogen acid gases (from the combustion of films, fluorinated resins, and some fire-retardant materials containing bromine), sulfur dioxide (from the burning of sulfur-containing materials), and carbon monoxide (from incomplete combustion of hydrocarbon fuels and some methylene chloride found in paint strippers and aerosol products). Therefore, because of the wide variety of situations in which police uses horses and dogs, these gases should also be considered when planning for the health and safety of these animals, when involved in protests where law enforcers throw Tear Gas, and to those stray or pet animals in the vicinity.

Tear Gas, also called o-chlorobenzylidene malononitrile, is commonly referred to as CS gas. However, it can become a **Cyanide** after chemical breakout, especially if the can in which it may be contained is expired; this puts it in the high-risk toxic agents list for people and especially for more susceptible, smaller animals. The main potential route of exposure in veterinary medicine is by inhalation. Substantial skin absorption can also occur if the atmospheric concentration is high or if the skin comes into contact with cyanide solutions. High ambient temperatures and high humidity appear to increase skin absorption. (Significant cyanide exposures result in death within a few minutes because of the arrest of mitochondrial oxidative phosphorylation, histotoxic hypoxia, and severe metabolic acidosis, which results in rapid onset CNS, cardiovascular, and respiratory effects. CNS signs and symptoms in people could include excitement, dizziness, nausea, vomiting, headache, and weakness, which progresses to drowsiness, tetanic spasm, lockjaw, convulsions, hallucinations, loss of consciousness, and terminal coma.)

Pepper spray, is a lachrymatory agent, meaning that it stimulates the eyes to produce tears.

An oil known as oleoresin capsicum is the main component in pepper spray. Capsaicin is an inflammatory agent in the oil. This is the same chemical that adds the characteristic heat to chilli peppers. However, capsaicin is present in pepper spray at a much higher concentration.

Animals such as horses or large dogs tend to recover faster to Tear Gas in its intended state and if the time of exposure is short, but it is lethal in seconds for birds, and if exposed for more than half-hour in cats and dogs, it can kill them immediately or in the following 2 to 3 days or even after a month.

With the exception of more severe cutaneous reactions, recovery from exposure is generally quick upon exposure to fresh air, usually within 30 min after exposure. Clinical signs in the acute and repeated-dosed animal studies suggest that CS is highly irritating. The majority of the acute inhalation exposure data in animals focused primarily on lethality and death generally caused by pulmonary oedema and congestion. Renal damage was also occasionally noted but may have been secondary to anoxia.

General signs in affected animals are:

- Burning in the throat
- Wheezing
- Dry cough
- Shortness of breath

- Gagging
- Gasping
- Inability to breathe or speak/vocalise

In rare cases, it can cause cyanosis, a bluish discolouration of the skin that indicates a lack of blood flow and oxygen. Apnea and respiratory arrest may also occur.

Recommendations for Owners

PEPPER SPRAY

Owners whose animals (and themselves!) may come into contact with pepper spray should take the following steps to alleviate the burning symptoms:

- Carry wipes and rinse solutions to help clean eyes, nose, mouth and skin fast
- Since the spray is oil-based, people who have it on their skin are advised not to touch the affected area. Touching the solution can quickly spread it to other areas of the body.
- If pepper spray enters the eyes, rapid blinking might help to flush it out.
- Wash thoroughly with hand soap, shampoo, or dish soap as it can break up the oil. After that, the area should be rinsed with water. Baby shampoos can be useful for washing spray in the eye area.
- People who get sprayed may instinctively want to douse themselves in water, and this can provide instant but short-lived relief. Oil does not mix with water on a molecular level, so washing the skin with water alone will not remove the solution.

TEAR GAS

- Flushing the eyes. Dogs will try to run and be over excited as soon they feel the irritant, so take them out of the area, hold their head and allow fresh water to stream from the inside corner of the eye to the outside. Repeat on the other side.
- Many chemicals found in tear gas can seep into your clothes and through the fur and to the skin of the animals and their belly causing ongoing symptoms, so it is imperative to remove contaminated clothing as soon as possible and give a bath to the animal fast!

- Be sure to avoid hot water, as it can open the pores and make the stinging sensation worse.
- Wipe off the skin: Use a towel saturated in canola oil to wipe down your and the animals' skin, then immediately wipe down with another rag soaked in rubbing alcohol. Be careful to avoid wiping the eyes.

Veterinary Treatment

The treatment of **acute cases** is aiming at **basic life support**, including:

- 100% oxygen assisted ventilation if the patient is unconscious or the airway seems compromised
- Decontamination, correction of acidosis and blood pressure support combined with the use of an antidote.
- Use of antidotes. Currently, there are four types of remedies. (These include OHCob, sodium thiosulfate, dicobalt edetate and methaemoglobin forming antidotes). Initial evaluation of antidotal efficacy based on correction of hypotension and lactic acidosis and the outcome rests on the degree of permanent central nervous system injury.

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