

Research suggests protocol change for tear gas deployment

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A new study by five doctoral students in neuroscience at the University of Minnesota Medical School calls attention to a lack of regulation and unknown long-term health effects of tear gas. Based on their research,



the group recommends changing the protocols around the use of tear gas as a crowd control measure at both the local and national level.

"Following the murder of George Floyd and the protests in our city, we felt compelled to dig into the police force used during those protests. We are trained to look at data and draw conclusions," said Jennifer Brown, a graduate student in the U of M Medical School's Graduate Program in Neuroscience and lead author of the study. "Investigating the use of tear gas on crowds was something we felt we could contribute to this social justice movement."

After a search through peer-reviewed <u>scientific articles</u>, news sources and legislative documents, the team published their findings in the *Journal of Science Policy & Governance*, which included that:

- there are few studies examining the long-term impact of tear gas on human health and the environment;
- the information that was available indicated that exposure to these chemicals can have long-term physiological and mental health effects and may even result in death following prolonged exposure;
- and, there is an absence of robust policies to govern their use in domestic policing in the United States and a lack of regulatory oversight.

"Tear gases are understudied in both the environmental and human health fields, despite their widespread use," explained Brown. "Changes to regulations on manufacturing and deployment of chemical demonstration control agents are needed to protect human health and civil liberties."

Tear gas, also known as chemical demonstration control agents (DCAs), refers to a number of compounds that can cause irritation and



inflammation to the eyes, nose, skin, throat and lungs. Though they have been banned from use in war by the 1925 Geneva Protocol, they are still commonly used by domestic law enforcement agencies for crowd control. Yet, there have been numerous calls for more research regarding the toxicity of these chemical agents, especially to vulnerable groups such as pregnant women, children and people with underlying health conditions, such as asthma. Discussions surrounding the use of tear gas were especially prominent these past two years, given that these protests coincided with the ongoing COVID-19 pandemic.

"Most tear gases attack the <u>upper respiratory tract</u>, so using them during a respiratory pandemic could increase the spread of disease, making them more dangerous," said Roman Tyshynsky, another U of M Medical School <u>graduate student</u> and co-author of this study.

DCAs can also have a negative impact on the environment. Previous studies suggest that these compounds are toxic to plant and animal life and may persist in soil and water long after initial use. Yet, similar to studies of its <u>human health</u> effects, its impacts on the environment are vastly understudied. "In some situations, potentially <u>toxic substances</u> were left to be washed away into storm drains and into rivers, with little understanding of the full dangers to the environment," said Tyshynsky.

As part of their study, Brown and colleagues propose a range of policy recommendations that either limit the use of tear gas by ensuring their deployment follows stringent protocols or ban their use entirely. In particular, they stress that chemical weapons, such as tear gas, should always be prohibited during pandemics. An op-ed in the *Scientific American* shares the personal motivations that led to their study as well as these recommendations.

"None of us were prepared for the scale of the research and regulatory gaps. Now that we are more aware, we are excited to spread that



awareness and to fight to change long-ingrained policies," Brown said.

More information: Jennifer L. Brown et al, Tear gas safety and usage practices, *Journal of Science Policy & Governance* (2021). DOI: 10.38126/JSPG180104

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