

Dear Chair Power and the House Interim Committee on Energy and Environment,

My name is Dr. Juniper (they/them/theirs) Simonis, I have a PhD in Ecology & Environmental Biology from Cornell University (2013), and am a conservation biologist who owns DAPPER, LLC [<https://www.dapperstats.com>], a Portland-based ecological consulting company. I am also the founder of the Chemical Weapons Research Consortium [<https://www.chemicalweaponsresearch.com>], an interdisciplinary collection of research groups working to study the impacts of chemical weapons on human and environmental health. As a professional researcher, I have published over 20 peer-reviewed scientific manuscripts and over 30 technical research reports. Of particular note is my experience and training in ecological toxicology, aquatic ecology, and bio-geo-chemistry (chemical cycling through the environment).

I am writing today to provide scientific information regarding the known impacts of chemical weapons on humans and the environment as well as concerns regarding use of Hexachloroethane (HC) by federal agents.

Despite claims to the contrary (Fig. 1), there is an extensive body of research from the past half-century documenting specifically the impacts of tear gasses and munitions smokes. For the most comprehensive information on chemicals, individuals examine PubChem [<https://pubchem.ncbi.nlm.nih.gov>], “the world's largest collection of freely accessible chemical information”, which is made available by the US National Institutes of Health. Pages are available for nearly every chemical sold or used in the country and include pertinent summaries (human health, ecological impacts, transportation regulations, storage requirements, etc.) as well as full sourcing of information to primary literature.

Any statement of no research being available on a chemical should be evaluated using PubChem.


For specific reference here, I have included the pages for the chemical compounds of primary present concern including safety classifiers of note in Fig. 2. **There is sufficient research on CS, OC, HC, and all incendiary munitions for the federal government to classify them as unsafe** for use on or around humans, sensitive ecosystems (like the Willamette River), and critical infrastructure (like street car tracks). Not only are they proven toxins, they are highly corrosive and oxidizing agents that aggressively eat metal.

As part of my research at DAPPER [https://www.dapperstats.com/project/chemical_weapons/], I am studying the impacts of these chemical weapons on the Willamette River ecosystem, as these munitions are used in the catch basins of and directly into stormwater pipes that drain into the river within ~3000 ft with no treatment. I have documented clearly that physical unspent munitions (as well as partially spent munitions, and other fragments) have been transferred through the stormwater system and into the river (Figs. 3, 4). This occurs at both the Hawthorne Bridge outfall from the (In)Justice Center compound (Fig. 3) and the Lowell St. outfall from around the building that ICE rents on SW Macadam Street (Fig. 4).

During my research and thanks to civilians on the ground, we have discovered that the federal government has deployed *at least* 19 hexachloroethane (HC) “smoke” grenades (Fig. 5), which produce Zinc Chloride gas, a highly toxic compound that has led to the population experiencing “metal fume fever” *en masse* (Fig. 5). The high levels of Zinc found in the BES report at SW 3rd and Salmon align with our data (forthcoming) showing that as a specific location of deployment. Use of HC effectively stopped the rising interest in protests (Fig. 5).

Please reach out to me at simonis@dapperstats.com if you have any questions or would like to discuss.

Take care,



Dr. Juniper L. Simonis
they/ them/ theirs

Figure 1. Examples of agency individuals stating there is not adequate research on the topic of chemical weapons, despite the presence of such research.

When asked about what all these chemicals are doing to the environment, state and city agencies say there's nowhere to look to for answers, because no other U.S. city has ever been subjected to such a sustained barrage of tear gas.

The Oregon Department of Environmental Quality and the Portland Bureau of Environmental Services are working together to gather more information and research about what the potential environmental impacts of chronic tear gas deployment may be.

Environmental compliance manager Matt Criblez from the Portland agency said they are doing literature research right now and will be collecting samples from storm drains in the next couple of days.

"We're really working with a stew of pollutants and we don't know what that means yet," Criblez said.

<https://www.opb.org/article/2020/07/31/tear-gas-environmental-impact-portland/>

"We're not sure if ... rain will wash any of the tear gas into the river," said Environmental Services spokeswoman Diane Dulken. "We

<https://pamplinmedia.com/pt/476051-384722-portland-cleans-tear-gas-residue-out-of-downtown-drains->

Figure 2. Chemical constituents of concerns, their sources, links to their pages on PubChem, their Globally Harmonized System (GHS) classifications, and noteworthy quotes from their PubChem pages:

- Capsaicin
 - Focal ingredient in “OC” Oleoresin Capsicum
 - <https://pubchem.ncbi.nlm.nih.gov/compound/Capsaicin>
 - EPA listed pesticide:
 - https://archive.epa.gov/oppsrrd1/registration_review/web/html/index-55.html
 - Acute toxin
 - Irritant
 - Corrosive
 - “Capsaicin is shown to be mutagenic”
 - “Symptoms of **systemic toxicity** include disorientation, fear, loss of body motor control including diminished hand-eye coordination, hyperventilation, tachycardia, and pulmonary oedema.” (emphasis added)
- PAVA/Nonivamide
 - Synthetic capsaicin-analog, found in small percentages in traditional OC
 - <https://pubchem.ncbi.nlm.nih.gov/compound/Nonivamide>
 - Irritant
 - Health hazard
 - Corrosive
 - “practically insoluble (in water)”
- CS (2-Chlorobenzylidenemalononitrile)
 - <https://pubchem.ncbi.nlm.nih.gov/compound/2-Chlorobenzylidenemalononitrile>
 - Acute toxin
 - Irritant
 - Health hazard
 - Environmental hazard
- Malononitrile
 - Component of CS molecule, released during thermal (incendiary) expulsion of CS
 - <https://pubchem.ncbi.nlm.nih.gov/compound/MALONONITRILE>
 - Acute toxic
 - Environmental hazard
 - “metabolized by body to cyanide”
 - “effects of inhalation of toxic fumes will be related to cyanide”
- Hexachloroethane
 - Prime component of dense munitions smoke (Fig. 5)
 - <https://pubchem.ncbi.nlm.nih.gov/compound/Hexachloroethane>
 - EPA Listed Hazardous Waste Constituent
 - https://www.law.cornell.edu/cfr/text/40/appendix-VIII_to_part_261
 - Irritant
 - Health hazard
 - Environmental hazard
- Zinc Chloride **Gas**
 - Dominant constituent of HC smoke
 - Truly in gaseous form, thus able to penetrate particle filters

- <https://pubchem.ncbi.nlm.nih.gov/compound/Zinc-chloride>
- Irritant
- Corrosive
- Environmental hazard
- “Gives off irritating or toxic fumes (or gases) in a fire.”
- Produces “metal fume fever” [https://en.wikipedia.org/wiki/Metal_fume_fever]
- Potassium Chlorate
 - Prime incendiary component in non-HC grenades
 - <https://pubchem.ncbi.nlm.nih.gov/compound/Potassium-chlorate>
 - Oxidizer
 - Irritant
 - Environmental hazard
 - “May be toxic by ingestion”
 - “Ignites organic materials upon contact”

Figure 3. Documented transfer of munitions from the (In)Justice Center compound to the Willamette River via the City of Portland's stormwater system.

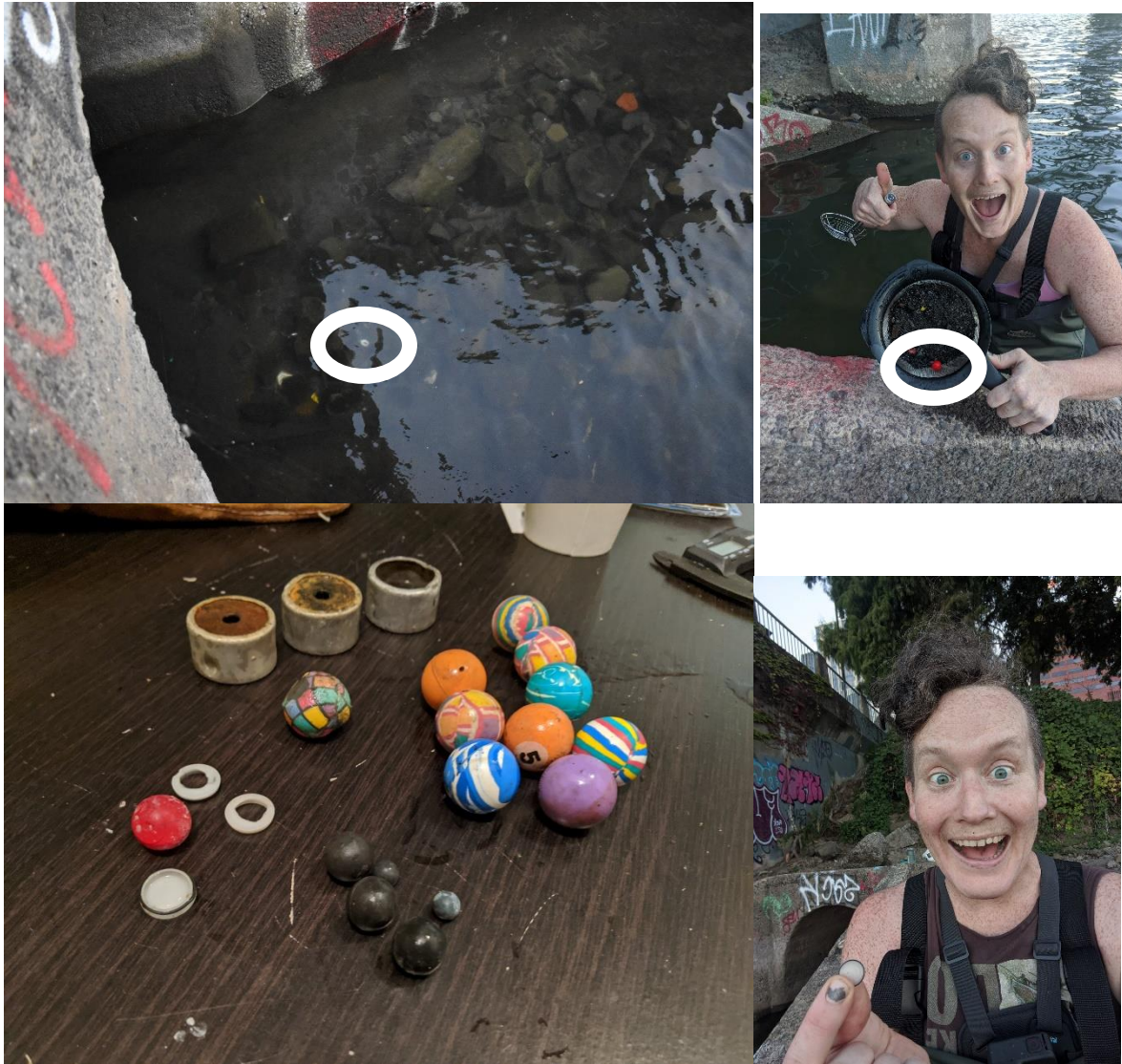
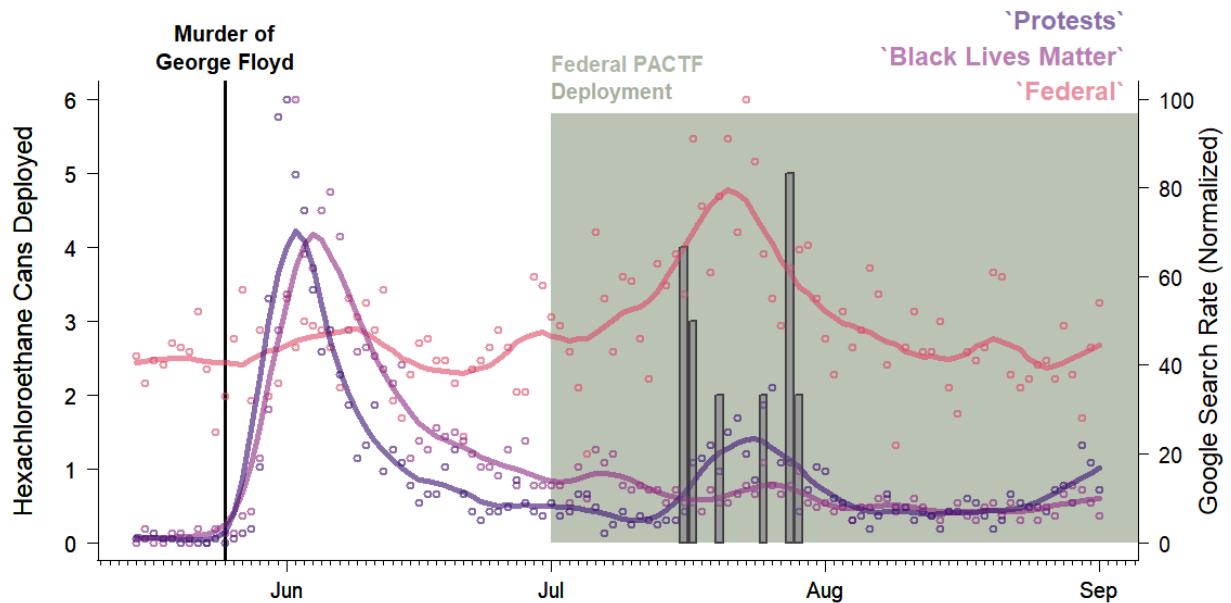
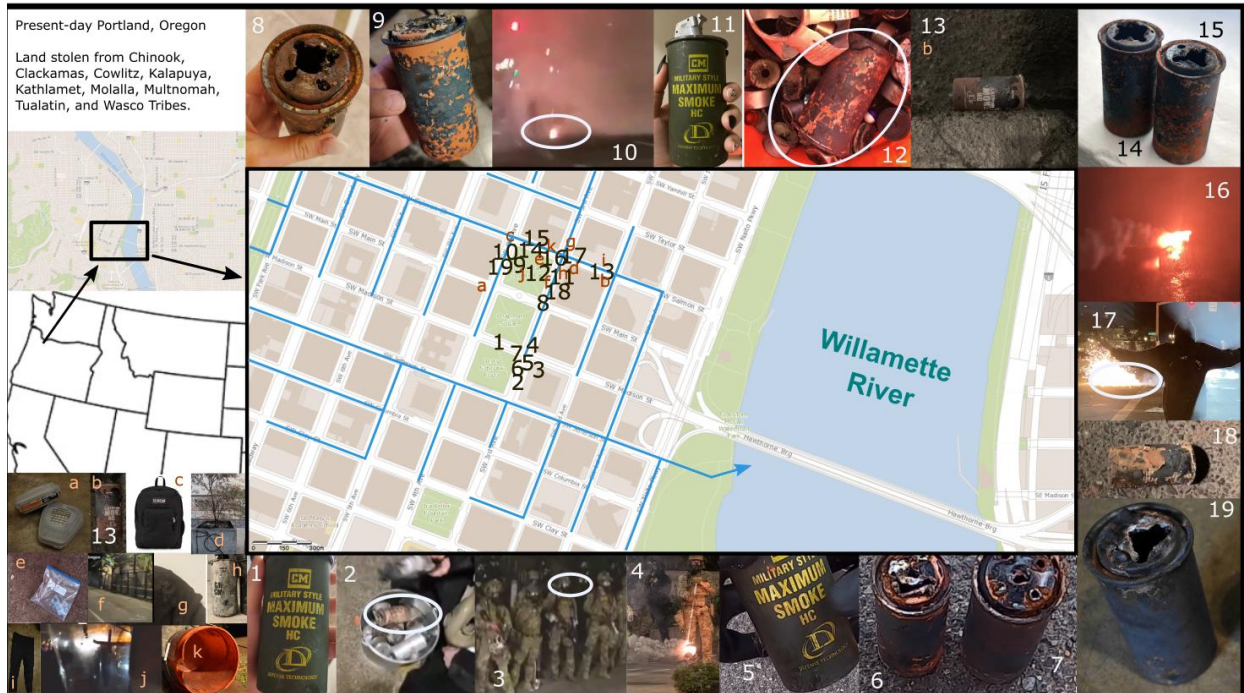


Figure 4. Documented transfer of munitions from the rental ICE property to the Willamette River via the City of Portland's stormwater system.



<https://twitter.com/JuniperLSimonis/status/1296445000134340609>

Figure 5. Top: Map of the confirmed Hexachloroethane (HC) grenades used. Middle: Timeline of HC usage compared to interest in protests, BLM, and federal agencies over time. Bottom: Mentions of mass symptoms.



Griffin - Live from Portland
@GriffinMalone5

Reports of air smelling like chlorine, lots more throwing up on the streets, lots more lingering affects this morning.

If you saw / collected / took photos of any canisters that look different, please, please send them my way or share them.

Nothing is confirmed yet.

3:19 PM - Jul 26, 2020 - Twitter for Android

1.2K Retweets 94 Quote Tweets 3K Likes

Alissa Azar
@R3volutionDaddy

It smells like spicy air mixed with chlorine wtf

2:27 AM - Jul 27, 2020 - Twitter for iPhone

7 Retweets 35 Likes

Alissa Azar @R3volutionDaddy · Jul 27
Replying to @R3volutionDaddy
Alright I'm out of downtown. Chest is very heavy and nauseous from whatever it that gas was. Stay safe everyone.

Alissa Azar @R3volutionDaddy · Jul 27
lol I work in 3 hours and my skin is burning and my chest hurts and I'm nauseous. 🤔 yay for crowd control munitions.

cave witch
@hindsights2030

Replying to @GriffinMalone5

idk what was out last night but i will say after many many days out there, i am feeling it HARD today even with a respirator on.

3:53 PM - Jul 26, 2020 - Twitter for iPhone

23 Retweets 169 Likes