

What is pepper spray, and is it dangerous?

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Pepper spray is commonly used by law enforcement and corrections agencies across the United States. It is an aerosol spray that assists in subduing and arresting people whose behavior is violent or uncooperative.

Individuals may also use it to defend themselves against attacks by other people or animals.

Its use is sometimes controversial and has led to a number of deaths in custody after a policeman has applied the spray to apprehend suspects.

However, a 2003 study of North Carolina jurisdictions from the National Institute of Justice showed that the number of police officers injured on duty decreased after the introduction of pepper spray.

This article examines what is in pepper spray, whether it is dangerous, and how to treat exposure to pepper spray.

What is it?

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.

The heat of a bell pepper measures 0 on the Scoville Heat Units scale, which is used to measure the "heat" of peppers. A jalapeño pepper scores 2,500 to 5,000 on the same scale.

The heat of pepper spray, however, ranges from 2 million units in commercial pepper sprays, marketed for use in self-defense, to 5.3 million Scoville units for police-issue spray.

This same ingredient also forms the basis of bear spray, which reduces attacks during human encounters with bears.

However, the concentration of capsaicin in bear spray is only 1 to 2 percent. Pepper sprays used in law enforcement reportedly have a capsaicin content of between 10 and 30 percent.

As a result, its deployment has often been controversial, particularly when civilian protestors experience pepper spray use, such as during the Occupy Wall Street protests of 2011.

Authorities classify pepper spray as a riot-control agent. Article I.5 of the Chemical Weapons Convention bans its use in war.



Pepper spray uses a high concentration of the chemical that adds spicy flavor to peppers to irritate the eyes.

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Physical effects

When a person comes into contact with pepper spray, their eyes will close immediately.

They will experience a "bubbling" or "boiling" sensation, followed by temporary blindness and eye pain. The effects last from 30 to 45 minutes, depending on how strong the spray solution is.

Pepper spray can also cause:

- burning in the throat
- wheezing

- dry cough
- shortness of breath
- gagging
- gasping
- the inability to breathe or speak

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

A 1999 study from the North Carolina Medical Journal found that people who breathe in pepper spray could experience acute hypertension, or a sudden increase in blood pressure. This increases the risk of stroke or heart attack.

Treatment

Emergency medical technicians carry wipes and solutions that treat the symptoms of pepper spray.

People who come into contact with pepper spray should take the following steps to alleviate the burning symptoms:

- 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 easily spread it to other areas of the body.
- If pepper spray enters the eyes, blinking rapidly might help to flush it out.
- Washing with hand soap, shampoo, or dish soap can break up the oil. After that, the area should be rinsed with water. Baby shampoos can be useful for washing spray from the eye area.
- People who have been sprayed may instinctively want to douse themselves in water. 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.

Uses

Since the 1980s, the police have often used pepper spray to subdue violent or uncooperative behavior.

When pepper spray hits the face, it temporarily blinds the subject. This makes it easier for police officers to remove suspects from the scene and arrest them.

During the Occupy protests in 2011, the media began to scrutinize the use of pepper spray by police. Videos emerged showing police officers repeatedly spraying peaceful protestors for prolonged periods, although guidelines state that the spray should be used for no more than one second on any person.



The deployment of pepper spray by law enforcement officers can be controversial for other reasons.

A 2016 study by Harvard University researchers, for instance, found that, in the U.S., police are 25 percent more likely to pepper-spray African-American people than white people.

Complications

Pepper spray is known as a "nonlethal weapon," or a weapon that cannot kill people.

However, deaths have occurred following the use of pepper spray. People with asthma have a higher chance of complications.

In 2003, a Department of Justice report found that pepper spray directly contributed to the deaths of 2 people out of 63 cases, where suspects held in custody died after pepper spray was used in their arrest.

The report attributed the cause of two deaths to pepper spray, citing pre-existing asthma as a contributing factor.

The other causes of death were found to be drug use, disease, positional asphyxia, or a combination.

However, the same report concluded the following:

"Pepper spray inhalation alone does not pose a significant risk for respiratory compromise or asphyxiation, even when combined with positional restraint."

The commercially available pepper sprays can also serve as an effective deterrent during street attacks and assaults.

Takeaway

Pepper spray is an effective deterrent that can be dangerous when used in excess.

Its main ingredient is capsaicin, an inflammatory agent that gives pepper its spicy flavor. Pepper spray is available commercially for self-defense, but the police-issue sprays are far more powerful. They are designed to respond to riots.

People have died from pepper-spray-related complications, and its use remains controversial. However, studies have shown that inhaling the spray directly does not cause respiratory damage or strangling effect.

Q:

What should I do immediately after a person pepper sprays me in the face?

A:

The first thing you should do is get to a well-ventilated area with fresh air. Loosen any clothing around your neck, chest, or waist that might restrict breathing.

If you are wearing contact lenses, remove them. Wash your face and hair with running water and non-abrasive soap for at least 15 minutes, but do not rub your eyes, as this can increase exposure to the pepper spray.

You may feel stinging and burning for up to an hour, so be patient. However, if the pain is unbearable and lasts longer than an hour, you swallowed some of the pepper spray, or you are having trouble breathing, seek medical attention.

Wash all clothing you were wearing when coming into contact with pepper spray.

– Lindsay Slowiczek, PharmD

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Additional information

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