

1 Quantifying use of lethal ZnCl<sub>2</sub> on Black Lives Matter demonstrators by United States Homeland Security

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9 This PDF file includes:

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11 Table S1

12 Figures S1 to S26

13 Legend for Video S1

14 Legends for Datasets S1 to S6

15 References

16

17 Other supplementary materials for this manuscript include the following:

18

19 Video S1

20 Datasets S1 to S6

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## TABLES

23 **Table S1.** Date, classifications, and locations for all 25 HC grenades recorded (Figs. S1-24).

id	date	observed	recovered	detonated	location
1	2020-07-16	0	1	0	madison closer to 3rd than 4th
2	2020-07-16	0	1	1	3rd btwn madison and jefferson
3	2020-07-16	1	0	0	wyatt
4	2020-07-16	1	0	1	wyatt and down 3rd towards main
5	2020-07-17	1	1	0	3rd btwn madison and jefferson
6	2020-07-17	1	1	1	3rd btwn madison and jefferson
7	2020-07-17	1	1	1	3rd btwn madison and jefferson
8	2020-07-19	0	1	0	near side of the parks
9	2020-07-19	0	1	1	Unknown
10	2020-07-20	0	1	1	main and 3rd
11	2020-07-20	0	1	1	lownsdale
12	2020-07-21	0	1	1	salmon and 3rd
13	2020-07-23	1	0	1	4th near salmon
14	2020-07-25	0	1	0	around courthouse (fence was torn down)
15	2020-07-25	0	1	1	around courthouse (fence was torn down)
16	2020-07-28	1	1	1	2nd and salmon
17	2020-07-28	1	1	1	salmon between 3rd and 4th
18	2020-07-28	1	1	1	salmon between 3rd and 4th
19	2020-07-28	1	1	1	salmon and 3rd
20	2020-07-28	1	0	1	salmon and 3rd
21	2020-07-29	1	1	1	3rd between salmon and main
22	2020-07-29	0	1	1	4th and main
23	2020-07-29	0	1	1	unknown
24	2020-07-29	0	1	1	unknown
25	2020-07-29	1	0	1	main between 4th and 5th

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## FIGURES

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28 **Fig. S1.** Deployed hexachloroethane grenade 1: 16 July 2020, SW Madison closer to 3rd than 4th, not  
29 detonated, deployment not observed, recovered<sup>1</sup>.

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32 **Fig. S2.** Deployed hexachloroethane grenade 2: 16 July 2020, SW 3rd between Madison and Jefferson,  
33 detonated, not observed deployed, recovered<sup>2,3</sup>.



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35 **Fig. S3.** Deployed hexachloroethane grenade 3: 16 July 2020, Wyatt Federal Building, not detonated,  
36 observed deployed, not recovered<sup>4</sup>.

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39 **Fig. S4.** Deployed hexachloroethane grenade 4: 16 July 2020, Wyatt Federal Building and down SW 3rd  
40 towards Main, detonated, observed deployed, not recovered<sup>5,6</sup>.



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42 **Fig. S5.** Deployed hexachloroethane grenade 5: 17 July 2020, SW 3rd between Madison and Jefferson, not  
43 detonated, observed deployed, recovered. Photos by the author.

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46 **Fig. S6.** Deployed hexachloroethane grenade 6: 17 July 2020, SW 3rd between Madison and Jefferson,  
47 detonated, observed deployed, recovered. Photos by the author.



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49 **Fig. S7.** Deployed hexachloroethane grenade 7: 17 July 2020, SW 3rd between Madison and Jefferson,  
50 detonated, observed deployed, recovered. Photos by the author.

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53 **Fig. S8.** Deployed hexachloroethane grenade 8: 19 July 2020, SW 3rd between Salmon and Main, not  
54 detonated, not observed deployed, recovered<sup>7</sup>.



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56 **Fig. S9.** Deployed hexachloroethane grenade 9: 19 July 2020, unknown location, detonated, not observed  
57 deployed, recovered. Note the coloration and dimensions of the can (e.g., the rim shape and size) are distinct  
58 from the standard HC Military Style Maximum smoke whether unexploded (Fig. S1) or exploded (Fig. S7),  
59 suggesting perhaps a different run of product or a partial detonation<sup>8</sup>.

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62 **Fig. S10.** Deployed hexachloroethane grenade 10: 20 July 2020, SW Main and 3rd, detonated, not observed  
63 deployed, recovered. Photos by @JesykaNoellex3, used with permission.



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66 **Fig. S11.** Deployed hexachloroethane grenade 11: 20 July 2020, Lownsdale Square, detonated, not observed  
67 deployed, recovered<sup>9</sup>.

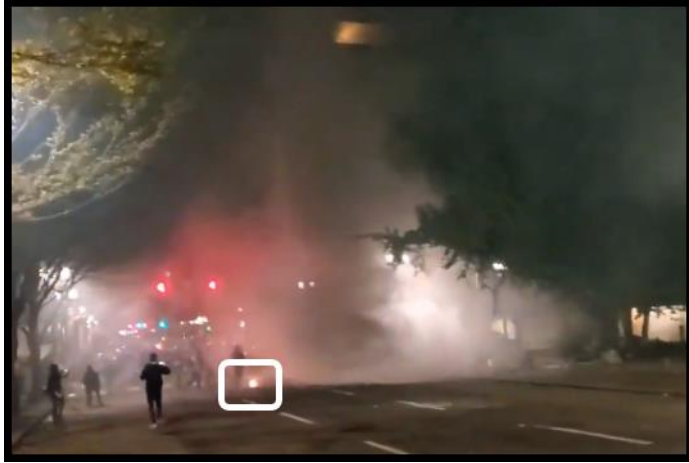
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70 **Fig. S12.** Deployed hexachloroethane grenade 12: 20 July 2020, Lownsdale Square, detonated, not observed  
71 deployed, recovered<sup>10</sup>.





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73 **Fig. S13.** Deployed hexachloroethane grenade 13: 23 July 2020, SW 4th near Salmon, detonated, observed  
74 deployed, not recovered<sup>11</sup>.

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77 **Fig. S14.** Deployed hexachloroethane grenade 14: 25 July 2020, Hatfield Courthouse, not detonated, not  
78 observed deployed, recovered. Photos by anonymous recoverer. Used with permission.



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80 **Fig. S15.** Deployed hexachloroethane grenade 15: 25 July 2020, Hatfield Courthouse, detonated, not  
81 observed deployed, recovered<sup>12</sup>.

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84 **Fig. S16.** Deployed hexachloroethane grenade 16: 28 July 2020, SW 2nd and Salmon, detonated, not  
85 observed deployed, recovered<sup>13</sup>.



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87 **Fig. S17.** Deployed hexachloroethane grenades 17 and 18: 28 July 2020, SW Salmon near 3rd, detonated,

88 observed deployed, recovered<sup>14-16</sup>.



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90 **Fig. S18.** Deployed hexachloroethane grenade 19: 28 July 2020, SW 3rd and Salmon, detonated, observed

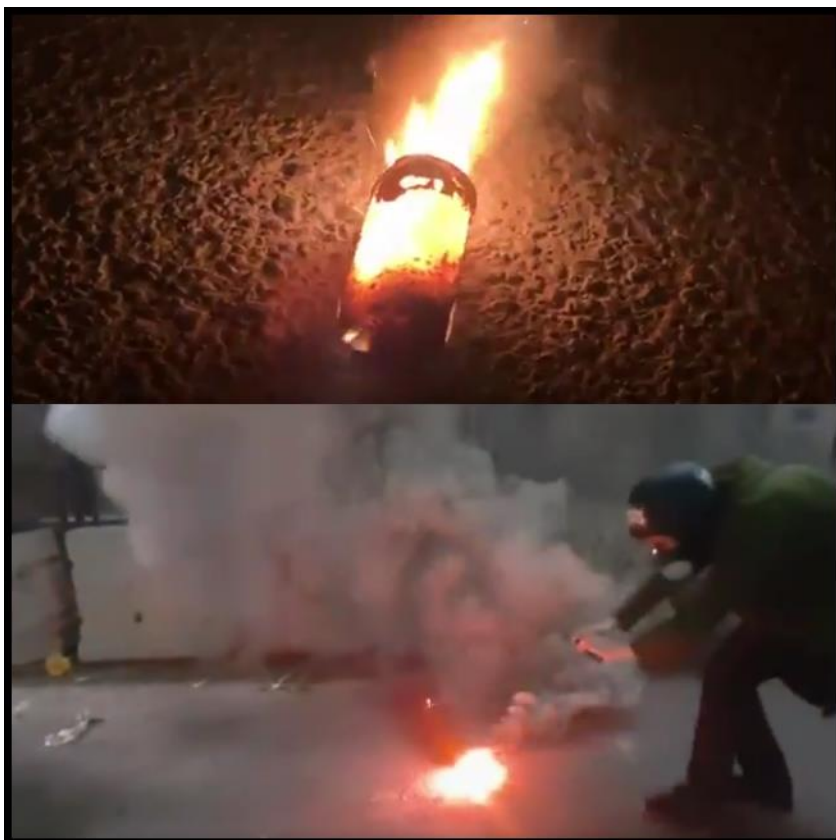
91 deployed, recovered<sup>17,18</sup>.



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93 **Fig. S19.** Deployed hexachloroethane grenade 20: 28 July 2020, SW 3rd and Salmon, detonated, observed  
94 deployed, not recovered<sup>19</sup>.

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97 **Fig. S20.** Deployed hexachloroethane grenade 21: 29 July 2020, SW 3rd near Salmon and Main, detonated,  
98 observed deployed, recovered<sup>20,21</sup>.



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100 **Fig. S21.** Deployed hexachloroethane grenade 22: 29 July 2020, SW 4th and Main, detonated, not observed  
101 deployed, recovered. Photos by the author.

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104 **Fig. S22.** Deployed hexachloroethane grenade 23: 29 July 2020, specific location unknown, detonated, not  
105 observed deployed, recovered. Photos by Nicholas Lee, used with permission.



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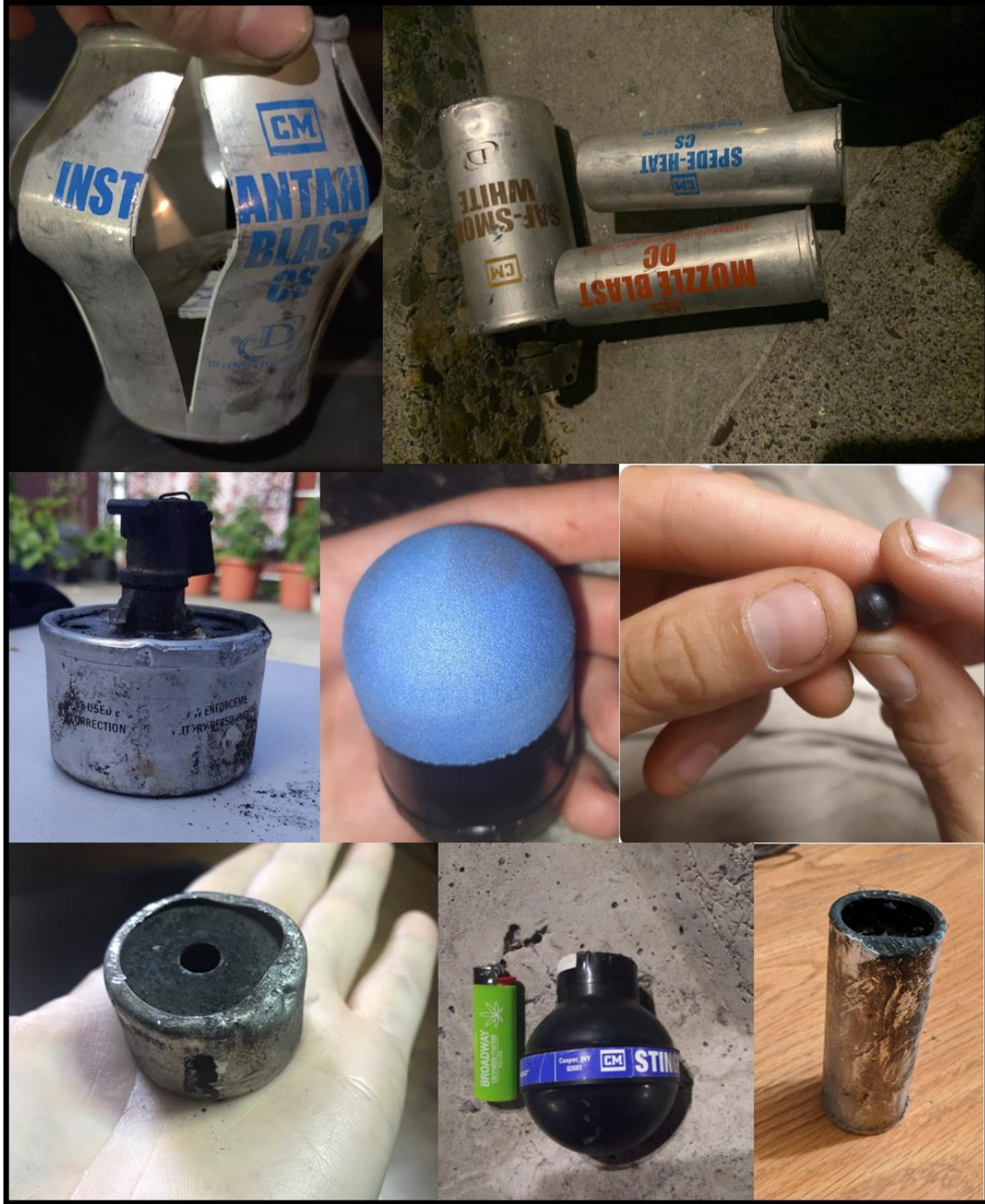
107 **Fig. S23.** Deployed hexachloroethane grenade 24: 29 July 2020, specific location unknown, detonated, not  
108 observed deployed, recovered. Photo by anonymous collector. Used with permission.

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111 **Fig. S24.** Deployed hexachloroethane grenade 25: 29 July 2020, SW Main near 4th, detonated, observed  
112 deployed, not recovered<sup>22</sup>.



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114 Fig. S25. Photos from a tweet thread collection of munitions prior to HC usage<sup>23</sup>.



**MAXIMUM COVERAGE HC SMOKE GRENADE  
MILITARY STYLE – CONTINUOUS DISCHARGE**

**DEFENSE TECHNOLOGY®**

PRODUCT SPECIFICATIONS	
Diameter	2.36 in / 6.0 cm
Length	5.50 in / 14.0 cm
Fuze	M201A1 Type
Active Agent	N/A
Discharge Time	1.5 - 2 minutes
Launchable	Yes
Part No.	1083
Warranty	5 years from date of manufacture

**ALL SPECIFICATIONS ARE AVERAGES AND SUBJECT TO CHANGE**

The Military Style Maximum Smoke Grenade is a slow burning, high volume, continuous discharge grenade that emits a grey-white smoke.

Hexachloroethane (HC) smoke is discharged through four (4) gas ports located on top of the canister. Due to the high metal content, HC smoke is dark in comparison to Sal-Smoke™ that is utilized in all other Defense Technology® smoke devices (except the Large-Style Maximum Smoke Grenade). It is similar to the military-style grenade and incorporates a steel canister.

Designed specifically for outdoor use in crowd management situations, the Maximum Smoke Grenade is a high volume, slow burning device that deploys large quantities of grey-white colored smoke for approximately 1.5 to 2 minutes. Due to its extremely long burn time, it is subject to throw-back by individuals wearing burn protection such as a welder's mitt. The canisters may be protected from advancing individuals with the use of less lethal impact munitions. The device should be deployed utilizing wind advantage.

It can be utilized as a carrying agent (multiplier) for smaller OC, CN or CS munitions, or for concealing the movement of agency personnel. It may also be used as a distraction to focus attention away from other activities.

It should NOT be deployed onto rooftops, in crawl spaces, or indoors due to its fire-producing capability. Hand throw or launch. Launching of grenades will provide deploying officers additional stand-off distances. Affords MAXIMUM COVERAGE AND BURN TIME and is excellent for large outdoor areas.

Due to the nature of Hexachloroethane (HC), agencies should refer to the MSDS sheet listed on the Defense Technology® Web site or call customer care.



**WARNING**

This product may expose you to chemicals including Lead Salts and Hexavalent Chromium, which are known to the State of California to cause cancer, and Lead Salts, which are known to the State of California to cause birth defects or other reproductive harm. For more information, go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**WARNING: THIS PRODUCT IS TO BE USED ONLY BY AUTHORIZED AND TRAINED LAW ENFORCEMENT, CORRECTIONS, OR MILITARY PERSONNEL. THIS PRODUCT MAY CAUSE SERIOUS INJURY OR DEATH TO YOU OR OTHERS. THIS PRODUCT MAY CAUSE SERIOUS DAMAGE TO PROPERTY. HANDLE, STORE AND USE WITH EXTREME CARE AND CAUTION. USE**



115  
 116 **Fig. S26.** Product photo and specification sheet for Defense Technology Military-Style Maximum Smoke HC  
 117 Grenade<sup>24</sup>.



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## VIDEOS

**Video S1 (videoS1.MOV).** Raw video showing context and deployment of Hexachloroethane Smoke grenade by US Department of Homeland Security and evaluation of the munition by press and protesters documenting its use. This grenade was sampled for chemical analyses (Dataset S2).

## DATASETS

**Dataset S1 (summary\_data.csv).** Collated daily data used in the analyses.

**Dataset S2 (analytical\_chemistry.pdf).** Full analytical chemistry report of samples (Fig. 4) from private lab: Specialty Analytical in Clackamas, OR.

**Dataset S3 (fed\_presence.xlsx).** Jaunt-by-jaunt time stamps and total time out for each instance where the federal agents left their buildings during July 2020.

**Dataset S4 (population\_sizes.csv).** City population size estimates used in main text Figure 1, derived from the US Census Bureau<sup>25</sup>.

**Dataset S5 (functions.R).** Custom R functions used in analyses.

**Dataset S6 (analyses.R).** R code used to conduct analyses and full session information.

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