Lethal In Disguise: The Health Hazards Of Pepper Spray

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Pharma & Healthcare

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Pepper spray is back in style.

Josh Helmuth
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Video of spray via Chris Otter

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Remember the UC Davis cop, spraying students having a sit-in as though they were cockroaches? (And then he looked for support for his psychological scars from being so sadistic, and received $36,000 in worker's comp, more than the kids he injured!)

Occupy UC Davis news coverage - By RTAmerica (Internet Archive, YouTube) [CC BY 3.0] via Wikimedia

in Birmingham public schools, chemical sprays were used in 110 incidents

Then there was widespread use of pepper spray in Ferguson last year and in Occupy Wall Street protests. This weekend, crowds in Kansas City were sprayed by policemen on horseback—a sight we will likely see more regularly as protests heat, following Donald Trump's incitements to more violence.

What do we know about pepper spray?

Surprisingly little research is available. I reviewed the literature in 2011, and wrote "*Should pepper spray be put on (clinical) trial?*" Now, five years later, I've

found no further research studies. New information is from news reports about injuries, which have increased as the chemical is used more indiscriminately.

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Pepper spray is made from capsaicin, or Oleoresin Capsicum (OC), and is what makes peppers fiery. As Deborah Blum explained, and you can see in this chart, "commercial grade pepper spray leaves even the most painful of natural peppers (the Himalayan ghost pepper) far behind. It's listed at between 2 million and 5.3 million Scoville units." The pepper spray used by law enforcement is off the chart.

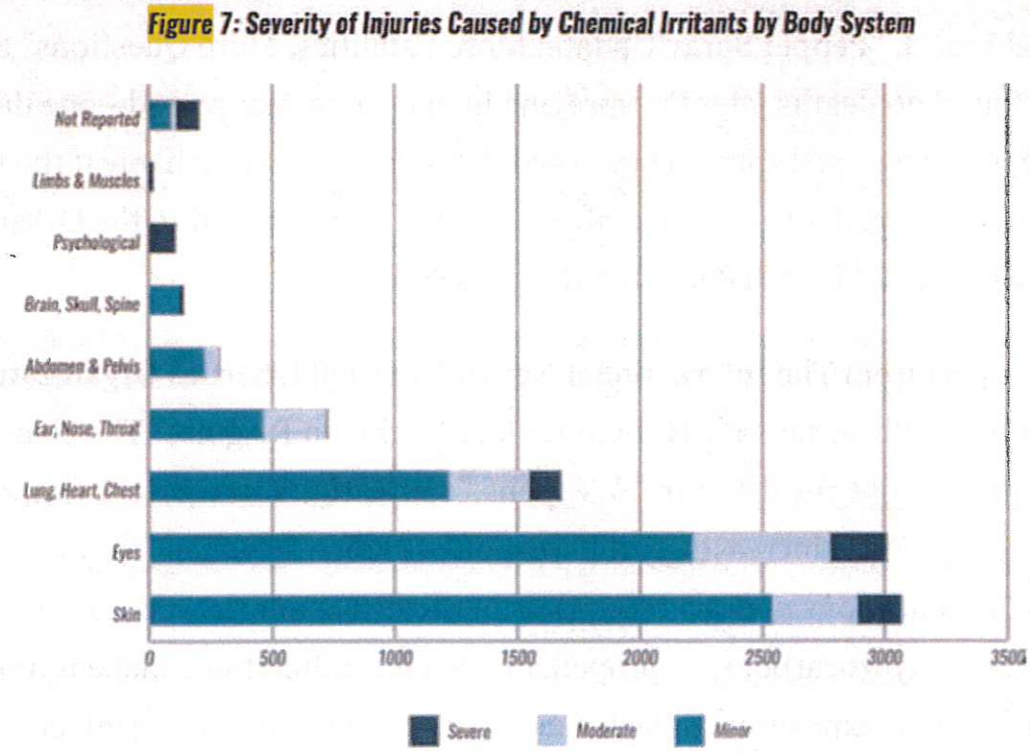
'Hotness' Scores of Common Chili Peppers | Graphiq

Some of the best information on the harms of OC comes from the ACLU. In their original report, "Pepper Spray Update: More Fatalities, More Questions" the ACLU found 26 deaths after OC spraying in just a two year period—one death per 600 times police used spray. They noted that death was more likely if the victim was also restrained. (The cause of death was not firmly linked to the OC and some of the victims had been using other drugs as well).

A new report from The International Network of Civil Liberties Organizations (INCLO) and Physicians for Human Rights, "Lethal in Disguise: The Health Consequences of Crowd-Control Weapons," found that more potent formulations of pepper spray are increasingly the weapon of choice by police. They also report that OC preparations may also include other toxic chemicals, such as alcohol, halogenated hydrocarbons, or propellants. Such combinations make it more difficult to treat exposures. In fact, a 2004 paper from Duke and University of North Carolina cautioned about the other chemicals often used with OC, noting, "Inhalation of high doses of some of these chemicals can produce adverse cardiac, respiratory and neurologic effects, including arrhythmias and sudden death."

The combinations may also result in delayed reactions, according to the British National Poisons Information Service.

This new literature review was much more restrictive in what studies were examined. As co-author Dr. Rohini Haar, an emergency medicine physician and research fellow at University of California Berkeley explained, this review excluded case reports and studies where "pepper spray was involved but not necessarily the cause of death." Thus, "we significantly underestimate the numbers of deaths" due to pepper spray. Yet even with such strict and limiting criteria, this systematic review of a variety of weapons for crowd control "identified **5,131 people who suffered injuries; two of these people died and 70 suffered permanent disabilities**. Out of 9,261 documented chemical weapons injuries, 8.7% were severe and required professional medical management, 17% were substantial ."



Severity of injuries from chemical irritants - courtesy ACLU

In earlier studies, Oleoresin capsicum (OC) was used in very controlled settings—for example, a one-second spray from a distance of five feet and, not surprisingly, showed no lasting ill effect in 35 volunteers.

But in 1996, OSHA "concluded that exposure to OC spray during training constituted an unacceptable health risk," with some police officers having injuries that lasted more than a week. Acute symptoms included asthma, chest pain and loss of consciousness, as well as the expected eye pain. In another report of deaths from the Department of Justice, use of pepper spray was felt to be a contributing factor. This is particularly true in people with asthma, where the DOJ found asthma to be a contributing factor in two of 63 clearly documented deaths.

Clearly, studies of short, controlled exposures of healthy people to OC, even when restrained, cannot be extrapolated to the real world, where people with asthma, obesity and many other underlying diseases are given much larger and intense exposures. Nor is a short exposure from five feet away likely to cause the same harm as the deliberate, close range intense exposures we have seen the police inflict on peaceful protesters.

As I noted previously, "police need to have protocols in place to identify and treat 'sprayees' who have these pre-existing conditions that predispose them to serious harm from the spray. This particularly holds true for people also at risk for respiratory compromise from being restrained, on other drugs or with obesity." This is even truer today, given the horrific deaths of Eric Garner and others who were restrained, despite their pleas: "I can't breathe."

Since there are no clinical trials of chemical weapons used in crowd control, at a minimum there should be medical monitoring of victims of chemical exposures for at least 24 hours by someone competent, and public health departments and CDC should keep objective data and a registry of outcomes. This should not be buried, as is research into gun violence. Just as with new drugs in development, studies should actively look for adverse reactions to these weapons—be they chemical, Tasers, or sound blasts.

The indiscriminate use of pepper spray and other hazardous crowd control techniques by increasingly militaristic law enforcement is out of hand. Loosely defined "interfering with police" or leaving a designated media zone should not be grounds for a chemical weapons attack. It's time the police took responsibility for

showing restraint, respect for the protections of free speech and assembly, and did due diligence both with training officers and especially in providing care for those injured.

Suggested reading:

Lethal in Disguise: The Health Consequences of Crowd-Control Weapons

Pepper Spray Update: More Fatalities, More Questions

Health Hazards of Pepper Spray

I am an Infectious Disease specialist, experienced in conducting clinical research and the author of Conducting Clinical Research, the essential guide to the topic. I survived 25 years in solo practice in rural Cumberland, Maryland, and now work part time as an Infectious Di... **MORE**

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