

The Thermal Fogger

An Imperial Tetherball

Dr. Juniper L. Simonis (they/them/theirs)

2021-05-28

Contents

Foreword	2
Introduction	5
Vietnam	7
Context	7
Genesis	7
Expansion	7
International Melting Pot	7
The Return	13
Manufacturers	13
Rex Applegate	15
News Media Propaganda	16
Coming to Your Town Soon!	17
Crossing to Canada	23
The 1968 Conventions	23
Miami, August 8	23
Chicago, August 26 - 29	26
Berkeley, August 31	26
University Cities	28
Durham	28
Berkeley	28
Seattle	32
College Park	32

Iowa City	32
Minneapolis	35
Gainesville	35
High Schools	35
San Gordonio	37
Lawrence	37
Racial Justice	38
Danville IL	39
Portland OR	39
Labor	42
Celebrations	46
The Carceral System	47
Big Mac	47
Union Correctional	47
Dade County	48
Accidents	48
Border Patrol: A Second Boomeranging	48
The Science of Thermal Fogging	49
References	50

Foreword

Content Warning

This book deals with police and corrections violence in frank terminology. Pictures of chemical weapons being deployed on individuals, including those passively resisting, are included, but no injuries, blood, gore, etc. are shown. Casualties, including fatalities, are discussed with discussion of an individual being killed by corrections officers.

Land Acknowledgment

This work's impetus comes from present-day Portland, Oregon, United States of America – the Indigenous land of the Chinook people, who were colonized and spread across multiple federally recognized tribes in Oregon, Washington and Idaho including Cowlitz, Siletz, Wasco, and Yakima.

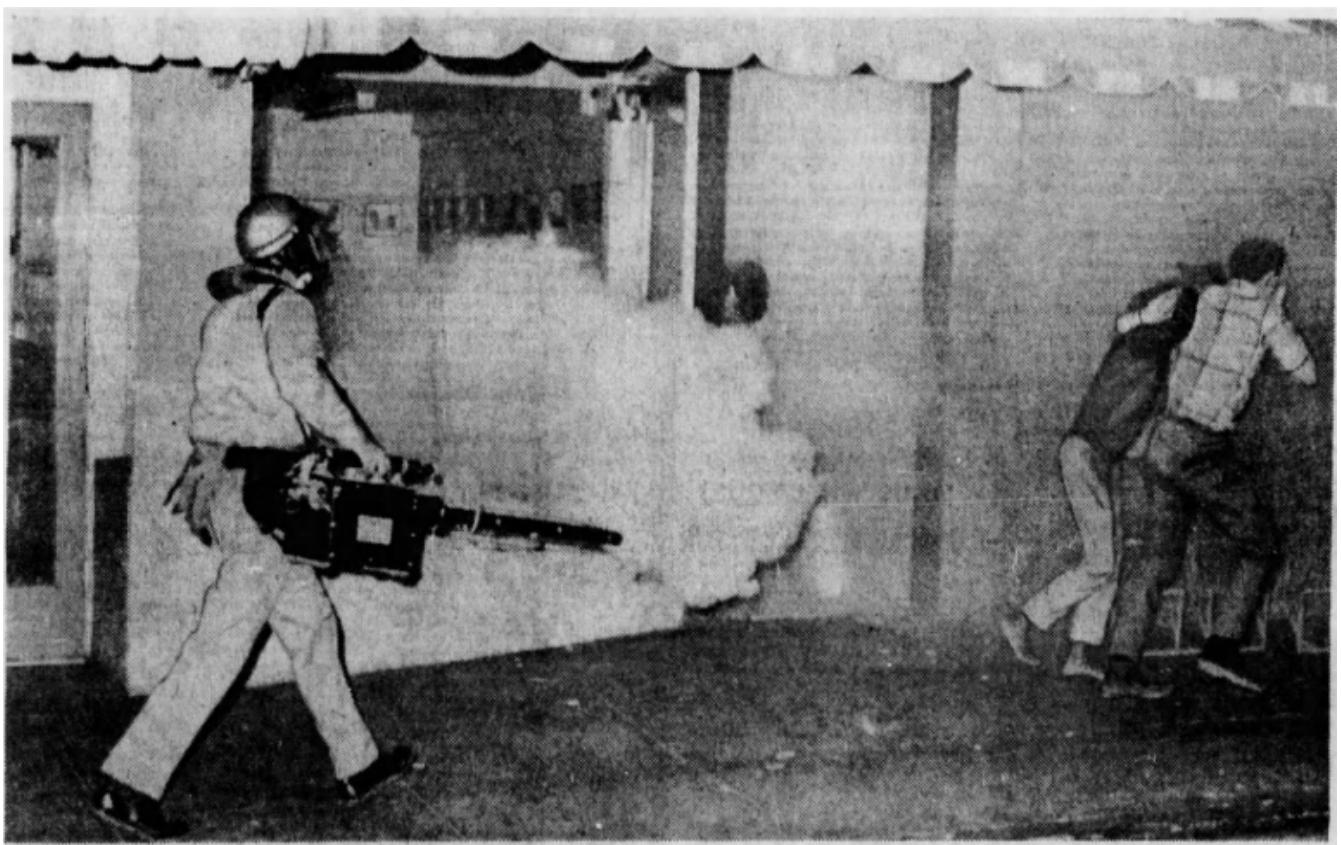


Figure 1: Deployment of a thermal fogger by police in Berkeley CA, 8/31/1968 (United Press International 1968g)

Chemical weapons are a common tool among imperialist regimes. The events cataloged in this book occur at many locations across the present-day United States and internationally, with specific references to Canada, Mexico and Vietnam, where colonizing forces of (predominately Northwestern) Europe have used forced labor from enslaved Black people to impose significant force on Indigenous cultures and individuals.

No words can fully encompass the importance of acknowledging the place in which each of the stories told in this book occur. I will work to add important contextual information and acknowledgements, but please remember that each use of a thermal fogger or other brutal police force described here impacted many, many lives.

I ask you to take time to reflect on the countless individuals from communities, tribes, peoples, and cultures around the world that have been fogged with some chemical agent whose names we will never know, whose stories we will never hear.

Inherent Bias

This book has been produced by collating historical documentation and records, which are inherently biased, as will be plainly evident in the documents. As such, it is important to recognize that there are almost certainly records that I have not yet found or which have been lost to time. Even more critical, however, is that many uses of thermal foggers have likely never been recorded at all (even if “legally required”), as will be made clear through the documents that have been recovered.

Author Position

I, Dr. Juniper L. Simonis (*they/them/theirs*), am a 36-year-old middle-class, white, non-binary, queer, physically and psychologically disabled person. I come to the study of the history of chemical weapons use in America via my personal experience being the recipient of law enforcement’s chemical weapons and my ensuing scientific research into its impacts on the environment.

I have a PhD in Ecology and Evolutionary Biology from Cornell, where I studied aquatic ecology and biogeochemistry – disciplines I have put to use to studying the impact of chemical weapons. Through my ecological research, I have uncovered historical and current information into the impacts of chemical weapons that I was not seeing being represented in the present day broad cultural discourse.

From this need to share historical information came this book, a way for me to pass along a window into the racist, classist, capitalistic, and colonialistic throughline of the thermal fogger.

I am an abolitionist in multiple senses: I believe that the use of chemical weapons, police, and the carceral system should all be abolished, full-stop.

Financial Statement

All work for this product was conducted by Dr. Juniper L. Simonis via internal time at DAPPER Stats. No external funding was provided.

Licenses

This book is created under a [dual license](#) that recognizes a separation between the software and non-software components. All underlying documents (photos, etc.) are cited in the [References](#) and do not indicate the original licensor endorses this book or its authors.

Acknowledgments

My deepest heartfelt condolences to the family of Robert Forsythe. I cannot even begin to imagine the impact Bobby's murder and the subsequent trial and media presence had on you and your community. I hope that by shining a light on his story now, more people will come to understand just how horrendous the prison system is and fight for its abolition.

The story of Robert Forsythe is almost certainly not unique, and only public knowledge because of the trial against the corrections officers. I recognize that many others have been killed by thermal foggers, yet we will never know their names.

This booklet is based on a variety of sources past and present, and to the journalists and photographers: thank you for sharing your work with the world.

I have no idea how many people have been involved in digitizing historical newspapers, as their names are never on anything, but y'all are fantastic and I appreciate you so much.

Sandra Simonis provided significant help with writing alt-text for images.

Twitter users NewNameJeanette and WillHickox notified me of the [Lawrence High School](#) protest and use of the thermal fogger, for which I am very thankful.

Contribute Information

If you are aware of incidents where a pepper fogger was used to deploy chemical weapons that we have not included, please reach out [via the Chem Weapons Research Website](#) or submit an [issue](#) or [pull request](#) on our [GitHub repository](#) for the book.

Introduction

On July 29th, 2020 federal agents of the Department of Homeland Security (DHS) Customs and Border Protection (CBP) deployed unknown chemical agents via a thermal fogger on racial justice protesters outside the Hatfield Federal Courthouse in Portland, Oregon.

In doing so, DHS made a large swath of the populace aware of an insidious weapon that was [birthed](#) in the American occupation of Vietnam, perfected for use against domestic protesters in the 1960s and '70s, and sent abroad via US Border Patrol in the years since. The subsequent [return](#) of the thermal fogger to use against civilians domestically by the same domestic law enforcement agency (Border Patrol) that sent it abroad after its initial domestic use is an extension of the classical Imperialist Boomerang ([Césaire 1950](#); [Arendt 1951](#); [Foucault 1976](#); [Graham 2013](#)) that can be more aptly described as a tetherball.

Despite repeated use of thermal foggers to deploy chemical weapons over the last half century, the device appears to have slipped from the zeitgeist, only to reemerge in the city which experienced the most visible novel federal deployment of chemical weapons ([Flanigan 2020](#)), the most chemical weapons-based incidents of police brutality at racial justice protests across American cities (regardless of population size) ([PB2020 Team 2021](#)), and an notable density of photographers and videographers.

Not all of the weapon's history is documented, but enough is that we can dispel the myth that this deployment was *new* in any notable sense other than being recent.

Indeed, through this work, I have discovered an extensive history of its deployment and can say that I feel a deep connection to my protest elders who experienced thermal foggers decades ago, and I hope that my work will bring light to their stories. We are but the most recent chapter in a long history of United States Law Enforcement using chemical weapons against its own people.



Figure 2: CBP agent using a thermal fogger in front of the federal courthouse, Portland OR, 7/29/2020
(Brown 2020)

Vietnam

The modern day use of thermal foggers for chemical weapons deployment was born from the American colonization of Vietnam in the mid-to-late-20th Century (Bunker 1996).

Context

Early on in the deployment of US troops to occupy Vietnam, the need for large scale mosquito control became so great that soldiers began improvising insecticide foggers by mounting pesticide sprayers to diesel truck exhaust (Spicknall 1969). The hack turned out to be much more effective, covering nine square miles per day, compared to 50,000 square feet (0.002 square miles) per day using a conventional manually operated fogger (Spicknall 1969).

As the occupation continued, US Army Soldiers were tasked with “rooting out” Viet Cong and People’s Army of Vietnam soldiers, as well as innocents, from tunnels. The specialized forces designated for the work were dubbed “Tunnel Rats” and tear gas was part of their arsenal to “flush” individuals from caves, which they regularly deployed via pyrotechnic grenades and powdered explosives (Faas 1977; Rottman 2006; Hemmings 2019).

Genesis

In 1965, the US Chemical Advisor to the South Vietnamese Army’s (ARVN) III Corps participated in planning a “search and destroy” operation in the Iron Triangle, which was known to house an elaborate Viet Cong tunnel system, and suggested using a Mity Mite (Mitey Mite, Mighty Mite) fogger to aid in clearing tunnels (USMACV 1965). On the first day of the operation (October 8th), the force located a tunnel and set into motion an elaborate scheme to fog the tunnels with hexachloroethane (HC) smoke from burning pots, marking the first known tactical use of a thermal fogger to deploy chemical weapons agents (USMACV 1965; Rottman and Delf 2012). Overall, the endeavor was dubbed a success in the report distributed the next month, despite the tunnel having been empty already (USMACV 1965). And although (highly toxic; Simonis (2020)) munitions smoke was used in this application, it was noted that tear gas would be “very effective in flushing VC from tunnels” should there been any present (USMACV 1965).

Expansion

The practice caught on quickly, and Mity Mites were soon issued to ARVN units (USMACV 1965) and became common tools for Tunnel Rats (Rottman and Delf 2012). The United States military was publishing on the utility of the fogger in official journals by the next year (US Army 1966).

The Army used foggers to pump “air” or “smoke” into tunnels in combination with “riot control agents” during Operation Cedar falls in 1967 (Lehrer 1968). And by 1968’s Battle of Khe Sanh, it was standard practice to use foggers for tunnel excavation as well as mosquito and fly control (Rottman 2006).

In 1969, the US Army Limited War Laboratory published a report on “riot control” methods that included a section on foggers and agents for use in them, naming the General Ordinance Equipment Corporation and Federal Laboratories models that were already in production (Samuels, Egner, and Campbell 1969).

International Melting Pot

A handful of other countries were explicitly involved in supporting the US colonization in Vietnam, providing an pathway for the fogger idea to be rapidly picked up by the armed forces of other nations. For example, by 1966 the Australian Tunnel Rats were particularly fond of fogging tunnels with acetylene (MacGregor 1966a, 1966b).



Figure 3: Tunnel rat in a gas mask, undated (Hemmings 2019)

MITY MITE PORTABLE BLOWER

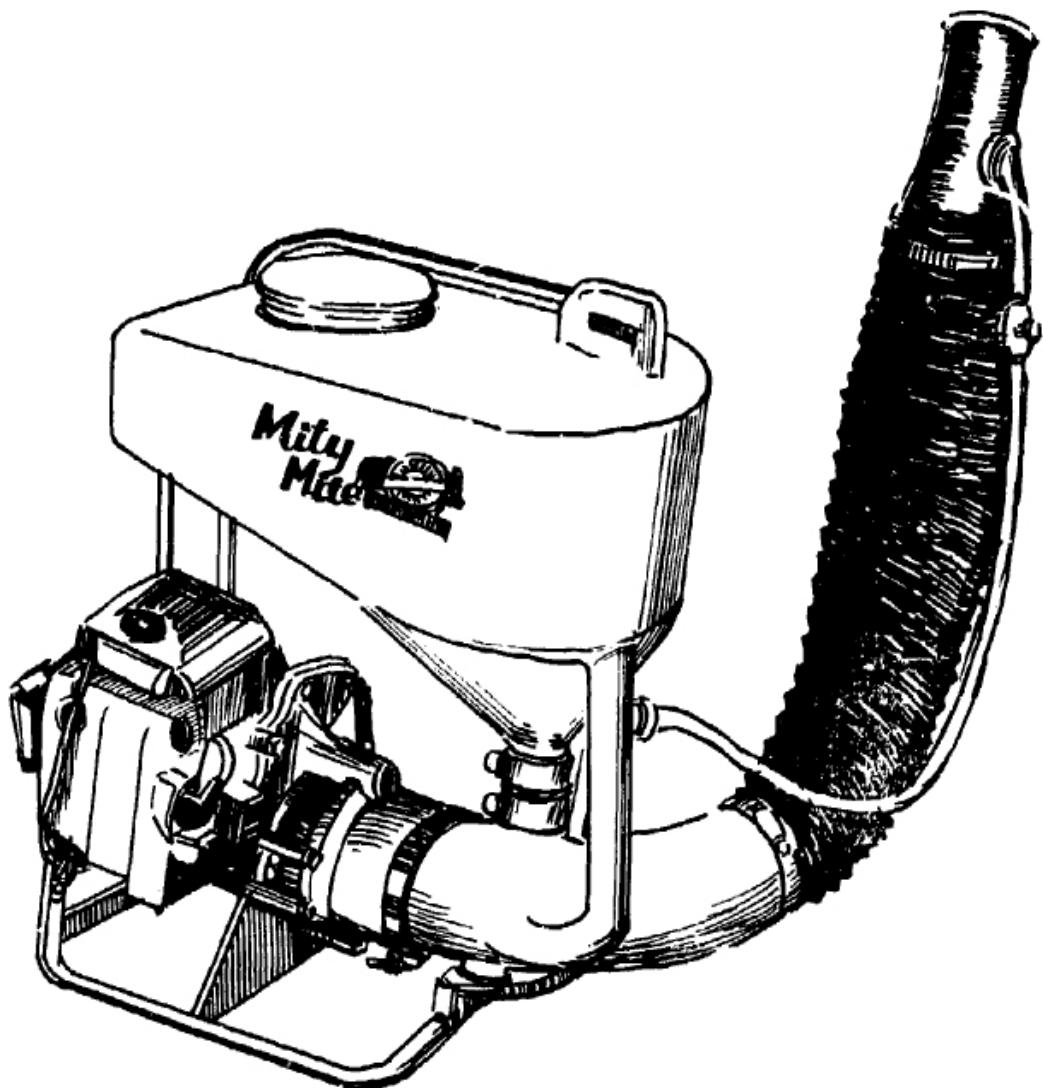


Figure 4: Technical drawing of a backpack fogger (USMACV 1965)



US Army

Figure 5: A soldier uses a backpack Mity Mite to fog a tunnel (US Army 1966)



Figure 6: Engineers unpack and test a Mitey-Mite blower (USAES 2003).



AUSTRALIAN WAR MEMORIAL

P01595.011

Figure 7: Double Acetylene Generator and a Mighty Mite Air Blower Used to Blow Fumes into Viet Cong Tunnels (MacGregor 1966a)



AUSTRALIAN WAR MEMORIAL

P01595.005

Figure 8: Mighty Mite Machine Used to Contaminate Viet Cong Tunnel Systems with Acetylene (MacGregor 1966b)

And, as expected, the fogger quickly made it to Australian police departments, although with a decidedly different response from the news media, who called it “highly controversial” amidst a Sydney Police spending scandal (Allen 1972). Unnamed Australian arms experts who spoke on background said there was no application for the fogger in the country (Allen 1972), although that hasn’t stopped its use elsewhere.

The Return

As to be expected following the basic trajectory of an Imperial Boomerang (Césaire 1950; Arendt 1951; Foucault 1976), the repressive technique (thermal fogging) developed by an imperialist country (USA) to control colonial territories (Vietnam) was brought home by the imperialist nation to use on its own people (Graham 2013).

Indeed, it took just *three years* from initial deployment in Vietnam on October 8 1965 to first application in the United States to gas Black racial justice protesters in [Miami, Florida on August 8th, 1968](#) during the Liberty City Riots (Tschenschlok 1995; Lorentze 2018).

In alignment with the general “Imperial Circuit of Tear Gas” (Schrader 2019) between the US and Vietnam, the return of the fogger was aided significantly by the weapons industry, militarization of US police forces, the transition of veterans to law enforcement occupations upon returning home, and substantial propaganda in a variety of specialized and generalized outlets.

Manufacturers

American companies quickly jumped at the opportunity to sell thermal foggers to police departments.

Sears Roebuck

The original Mighty Mite that established the fogger as a method of chemical dispersal was manufactured by a domestic company (Sears Roebuck) for insecticide application (Applegate 1969).

The International Association of Chiefs of Police included this style of thermal fogger in their 1969 Chemical Agents Manual (Crockett 1969), providing a trade-focused marketing opportunity. The bulkiness of the backpack proved to be a hinderance in mobile application, however, and there was an immediate push by existing corporations to produce a specialized tool for fogging chemical weapons at civilians (Applegate 1969, 1970).

General Ordnance Equipment Corporation

The General Ordnance Equipment Corporation (GOEC), who developed and trademarked Chemical Mace the year prior, began marketing a hand-held thermal fogger using the phrase “Pepper Fog” in July 1968 on their (Applegate 1969). They applied for a trademark on the phrase in October of the same year (USTPO 2018). By the end of August 1969, GOEC had received the trademark on “Pepper Fog”, which they (and their subsequent owners including Smith and Wesson, Federal Laboratories, and Safariland) retained until it expired in 1991 (USTPO 2018).

They immediately began a heavy marketing campaign taking out full-page ads in police magazines that year (General Ordnance Equipment Corporation 1969a, 1969c, 1970).

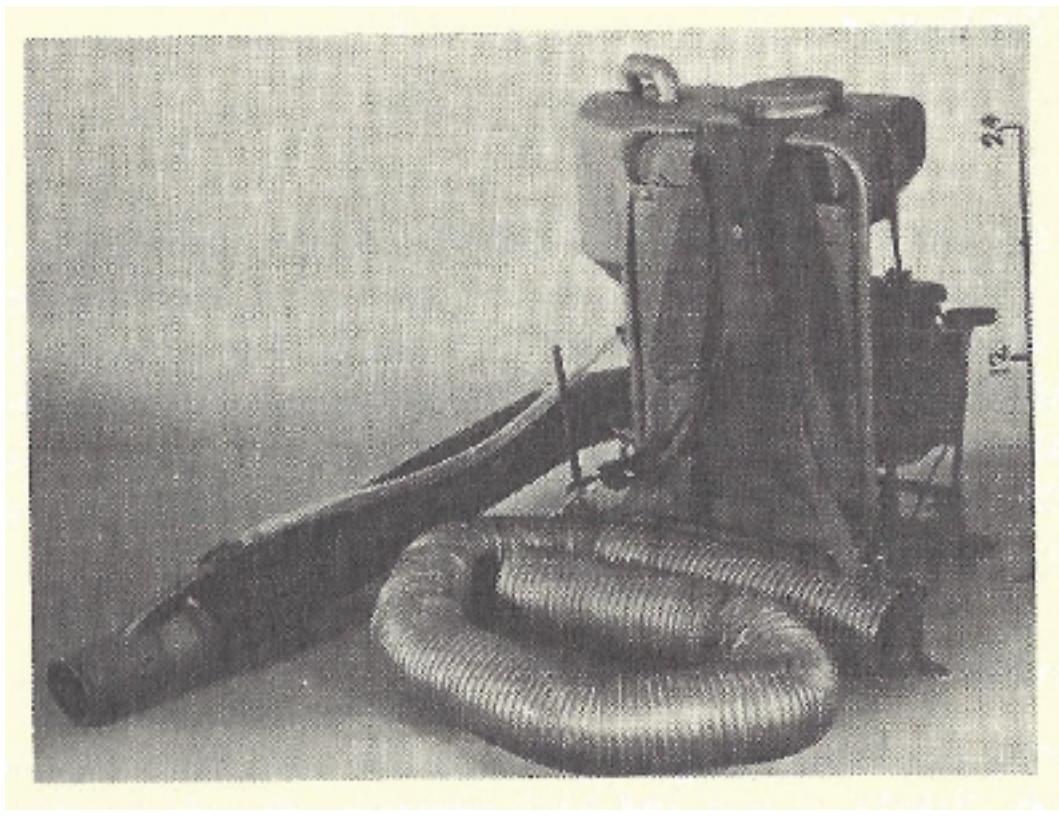


Figure 9: M-106 Mighty Mite Thermal Fogger, as promoted to law enforcement in Applegate (1969). According to Applegate (1969), it is an “insecticide blower ... adopted for use in Vietnam... [that can disperse] the gas agent continuously for [15 minutes]”.

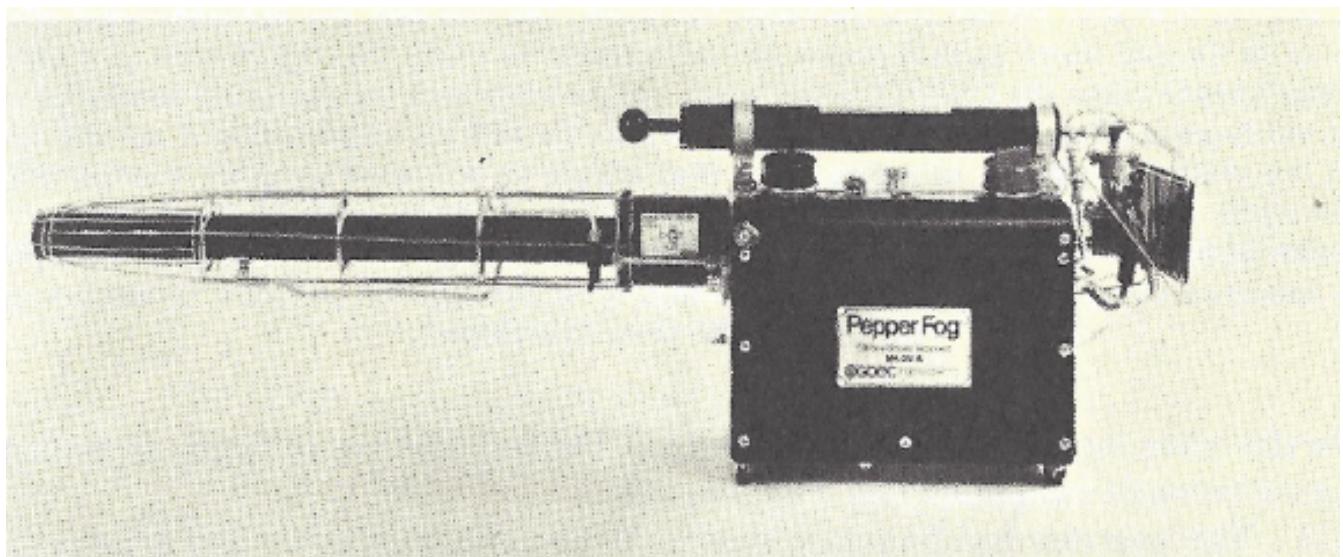


Figure 10: General Ordnance Equipment Corporation thermal fogger (General Ordnance Equipment Corporation 1969b), as shown in Applegate (1969).



Figure 11: Product image for thermal fogger (Safariland, LLC 2020b).

Federal Laboratories & Defense Technology

Indeed, to this day, the current owner of the legacy branding ([Safariland](#) subsidiary [Defense Technology](#)) continues to sell items under a “Pepper Fog” line, including a “pepper fog generator” that utilizes the same pulse-jet generation technique ([Safariland, LLC 2020a](#)):

This has supplanted the model produced by the corporate ancestor to Defense Technology (Federal Laboratories), which was a slightly bulkier version ([Samuels, Egner, and Campbell 1969](#)).

Rex Applegate

A major figure in the translation of military “riot suppression” tactics to domestic law enforcement in the 1960s and 1970s was a former US Army Lt. Colonel named [Rex Applegate](#). Applegate took a commission as a second lieutenant, but had a lung ailment kept him from serving in combat in World War II and so was assigned to Military Police Company before being tapped by [Col. William Donovan](#) to build and run the School for Spies and Assassins in the Office of Strategic Services ([Goldstein 1998](#)). Larger than life, Rex even served as bodyguard to President Franklin Roosevelt, before retiring and moving to Mexico at the end of World War II to consult with Central and South American governments on “riot control” ([Goldstein 1998](#)).

Applegate returned to the US in the 1960s during the civil rights and anti-war protest era and began proselytizing the good word of the thermal fogger ([Applegate 1969, 1970](#)). Indeed, Rex published what can only be described as a long-form written sales pitch for the GOEC Pepper Fog thermal fogger in the highly circulated *Guns* magazine in 1970 ([Applegate 1970](#)).



Figure 12: Demonstration of a pepper fogger (Applegate 1970)

News Media Propaganda

Alongside the more overtly pro-police-use-of-chemical-weapons propaganda of Rex Applegate were other, perhaps more subtle forms of pro-fogger propaganda (Macomber 1970). Newspapers around the country were more than happy to print “articles” that promoted the new arsenals police departments were building (LaPrade 1970), complete with product demo photos.

General Ordnance Equipment Corporation’s Pepper Fog model seems to have been the favorite, at least amongst the departments showing off their new cool toys for photographs.

Gary Wills

Pulitzer Prize-winning Garry Wills (who at the time was considerably more conservative than he came to be later) penned an op-ed that ran in (at least) The Herald Statesman (Yonkers, New York) (Wills 1971a), The Daily Item (Port Chester, New York) (Wills 1971b), The Charlotte News (Charlotte, North Carolina) (Wills 1971c), and The Philadelphia Inquirer (Wills 1971d) in April 1971 in which he basically tells all the cry babies (pun intended) to suck it up because he “would not be afraid to undergo such experiences [as being pepper fogged] again” (Wills 1971a).

Notably, he touts the leading belief at the time that somehow thermal fogging is a “safe immobilizer of individuals” (Wills 1971a), despite the weapon not being demonstrably safer than gas grenades and not only not “immobilizing” but explicitly designed to mobilize immobile resisters. Interesting, Wills compares indiscriminate and uncontrollable chemical weapons as “safer than dogs, which get out of control, bit bystanders (and even other cops) as well as ‘the bad guys’” (Wills 1971a).

He concludes his piece by calling tear gas “humane in … foreign wars [and] domestic encounters” (Wills 1971a), speaking clearly to the return, classically defining an Imperial Boomerang (Césaire 1950; Arendt 1951; Foucault 1976).



Figure 13: Amarillo Texas Police Sergeant Jerry Austin with a thermal fogger and shotgun (Vance 1970). Amarillo's 1970 population was 127,010 (USCB 1971).

Coming to Your Town Soon!

It seems like US domestic police have a hard time containing their glee when purchasing and testing thermal foggers for use on domestic civilians, as a general media blitz played out across the country through the late 1960s and early 1970s (The McHenry Plaindealer 1971).

Illinois

In the wake of the 1968 Democratic National Convention, Chicago-area police played an outsized role in promoting the propaganda line. The pepper fogger was touted as being able to “empty a house fast” by Cook County Illinois Sheriff Joseph Woods (M. Harris 1969b, 1969c), a definitely off-spec and dangerous use (Nixalite 2009b). The volume of fog emitted was also said to be able to fill Soldier Field (capacity 61,500 fans) in under a minute (M. Harris 1969c). Regardless, the Chicago-area Sheriff decided they needed three of them (M. Harris 1969c). The Sheriff’s Major in charge of chemical arsenals Anthony Yucevicius noted the fogger’s psychological effect on recipients, as well saying

They make a terrifying noise and probably will have a scare effect on crowds. - M. Harris (1969a).

Use expanded among and within states, as by 1972 the Illinois State Police also purchased three foggers, which they trained with in Springfield (Robinson 1972). In news reports, the foggers were described as

a cross between a machine gun, a power lawn mower, and a sun lamp. - Robinson (1972).



Figure 14: Richland County (Ohio) Sheriff's Captain Robert Dysart demonstrating a thermal fogger to a crowd of >200 people (Aman 1970). Richland County's 1970 population was 129,997 (USCB 1971).



Figure 15: A McHenry County (Illinois) Sheriff's officer fogs some grass in a rural landscape during a training and press demo day (Wayne Gaylord 1971; The McHenry Plaindealer 1971). McHenry County's 1970 population was 111,555 (USCB 1971).



Figure 16: Scott County (Iowa) deputy sheriff Jim Lewis, left, holds a new grenade launcher and a riot gun while Sheriff William Strout displays a pepper fogger and gas mask (Winter 1970). Scott County's 1970 population was 142,687 (USCB 1971).

Florida

Similarly, following the [1968 Republican National Convention](#), Florida law enforcement took to the fogger ([Cain 1968](#)). In Sanford (1970 pop. 17,393; USCB [\(1971\)](#)), the local police department purchased a fogger for use with [CN gas](#), noting that it could shoot fog 20 ft for up to a 15 minute stretch, and so would be effective for controlling large masses ([Cain 1968](#)). They had, however, only used it in training and for demoing to the media ([Cain 1968](#)).

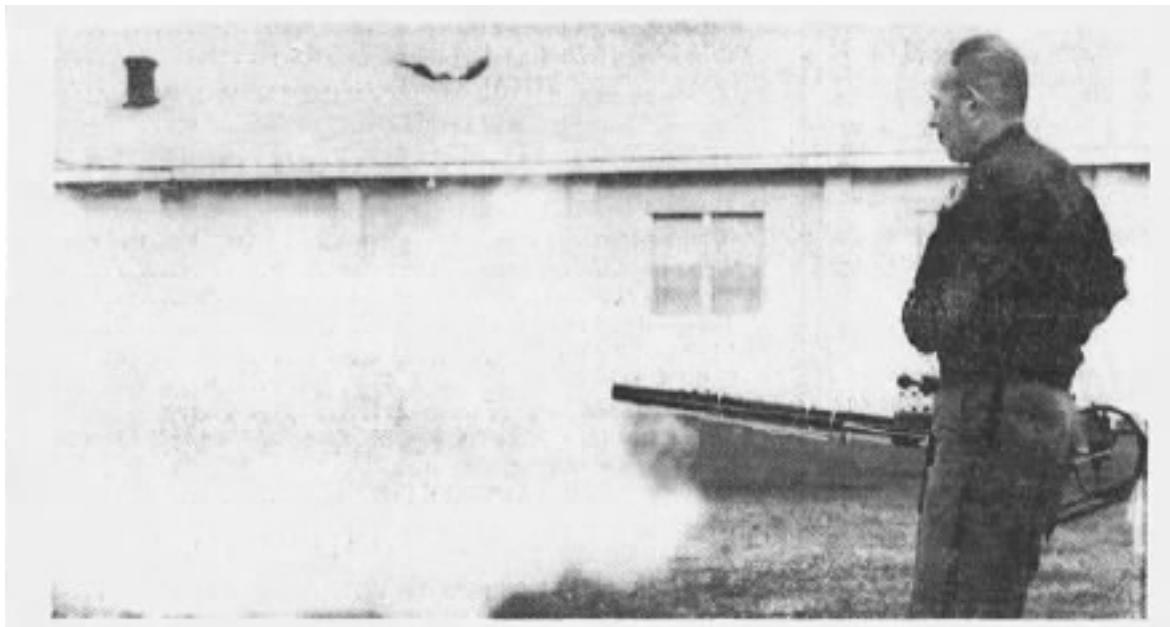


Figure 17: Sanford Police Officer Roy Williams shows off a fogger (Orlando Evening Star [1968](#)).

California

Eager to not be shown up by the police in Berkeley, by 1970, the Los Angeles Sheriff's Department had already purchased their own fogger for their "big artillery" to use "when other forms of persuasion have failed" and started a media campaign ([Michals 1970](#)). The department and new state regulations required officers to be trained in chemical weapons use, which was set up through Officer Robert Hawkins ([Michals 1970](#)).

National Guard

Following the Kent State Massacre, the Ohio National Guard, as well as others around the country began equipping their forces with thermal foggers, using the death of those students as justification for massive purchasing of "less lethal" options ([Bandy 1970](#)).

Small Town USA

No matter the size of the town, by the early 70s, police wanted in on that sweet sweet fogger action. The Brigham City (Utah; 1970 pop. 14,007; USCB [\(1971\)](#)) Police Department leveraged federal Omnibus Crime Act money to purchase a variety of weapons to use against protesters in 1971 ([Box Elder Agencies 1971](#)).

Police Chief Jay Christensen noted that the fogger provides a longer shelf-life than grenades and reportage noted that it



Figure 18: Los Angeles Sheriff's Department Officer demonstrating a fogger (Copley News Service 1970).

emits a continuous stream of smoke, chemical irritants, or whatever solution is fed into it. [emphasis added] - Robinson (1972)

Use of federal funds to purchase chemical weapons, and specifically foggers, was not limited to one department. Cities, counties, and states across the country used Omnibus Crime Bill money to up their chemical weapons caches, including foggers (Conheim 1972). For example, Oakland County in Michigan (1970 pop. 907,871; USCB (1971)) purchased two pepper foggers for their South County Tactical Mobile Unit with part of their \$21,066 in 1970 (Conheim 1972).

Oneota New York (1970 pop. 16,030; USCB (1971)) purchased a fogger in 1969 during the anti-war demonstrations, although the department bungled its response to protests (Griffin 1973). As came to light during a public probe, Oneota Police Chief Joseph F. DeSalvatore requested a limited amount of training in the budget, and officers were therefore unable to deploy the fogger or other chemical weapons (Griffin 1973).

Gaston County North Carolina (1970 pop. 47,322; USCB (1971)) Sheriffs purchased a fogger, which they turned on but not used to dispense agents multiple times by 1970 in their jail system “when there’s been trouble brewing” (The Gastonian Gazette Sun 1970a).

Apparently the threat of **death by chemical weapons fog** is sufficient to scare detained individuals into compliance.

Within a few years, however, departments began to realize they had no need for the machines, and began selling them with no use aside from testing (Des Moines Tribune 1975). The Storm Lake Iowa (1970 pop. 8,591; USCB (1971)) purchased a fogger in 1971 in advance of a motorcycle rally that never happened, and used free advertising in local media in attempts to pawn it (Des Moines Tribune 1975). The article/ad mentions that officers have used foggers “on occasion” in Des Moines (Iowa’s capital; 1970 pop. 201,404; USCB (1971)) in addition to **one instance on the University of Iowa’s campus** (Des Moines Tribune 1975), although I have not located contemporaneous mentions.

Crossing to Canada

Canadian law enforcement was also quick to jump on the fogger train and the media were just as happy to propagandize their use (Patterson 1976). A convention of US and Canadian police chiefs held in Halifax, Nova Scotia in 1976 provided a glimpse into the state of affairs by mid-decade, at which point a supply chain had clearly been developed, although weapons salesmen refused to be named or have their statements linked to employers (Patterson 1976).

The 1968 Conventions

Deployment of chemical weapons on United States civilians by domestic law enforcement began in earnest in the late 1960s during the height of anti-war and civil rights protests, kicked off in particular by the 1968 Republican (Miami, Florida) and Democratic (Chicago, IL) National Conventions (McArdle 2018; Taylor and Morris 2018). As a result of a **heavy propaganda and branding campaign**, the thermal fogger was becoming a mainstay of early police chemical weapons arsenals. Importantly, by the summer of 1968, the Florida Highway Patrol, Chicago Police Department, and California State Police all had purchased foggers.

The lingering impact of the 1968 Conventions was felt for years to come, as the Kansas City (Missouri) Police Department armed up their chemical weapons cache in advance of the 1976 Republican National Convention, including purchase of fogger fluids (Hudson 1976).

Miami, August 8

The first use of a thermal fogger to deploy chemical weapons in the US that I have been able to uncover was during the **“Liberty City Riots”**, which took place in during the 1968 Republican National Convention



Figure 19: Gaston County Sheriff's Deputy Anne Huffsteller poses with a thermal fogger (The Gastonian Gazette Sun 1970b).



Figure 20: Sergeant Al Oakley shows off a pepper fogger (MacKenzie 1976).

(RNC) in Miami, Florida (Tschenschlok 1995, 1996; McArdle 2018). A white reporter with the Miami Herald attempted to gain access to rally of concerned Black people that was meant to be only among Black people that was occurring in Liberty City, a Black neighborhood, on August 7th (Tschenschlok 1995, 1996). When the reporter was ejected from the rally, Miami police responded with a large and heavy presence and during the standoff, a white motorist with a “Wallace for President” bumper sticker attempted to drive through but was met with resistance and drove into another car, and fled the scene on foot (Tschenschlok 1995; Lorentze 2018).

Miami police used chemical weapons the night of the 7th, but the fogger did not make an appearance until the subsequent day. Local, state, and federal officials met with Black organizational representatives the night of the 7th and had agreed to continue discussions the morning of the 8th, but instead sent staffers rather than appear themselves, which effectively ended discussions (Tschenschlok 1995, 1996). Apparently, Miami Police Department was unable to manage the situation and Florida Highway Patrol (FHP) was called in by the city (Tschenschlok 1995).

FHP used a truck with multiple foggers (Lorentze 2018), described as “essentially a modified version of an insect-control machine” that “spread a thick fog of tear gas throughout the riot zone” (Tschenschlok 1995).

FHP used the truck-mounted thermal foggers indiscriminately and caused visible symptoms (gagging, etc.) in all present, including a 5-month old (McArdle 2018). The fog quickly spread into neighborhood homes, forcing residents outside to seek fresh air (Tschenschlok 1995).

Chicago, August 26 - 29

Later that month anti-war protests took place in Chicago, Illinois during the [Democratic National Convention](#), and a massive force of law enforcement (Chicago Police with assistance from over 6,000 National Guard members and 6,000 Army troops (Taylor and Morris 2018)) responded excessively, including with chemical weapons, on network news (Schultz 1969; Karnow 1983; Farber 1988; Langguth 2000). After four days, hundreds had been given medical assistance for exposure to chemical weapons (Taylor and Morris 2018).

Although I have yet to find contemporary documentation of fogger use during the convention, an AP report on fogger use in [Berkeley the year later](#) states

A similar device was used during demonstrations in Chicago during the Democratic convention last summer. - Associated Press (1969f)

As such, I consider this a very likely deployment. I am continuing to search for evidence.

Berkeley, August 31

A demonstration in Berkeley, California was called by the Young Socialist Alliance, Independent Socialist Club, and the Black Panther Party in solidarity with anti-war protesters in Chicago who the police had recently brutalized (United Press International 1968b, 1968d), including [use of a pepper fogger](#) (Associated Press 1969f). In response, police brutalized the protesters, and in the process brought out a hand-held pepper fogger, a “new police weapon... which produced a gas that caused sneezing” (United Press International 1968b).

Deployment of the thermal fogger was covered in newspapers around the country including Paterson, New Jersey (United Press International 1968b); Hanford, California (United Press International 1968c); Honolulu, Hawaii (United Press International 1968a); St. Louis, Missouri (United Press International 1968f); Franklin, Pennsylvania (United Press International 1968h); Madison, Wisconsin (United Press International 1968d); and El Paso, Texas (United Press International 1968e), a city whose significance was already budding.

It is clear from the photograph shared with the United Press International (UPI) copy that the fogger used is a [GOEC](#) brand pepper fogger, which hit the market the month prior (USTPO 2018). The GOEC thermal fogger was so new, it would not have a trademarked name (“Pepper Fog”) for another year (USTPO 2018).

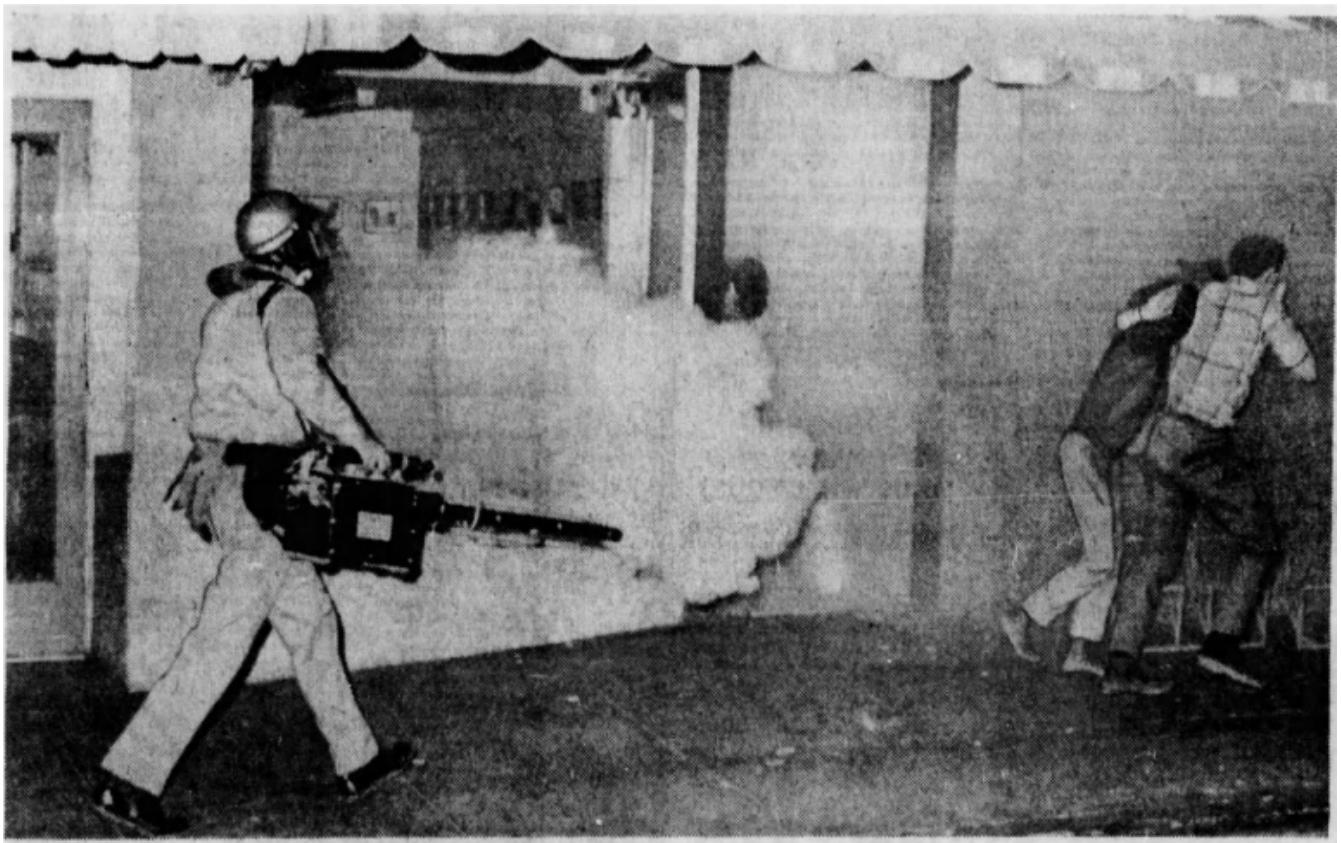


Figure 21: Deployment of a thermal fogger by police in Berkeley, CA (United Press International 1968g).

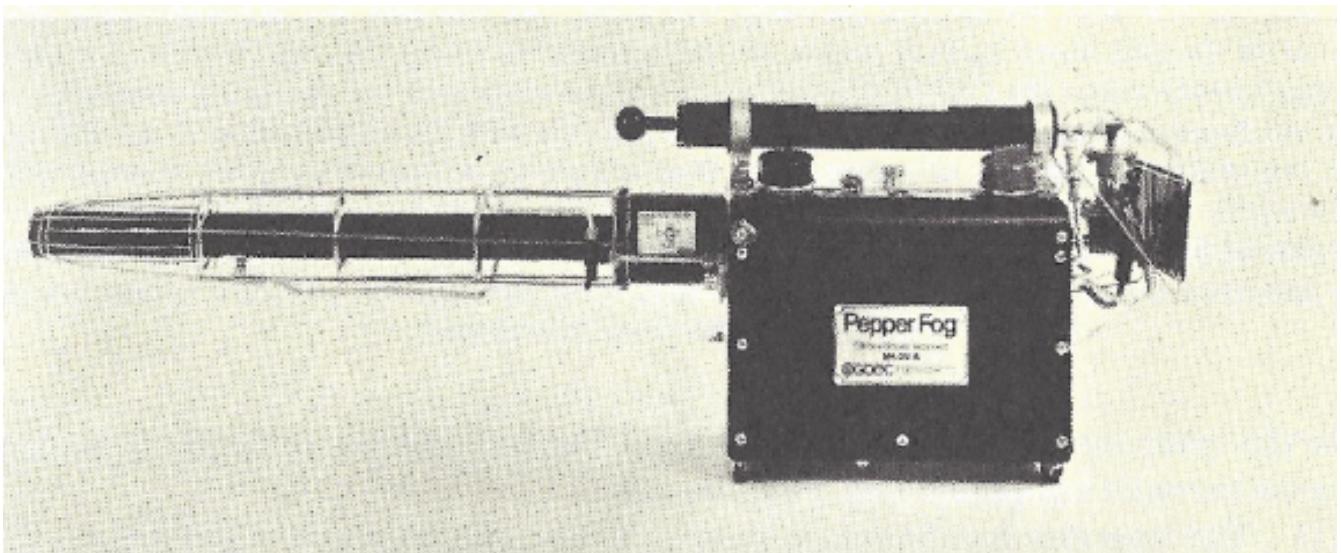


Figure 22: Product image for thermal fogger (General Ordnance Equipment Corporation 1969b).

University Cities

Perhaps instigated by the willingness of the California Highway Patrol to use chemical weapons (including thermal foggers) in [Berkeley on and around the University of California campus during the 1968 Convention protests](#), many law enforcement agencies escalated anti-war and racial just protests in University towns during the 1960s and 1970s via chemical weapons.

The willingness of police to fog literally any place where undergraduates standing up for racial justice and against imperialism were gathering was highlighted in May of 1970 when [Maryland State Police deployed chemical weapons via thermal fogger into the University of Maryland Chapel](#) (Cabe 1970).

Durham

Durham North Carolina Police broke up the “Allen Building Demonstration” taking place February 13 1969 on the campus of Duke University in Durham using a variety of weapons, including a thermal fogger (Jolley and Olive 1969; Schreiber et al. 1971a, 1971b). The police reportedly chased protesters across campus with the fogger, including using it inside Duke Chapel (Schreiber et al. 1971a, 1971b).



Figure 23: Deployment of a thermal fogger by police on Duke Campus (Jolley and Olive 1969).

Berkeley

0.0.0.1 February 21 1969 A year after [using the fogger on a protest held in solidarity with the Chicago Protest](#), police in Berkeley again deployed a fogger to clear demonstrators including striking students from outside a University Regents and Sproul Hall plaza on the University of California campus.

This deployment was covered in papers across the country including the Press-Telegram (Long Beach, California) (Associated Press 1969k), The Jackson Sun (Jackson, Tennessee) (Associated Press 1969g), The



Figure 24: Police with pepper fogger on Duke campus (Jolley and Olive 1969).



Figure 25: Police use a pepper fogger and other chemical weapons to clear a University plaza (Associated Press 1969n).

Daily Tribune (Wisconsin Rapids, Wisconsin) (Associated Press 1969f), The Sumter Daily Item (Sumter, South Carolina) (Associated Press 1969h), The New Mexican (Santa Fe, New Mexico) (Associated Press 1969i), Janesville Daily Gazette (Janesville, Wisconsin) (Associated Press 1969l), and Messenger-Inquirer (Owensboro, Kentucky) (Associated Press 1969m).

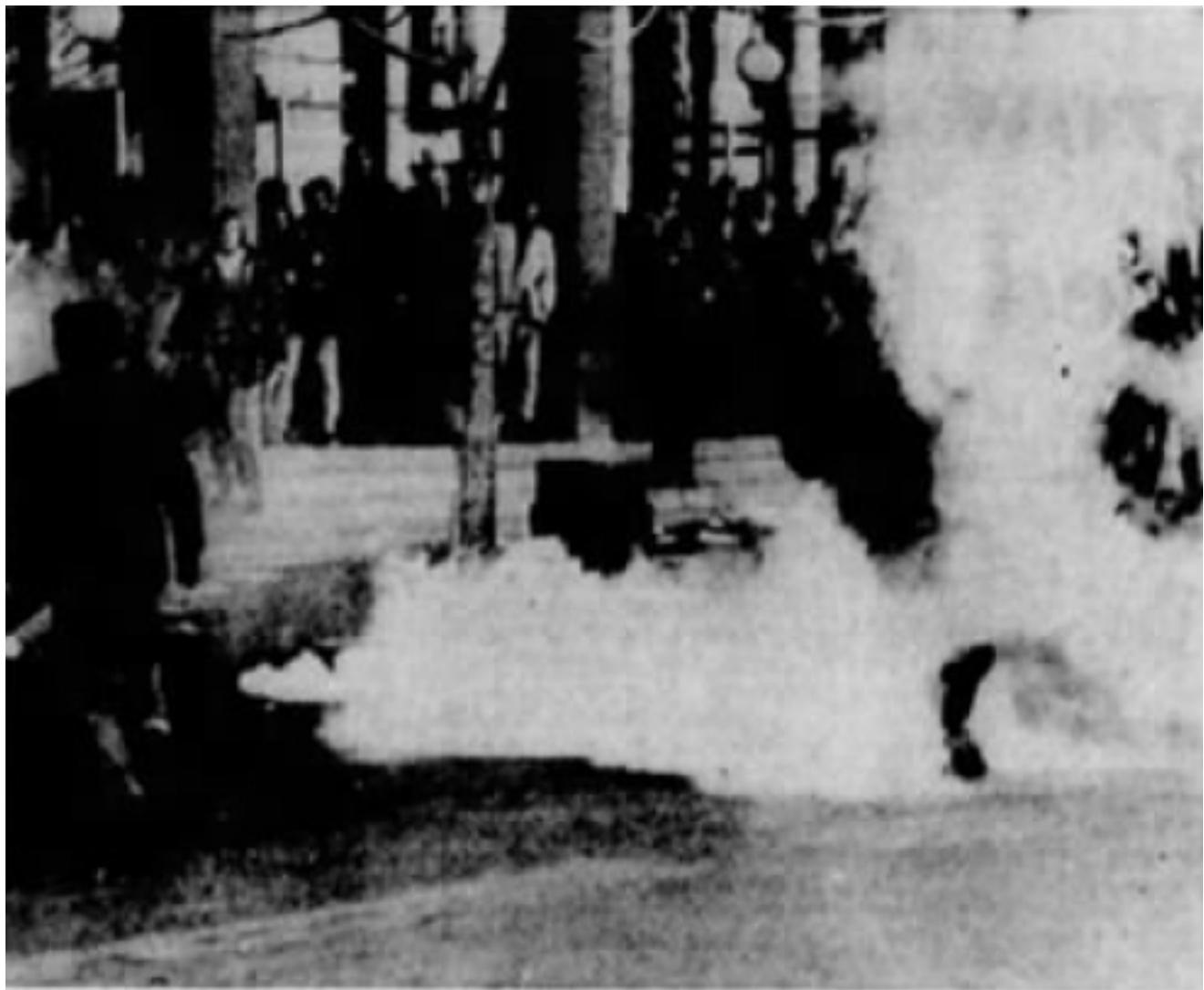


Figure 26: Police engulf a University plaza in chemical fog (Associated Press 1969n).

Canadian newspapers detailed the fogger use as well, specifically the Red Deer Advocate Red Deer, Alberta, Canada) (Associated Press 1969j) and The Leader-Post (Regina, Saskatchewan) (Associated Press 1969e).

0.0.0.2 February 28 1969 The following week, the police in Berkeley were joined by California National Guard troops to attack strikers, and continued to use the pepper fogger (Associated Press 1969a, 1969b).

0.0.0.3 May 15 1969 Alameda County sheriffs deployed a pepper fogger on UC Berkeley's campus again during the "People's Park Riots" of 1969 (Los Angeles Times 1969; Hayes 1970).

The riot apparently started when the university tried to prevent individuals living on the street from a volunteer-run park they built on a lot owned by the school (United Press International 1970).



Figure 27: National guardsmen and police fog UC Berkeley (Associated Press 1969o).

Seattle

Seattle Washington police deployed CN and CS gas via a new pepper fogger in their clash with “hundreds of unruly youths in the University District” on August 14 1969 (Associated Press 1969d). Witnesses recounted that the machine was “highly effective”, filling “2-3 blocks of a street with tear gas in about a minute” (Associated Press 1969d).

College Park

On May 4th 1970, students gathered at campuses around the country to protest President Nixon’s expansion of war into Cambodia, including in at the University of Maryland (UMD) campus in College Park (Washington Area Spark 2013). Police responded with chemical weapons that did not deter the protest, but rather moved it around the campus (Cabe 1970). By later in the day, UMD students had heard about the Ohio National Guard shooting four Kent State students and took up a position in front on and inside the UMD Chapel (Washington Area Spark 2013), which did not stop the chemical weapons barrage or the use of the fogger specifically (Oates 1970)

The Maryland State Police liked the GOEC fogger so much they included it in their Manual on Civil Disturbances as a tool for deploying CS gas (Maryland State Police, n.d.):

Iowa City

Johnson County sheriffs - including two deputies carrying pepper foggers - used chemical weapons against protesters in Iowa City, Iowa IA on May 6 1971 (Eckholt 1971).

The chemicals deployed smelled like insecticides and were described in print as “unidentified” because the Sheriff refused to publicly name the compounds, including to the news media (Eckholt 1971).



Figure 28: View from behind of the police using a pepper fogger on striking students (Associated Press 1969p).



Figure 29: Police fog the University of Maryland (Cabe 1970).



Figure 30: Police fog the University of Maryland Chapel (Cabe 1970).

Minneapolis

Thousands of anti-war protesters gathered in cities around the US on May 10 1972 to demonstrate against the use of mines in Vietnam harbors (Associated Press 1972b). In Minneapolis, crowds totalling a thousand protested gathered on and near the University of Minnesota campus and police responded with chemical weapons deployed via grenades, sprays, a helicopter and a thermal fogger (Associated Press 1972a; Star Tribune 1972).

The fogger was used to direct the crowd around campus and spread gas over large areas, such as the area known as Scholars Walk (~0.25 mile from Washington Avenue to the Auditorium) (Star Tribune 1972).

Gainesville

Similarly to the anti-mine protests in Minneapolis, on the campus of the University of Florida in Gainesville, Florida Highway Patrol deployed a riot vehicle dubbed “The Monster” which “spewed tear gas” (Associated Press 1972a). Although a fogger is not mentioned specifically, this is the same agency (Florida Highway Patrol) that first deployed thermal foggers via a truck in 1968 (Tschenschlok 1995; Lorentze 2018).

High Schools

Almost immediately, law enforcement extended use of foggers from universities to high schools, specifically using the weapons against Black youth protesters.

I will stop to repeat that again so that we can all (myself included) reflect on this.

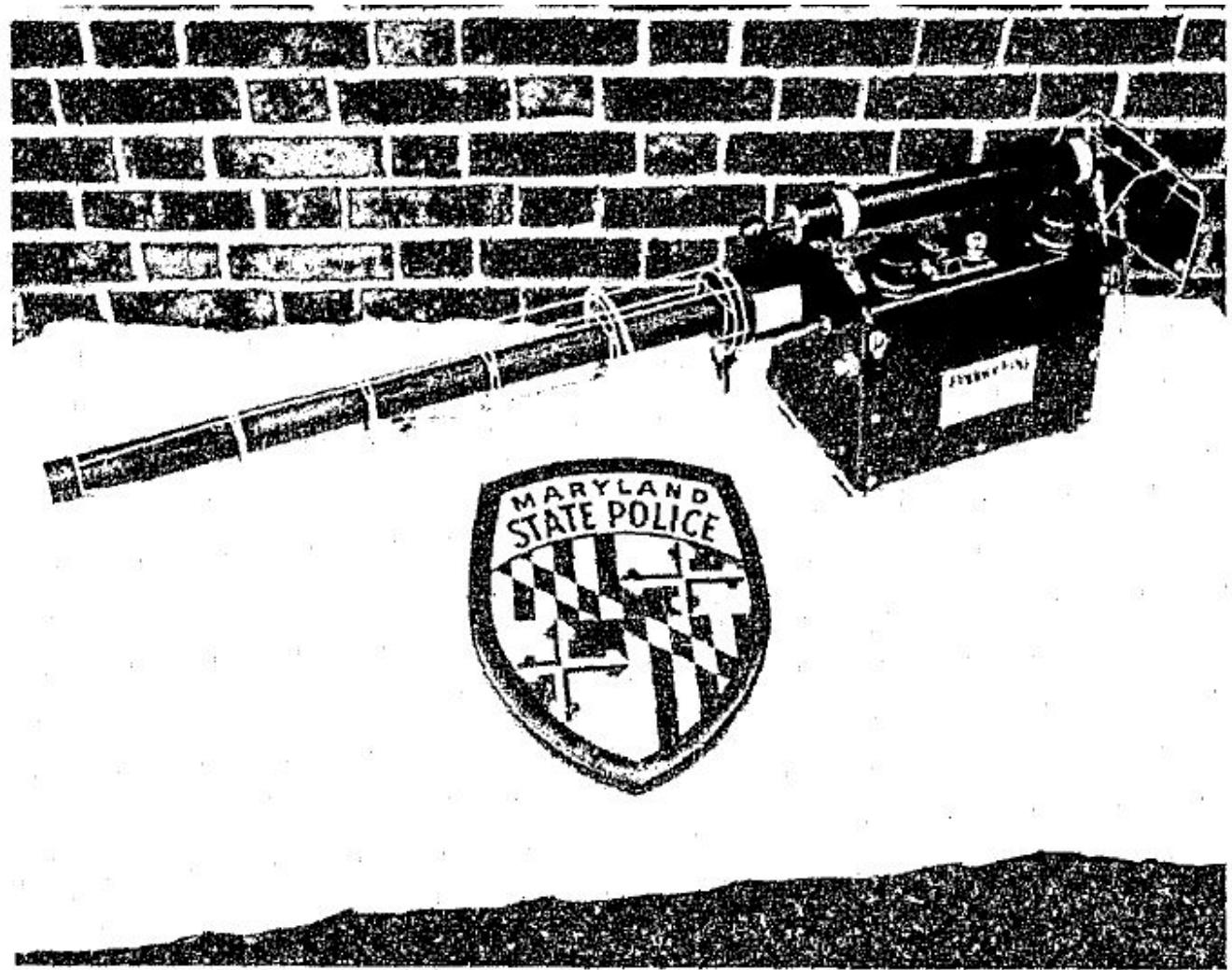


Figure 31: Maryland State Police's **GOEC** pepper fogger (Maryland State Police, n.d.).

Law enforcement agents used chemical weapons against Black junior and high school students during the Civil Rights Era, including a weapon (the thermal fogger) developed not even five years prior to gas Vietnamese soldiers and civilians from tunnels.

San Gordonio

Although undated, this photograph printed in The Delta Democrat-Times (Greenville, Mississippi Thursday) (United Press International 1969a) on November 20, 1969 references a “recent” use of the fogger on students.



Figure 32: Police use a pepper fogger on students at San Gordonio High School (United Press International 1969b).

Use of the thermal fogger by police that day seems likely, given their more documented deployment of it on December 3, 1971. On that day, a combination of San Bernardino police, San Bernardino County sheriffs, and California Highway Patrol used tear gas from a pepper fogger to break up a “major racial confrontation” among students at San Gorgonio High School and across a 20-block area surrounding campus (Yetzer et al. 1971).

Lawrence

Lawrence, Kansas Police used tear gas, including from a thermal fogger, on April 21st, 1970 against Black high school and junior high students, their parents, and community members (Monhollon 2002). The students had gathered that day after a week-long stand-off with administration in response to their failures to meet their demands regarding Black representation in curriculum, hiring, sports, and awards (Monhollon 2002).

Black students had occupied the principal’s office on May 13th and prominent members of the office occupation were arrested from the school that day and promptly suspended from school (Monhollon 2002).

Racial tensions escalated over the subsequent week flamed by presence and actions of the local Klu Klux Klan and Minutemen, some of whom were also police officers (Monhollon 2002). The night of April 20th, the school board held a meeting where they barred suspended students from participating and did not reinstate them, nor did they address the demands, and there was a mass walkout (Monhollon 2002).

The next day, police were ready with heavy chemical weaponry, including the GOEC Pepper Fog fogger:



Figure 33: Police bring a GOEC pepper fogger to gas Black high school and junior high students at Lawrence High School (University of Kansas Archives 1970).

Racial Justice

Police are generally more apt to use heavy responses including chemical weapons against Black protesters in general (Morman et al. 2020). It is therefore not surprising to learn that law enforcement use foggers to deploy chemical weapons on racial justice protests. Indeed, the first use of the fogger in the United States was during the [Liberty City Riots](#), a police action in response to Black community organizations holding conversations among themselves.

Although mentioned in a few outlets during the 1992 police response to the protests in response to the verdict in the Rodney King case, I have yet to find documentation of used explicitly during that time (Askren 1992). For example, Riley County (Kansas; 1970 pop. 56,788; USCB (1971)) Sheriffs had a fogger in their arsenal in 1992 according to Director Alvan Johnson (Askren 1992).

The thermal fogger made a very visible return to the public sphere in July of 2020, when US Customs and Border Protection (CBP) officers brought a bright-green version to Portland, OR during the [2020 Black Lives Matter protests](#) (PB2020 Team [2021](#)). Since then, the fogger has been deployed [three additional times by CBP in Portland](#), all at the property Immigration and Customs Enforcement (ICE) rents on the South Waterfront.

Danville IL

Foggers have been used in a variety of cities, not just major metropolitan areas.

Danville, Illinois (1970 pop. 42,570; ([USCB 1971](#))) Police used a pepper fogger to disperse a crowd of Black protesters that had used picnic tables to barricade a street through their neighborhood on a second night of demonstrations ([Associated Press 1969c](#)), August 10th 1969.

Portland OR

July 29 2020

At the beginning of July 2020, then-president Trump deployed Department of Homeland Security (DHS) agents to “protect” federal property in Portland, OR ([USDHS 2020](#); [Flanigan 2020](#); [Trump 2020](#)). During the final days of the visible presence and response of federal agents in Summer 2020, Customs and Border Protection (CBP) unveiled their thermal fogger ([Sal 2020b](#)), which has been identified through photos as an [IGEBA TF35](#) thermal fogger from Nixalite of America Inc. This machine is designed and marketed for bird control, and while “*training tool for military/law enforcement*” is listed among its uses ([Nixalite 2009a](#)), its safety requirements explicitly state:

“19. Do not fog directly against persons... During operation keep distance of minimum [10 ft].” - ([Nixalite 2009b](#))

Abolish ICE: Immigration and Customs Enforcement Rental Property

While the thermal fogger hasn’t been deployed at the federal Courthouse in downtown Portland since July 29 2020, it has been used repeatedly by Department of Homeland Security agents at the private property US Immigration and Customs Enforcement (ICE) rents to use as a holding center for deportees in the South Waterfront neighborhood ([Simonis 2021](#)) – the same building that saw the weeks-long Occupy ICE protests in 2018 ([Dubois 2018](#)).

The first of such deployments occurred during the fall of 2020.

Along with cities across the country, Portland hosted many events on October 17th focused around the racial and gender justice ([Sal 2020a](#)). In the evening, there was a gathering at Willamette Park in the Southwest part of the city, where organizers passed out balloons detailing harrowing experiences of migrants and immigrants detained by ICE ([Sal 2020a](#)). After marching to the ICE rental property, individuals tied the balloons to the gate to the parking garage, and Department of Homeland Security (DHS) agents including Customs and Border Protection (CBP) officers deployed massive amounts of chemical weapons, including via a thermal fogger, throughout the neighborhood ([Sal 2020a](#)).

Inauguration 2021

The same fogger (or at least the same model) was again brought out at the ICE rental property on January 20th 2021 during the Inauguration Day (“J20”) Abolish ICE protests in response to an individual spray



Figure 34: CBP agent deploying chemical agent via thermal fogger in front of the federal courthouse (Brown 2020).



Figure 35: CBP agent fogging a South Waterfront neighborhood (Lake 2020).

painting a piece of plywood tacked outside the building (Sal 2021a). The fogged up and down multiple blocks, with visible plumes entering units in the adjacent apartment complexes and covering the playground of an adjacent public school (Sal 2021a; Simonis 2021).



Figure 36: CBP officer holding thermal fogger (Staab 2021).

That weekend, CBP deployed the fogger again during Abolish ICE protests, this time gassing even more of the neighborhood, including the local public school and veterans-preference housing (Sal 2021b; Simonis 2021).

Labor

Another common target of police force are labor activists, and so it is not surprising to see the fogger being deployed against strikers at least once in US history.

North Kingstown RI, March 22 1982

The Brown and Sharpe company called in local police and Rhode Island State Police officers to help try to break a (at the time) 22-long strike at their factory in North Kingstown, Rhode Island (Associated Press 1982b; Carbone 2017). A North Kingstown officer named TJ Varone deployed tear gas via a pepper fogger on a group of 75 people, primarily workers' wives and Brown University students, that was blocking the main entrance to the tool factory (Associated Press 1982b; Carbone 2017). The picketers braved the gas for a considerable amount of time, requiring close-range fogging to finally disperse them (Carbone 2017).

The fogging did not, however, break the strike (Carbone 2017).



© Mathieu Lewis-Rolland

Figure 37: CBP agent holding thermal fogger (Lewis-Rolland 2021a).



© Mathieu Lewis-Rolland

Figure 38: CBP agent fogging an intersection in the South Waterfront neighborhood (Lewis-Rolland 2021b).



Figure 39: Police fog striking workers and their families (Associated Press 1982a).

Newspaper and television coverage of the fogging circled the globe (Carbone 2017).

Celebrations

On occasion, police forces have used foggers against protests or riots that are more of a celebratory nature but still do not respond to their commands to disperse.

1975 New Years Eve

New Year's Eve 1975 was apparently quite raucous in Florida, as many cities experienced revelry that got out-of-hand enough to elicit police use of force (United Press International 1976a). In Ft. Lauderdale, party-goers pulled down a traffic light and police deployed multiple foggers on a crowd of 2,500 on the beach (United Press International 1976a).



Figure 40: Police carrying pepper foggers towards the beach (United Press International 1975a).

The mayhem was noteworthy enough to garner publication in the Berkeley Gazette (United Press International 1976b) as well as the Tampa Tribune (United Press International 1976a).

1974 NHRA Nationals

Indiana State Police used a pepper fogger and gas grenades on a crowd of 2,000 drag racing fans blocking a highway between the track and campsites at the Hot Rod Association's US Nationals in Clermont IN, September 1 1974 (Associated Press 1974b, 1974a).

The Carceral System

Like many chemical weapons devices, thermal foggers are used in local, state, and federal carceral systems. Unfortunately most deployments go undocumented or such documents never see the light of day. It seems that the only time we find out about prisoners being fogged is when a serious incident occurs triggering outside investigations and the judicial system.

Big Mac

In the 1970s, the McAlester ("Big Mac") Oklahoma State Penitentiary was the site of considerable resistance and rioting by inmates (The Rag 1975; Winter Soldier 1975). A major tool used by the guards in retaliation was tear gas, which they deployed via shot shells, grenades, and pepper foggers (R. B. Allen 1974a, 1975a, 1975b; Coffey 1975b). Given its use here, it is highly likely that the Oklahoma State Penitentiary system used pepper foggers before (and likely after) (Johnson 1974).

The guards regularly isolated the uprising's leaders in the solitary confinement building known as "The Rock", sealed the building, and gassed it so thick it lasted for days (R. B. Allen 1974b; The Rag 1975). During the May 20 1974 gassings in response to riots, Black prisoner Robert Forsythe, a 33-year old serving time for a robbery, happened to be in solitary confinement due to being caught with contraband money and was not associated with the uprising directly, and so inexperienced with the effects of gas (Johnson 1974; The Rag 1975; Wilson 1993). Although reports are conflicting on details, guards started fogging and gassing prisoners who were, at most, rattling their doors (Hobbs 1974). The likely reason for the barrage was retaliatory, as it was "unjustified" according to a veteran guard (Coffey 1975a).

During the gassings, a pepper fogger was specifically used in the building and created "fumes of gas [that] were awfully heavy, one of the worst I've ever seen" according to veteran corrections officers' trial testimony (R. B. Allen 1975b; Coffey 1975a). The gassing lasted for four hours despite yells for help, resulting in serious injuries including burned and blistered skin, eyes swollen shut, and breathing difficulties (Coffey 1975b). That intense fogging and lack of medical attention over the next two days were main factors contributing to Forsythe's injuries and death two days later, according to medical experts' testimony (R. B. Allen 1974b, 1975a, 1975b).

Although the guards involved were indicted by a grand jury and brought to trial, they ultimately were acquitted of all charges (United Press International 1975c, 1975b).

Union Correctional

According to the superintendent, a riot was caused in the Florida State Prison's Union Correctional Institution in Raiford on July 5th, 1981 by 22 prisoners who were intoxicated, and the only way to subdue them was to deploy a thermal fogger (United Press International 1981). As a result of two officers being "slightly injured" and three inmates being stabbed, an investigation was launched that caused the event to be picked up in the newspapers (United Press International 1981).

Dade County

Dade County Sheriffs used foggers to sweep a field on July 17th 1974 in search of a murder suspect that had eluded K-9 units, helicopters, a plane, and an attempt to flush him out by burning the field (Associated Press and United Press International 1974). The suspect was so well dug in that he could withstand significant gassing that surprised a Sheriff's sergeant who participated in the operation (Associated Press and United Press International 1974).

Accidents

Bullitt Volunteer Fire Department

While not an intentional deployment, in at least one documented incident, a pepper fogger used in firefighter training exercises caused severe symptoms and led to an investigation (Judd 1981). On December 15 1981, The Southeast Bullitt Volunteer Fire Department In Kentucky was conducting a smoke training exercise using a pepper fogger on loan from the fire marshal's office when their "victim" and 16 others (including firefighters) began experiencing coughing fits, headaches, and chest pains (Judd 1981).

Although Smith and Wesson (the Pepper Fogger manufacturer at the time) claimed this was a one-off incident, the Kentucky State Fire Marshal's office had received other reports of firefighters becoming sick when using foggers in smoke training (Judd 1981). Residue tests later revealed no unexpected compounds (The Courier-Journal 1982), indicating the toxicity had come from the design-for-use "safe" smoke.

Border Patrol: A Second Boomeranging

United States Border Patrol (BP) has played an outsized role in policing and corrections within the federal immigration system and abroad both in support of armed services and independently (Miller 2019). Indeed, BP has provided another boomeranging of the Imperial Tetherball that bridges the Vietnam-era and present-day domestic applications via export to foreign governments for use in controlling their own populaces.

International Trafficking

Within a year and a half of the fogger's arrival to US domestic police agencies, BP agents were engaging foreign governments independent of the military on chemical weapons deployment including using thermal foggers. During April 25 - May 9 of 1970, Raymond Dee Bond, a Border Patrol agent with decades of experience, sold \$15,000 worth of chemical weaponry to the Mexican federal government (Star Tribune 1973). Included in the cache were multiple pepper foggers and formulations (Star Tribune 1973). Bond was caught and charged with weapons trafficking and acting as a foreign agent without notifying the Secretary of State (United Press International 1972). Although indicted by a federal grand jury, Bond was able to escape prosecution by resigning from his position (Star Tribune 1973).

Given the extensive reach of Border Patrol into Central and South America fueled in particular by the 'Drug War' (Chepesiuk 1999), it is reasonable to expect that this was not an isolated event.

BORTAC

By 2020, the Border Patrol Tactical Unit (BORTAC) had been established to, among other tasks, provide particularly extreme responses to domestic as well as foreign uprisings (USCBP 2006, 2014, 2018). BORTAC is truly a global domestic law enforcement agency, operating in 28 countries (they were willing to publicly

disclose as of 2006; USCBP (2006)), providing a wide range of services (USCBP 2014; Miller 2019). BORTAC's specific genesis was focused on riots in federal immigration detention centers (USCBP 2006, 2014), noteworthy given the use of thermal foggers in the United States [carceral system](#).

BORTAC would be the unit to bring the thermal fogger back to use against domestic civilian protesters during the [Black Lives Matter](#) and [Abolish ICE](#) protests in Portland Oregon during 2020 and 2021. Indeed, Border Patrol agents from the El Paso unit specifically were deployed to police protests in El Paso in addition to being sent to Portland and other cities like Albuquerque, New Mexico (Borunda 2020).

The Science of Thermal Fogging

The concept behind using a thermal fogger to disperse chemical weapons is known as [pulsejet technology](#), which is indeed a jet propulsion method. For the purposes of thermal fogging, the chemicals are heated to ~1400 degrees Celsius (C) in a combustion chamber and the fogger uses airflow to push the chemical mixture out a long nozzle resonator that cools the fog to 100-500 C before it is blown out as fog that cools as it hits air.

FOG DISSEMINATION

Fog dissemination devices operate by rapidly vaporizing a high boiling point liquid agent formulation. This is accomplished by injecting the liquid agent into a hot gas flow and allowing the vaporized agent to contact the cooler ambient air where the agent condenses into a fog and ultimately into extremely small agent particles.

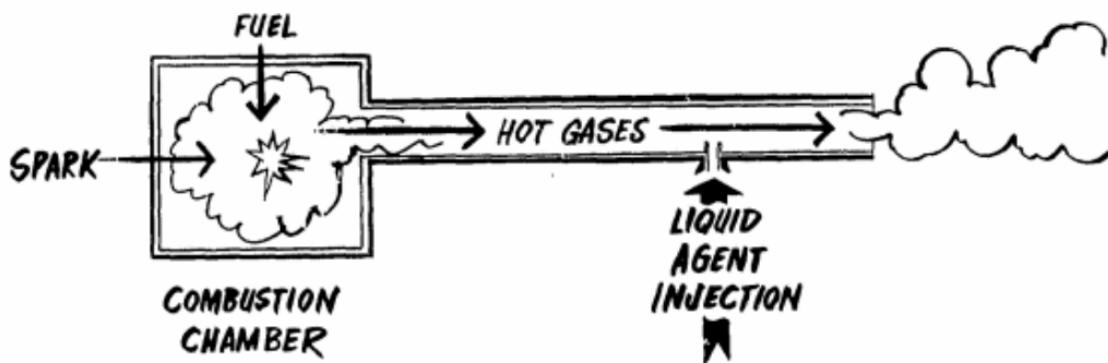


FIGURE 4 – FOG DISSEMINATION
A liquid chemical agent is vaporized by a hot gas flow and released as a fog cloud.

Figure 41: Concept drawing from the International Association of Chiefs of Police chemical agents manual (Crockett 1969).

Although the mixture does cool considerably from its peak temperature before being released, the chemicals were heated to such high temperatures that they will thermally decompose, creating a much more toxic mixture of gasses. Indeed, the thermal cracking temperatures of [CN gas](#) (248 C Compton (1987)), [CS gas](#) (450 - 550 C; Xue et al. (2015)), [Oleoresin Capsicum \(OC\) gas](#) (< 200 C; Henderson and Henderson (1992)), and [Terephthalic Acid \(TPA\) smoke](#) (445 C; Kimyonok and Ulutürk (2016)) are well below the temperatures achieved in a thermal fogger.

As a result, it is impossible for anyone to definitively know what chemicals they are fogging someone with, but it is fair to say the mixture is likely to have considerably higher toxicity than product labels and safety data sheets indicate.

References

- Allen, Peter. 1972. "Police in Secret Tests of Giant "Pepper Fogger"." *The Sydney Morning Herald*, 3, 14.
- Allen, R. B. 1974a. "Dying Man's Pleas Related by Convict." *The Daily Oklahoman*.
- _____. 1974b. "Move Isolates Rebel Convicts." *The Daily Oklahoman*.
- _____. 1975a. "Jurors Hear Witness to Prison Gas Death." *The Daily Oklahoman*.
- _____. 1975b. "Unavailability of Medical Aid at "Rock" Cited." *The Daily Oklahoman*.
- Aman, Dick. 1970. "Sheriff's Captain Robert Dysart and His "Buck Rogers" Pepper Fogger at Riot-Control Demonstration." *News-Journal*. Mansfield, OH, USA.
- Applegate, Rex. 1969. *Riot Control - Materiel and Technique*. Harrisburg, PA, USA: Stackpole Books.
- _____. 1970. "Guns and the Law: Pepper Foggers." *Guns*, 30–31.
- Arendt, Hannah. 1951. *The Origins of Totalitarianism*. New York, NY, USA: Schocken Books.
- Askren, Marisa G. 1992. "How Much Force Is Proper? RCPD Officers Confront That Question on Patrol," May, 1, 3.
- Associated Press. 1969a. "Guardsmen." *The Miami News Tribune*, 3A.
- _____. 1969b. "Guardsmen Charge Students." *Press and Sun Bulletin*, 3A.
- _____. 1969c. "Negroes and Police Battle in Illinois." *Palladium-Item*.
- _____. 1969d. "Pepper Fogger Stops Unruly Youth in Seattle." *Associated Press*.
- _____. 1969e. "Battle at Berkeley in Cloud of Tear Gas." *The Leader Post*, 1.
- _____. 1969f. "Pepper Fogger Lays down a Screen." *The Daily Tribune*, 1.
- _____. 1969g. "Pepper Fogger Lays down a Screen," 9.
- _____. 1969h. "Pepper Fogger Lays down a Screen." *The Sumter Daily*, 1.
- _____. 1969i. "Pepper Fogger Lays down a Screen." *The New Mexican*, 1.
- _____. 1969j. "Pepper Fogger Lays down a Screen." *The Red Deer Advocate*, 1.
- _____. 1969k. "Pepper Fogger Provides a Screen." *Press-Telegram*, 4.
- _____. 1969l. "Pepper Fogger." *Janesville Daily Gazette*, 1.
- _____. 1969m. "Pepper Fogger Lays down a Screen." *Messenger-Inquirer*, 1.
- _____. 1969n. Berkeley, CA, USA.
- _____. 1969o. Berkeley, CA, USA.
- _____. 1969p. Berkeley, CA, USA.
- _____. 1974a. "Drag Race Fans Riot at Nationals." *The Billings Gazette*.
- _____. 1974b. "Melee Breaks Out at Nhra Nationals." *The Courier*.
- _____. 1982a. North Kingstown, RI, USA.
- _____. 1982b. "Protest at Factory." *Lexington Herald*.
- _____. 1972a. "Guards Arrive on Campus at Minnesota." *Argus-Leader*, May.
- _____. 1972b. "Thousands Demonstrate Against Mines." *Argus-Leader*, May.
- Associated Press, and United Press International. 1974. "Abductor Collects Payment, Slays Two." *Tampa Bay Times*, 1B, 11B.

- Bandy, Don. 1970. "What Has Happened in Ohio National Guard Since May?" C8.
- Borunda, Daniel. 2020. "El Paso Border Patrol Teams Among Federal Forces Sent to Protests in Other Cities." *El Paso Times*. <https://www.elpasotimes.com/story/news/local/el-paso/2020/07/23/border-patrol-agents-bortac-el-paso-deployed-portland-protests/3288083001/>.
- Box Elder Agencies. 1971. "Riot Control Items Coming," 12A.
- Brown, Doug. 2020. Portland, OR, USA. <https://twitter.com/dougbrown8/status/1288727075197657088/photo/1>.
- Bunker, Robert J. 1996. "Nonlethal Weapons: Terms and References." *INSS Occasional Papers*, no. 15: 1–99.
- Cabe, Brig. 1970. https://www.flickr.com/photos/washington_area_spark/8878226358/.
- Cain, June. 1968. "New Fogger Replaces Police Billy," 28.
- Carbone, G. M. 2017. *Brown & Sharpe and the Measure of American Industry: Making the Precision Machine Tools That Enabled Manufacturing, 1833-2001*. Jefferson, NC, USA: McFarland & Company, Inc.
- Césaire, Aimé. 1950. *Discourse on Colonialism*. Paris, France: Éditions Réclame.
- Chepesiuk, Ron. 1999. *The War on Drugs: An International Encyclopedia*. Santa Barbara, CA, USA. <https://archive.org/details/warondrugsintern0000chep>.
- Coffey, I. 1975a. "Veteran Guard Terms Gassing "Unjustified"." *The Daily Oklahoman*.
- . 1975b. "Trio Gives Testimony in Fatal Gassing Trial." *The Daily Oklahoman*.
- Compton, J. A. F. 1987. *Military Chemical and Biological Agents: Chemical and Toxicological Properties*. Caldwell, NJ, USA: Telford Press.
- Conheim, Maryanne. 1972. "Federal Funds Finance Anti-Riot Arsenals," May, 3, 8.
- Copley News Service. 1970. "Tear Dispenser." Colorado Springs, CO, USA: Colorado Springs Gazette-Telegraph.
- Crockett, Thompson S. 1969. *Police Chemical Agents Manual*. 530240. Washington, DC, USA: International Association of Chiefs of Police, Professional Standards Division.
- Des Moines Tribune. 1975. "For Sale: Pepper Fogger, Low Miles; Immac. Cond." May, 3.
- Dubois, Steven. 2018. "Protesters Ordered to Leave Ice Property." *Statesman Journal*.
- Eckholt, L. 1971. *Des Moines Register*, May.
- Faas, Horst. 1977. "Vietnamese Recalls Agonies of Tunnel War." *The New York Times*. <https://www.nytimes.com/1977/10/13/archives/vietnamese-recalls-agonies-of-tunnel-war.html>.
- Farber, David. 1988. *Chicago '68*. Chicago, IL, USA: University of Chicago Press.
- Flanigan, Kaitlin. 2020. "Docs: Homeland Security's Portland Protest Mission Called "Operation Diligent Valor"." *KOIN 6 News*. <https://www.koin.com/news/protests/docs-homeland-securitys-portland-protests-mission-called-operation-diligent-valor/>.
- Foucault, Michel. 1976. "Society Must Be Defended."
- General Ordnance Equipment Corporation. 1969a. "PEPPER Fog Tear Smoke Generator."
- . 1969b.
- . 1969c. "To Take the Violence Out of Men's Minds with the Least Violent Means:" *Liberation News Service*, no. 199. <https://content.wisconsinhistory.org/digital/collection/p15932coll8/id/67765>.
- . 1970. "Street Cleaner." *Observer* 13 (6): Back Page. <https://digitalcommons.bard.edu/cgi/viewcontent.cgi?article=1128&context=observer>.

- Goldstein, Richard. 1998. "Rex Applegate, 84, Instructor of Deadly Skills." *The New York Times*. <https://www.nytimes.com/1998/07/27/us/rex-applegate-84-instructor-of-deadly-skills.html>.
- Graham, Stephen. 2013. "Foucault's Boomerang: The New Military Urbanism." *Open Democracy*. <https://www.opendemocracy.net/en/opensecurity/foucaults-boomerang-new-military-urbanism/>.
- Griffin, Leo. 1973. "Chief Says Police Trained to Limit Allowed by Budget," 3.
- Harris, Mike. 1969a. "Pepper Fogger Joins Arsenal," 16.
- _____. 1969b. "'Pepper Fogger' Can Empty a House Fast," 26.
- _____. 1969c. "'Pepper Fogger' Can Fill Soldier Field with Gas in Minute," 28.
- Hayes, E. 1970. "Grand Jury Riot Report Reviewed." *Oakland Tribune*.
- Hemmings, Jay. 2019. "Amazing Pictures of Tunnel Rats: The Warriors Who Infiltrated Underground Tunnels in the Vietnam War." *War History Online*. <https://www.warhistoryonline.com/instant-articles/the-tunnel-rats-vietnam-war.html>.
- Henderson, David E., and Susan K. Henderson. 1992. "Thermal Decomposition of Capsaicin. 1. Interactions with Oleic Acid at High Temperatures." *Journal of Agricultural and Food Chemistry* 40 (11): 2263–8. <https://doi.org/10.1021/jf00023a042>.
- Hobbs, C. 1974. "Jury to Probe Prison Gassing." *The Daily Oklahoman*.
- Hudson, Repps B. 1976. "Overtime Bonanza for Police," 1–2.
- Johnson, J. 1974. "Permanent Gassing Ban Under Study." *The Daily Oklahoman*, May.
- Jolley, Roger, and Cornelia Olive. 1969. "25 Injured in Clash of Students and Police After Black Seizure of Duke Campus Building," 14. <https://exhibits.library.duke.edu/exhibits/show/black-students-matter--allen-item/1901>.
- Judd, Alan. 1981. "State Fire Marshal Begins Probe into Illness During Rescue Session." *The Courier-Journal*.
- Karnow, Stanley. 1983. *Vietnam a History*. New York, NY, USA: Viking Press.
- Kimyonok, A. Begüm Elmas, and Mehmet Ulutürk. 2016. "Determination of the Thermal Decomposition Products of Terephthalic Acid by Using Curie-Point Pyrolyzer." *Journal of Energetic Materials* 34 (2): 113–22. <https://doi.org/10.1080/07370652.2015.1005773>.
- Lake, Mason. 2020. Portland, OR, USA. <https://twitter.com/MasonLakePhoto/status/1317869903345414144>.
- Langguth, A. J. 2000. *Our Vietnam: The War 1954-1975*. New York, NY, USA: Simon; Schuster.
- LaPrade, Steve. 1970. "Amarillo's Police Arsenal Holds Variety of Crowd Control Aids." *The Amarillo Globe Times*, 24.
- Lehrer, Glenn H. 1968. "Viet Cong Tunnels." *The Military Engineer* Vietnam Commemorative Issue: 61–63. <http://www.jstor.org/stable/26357656>.
- Lewis-Rolland, M. 2021a. Portland, OR, USA. <https://twitter.com/MathieuLRolland/status/1353427314348986373/photo/1>.
- _____. 2021b. Portland, OR, USA. <https://twitter.com/MathieuLRolland/status/1353427325405126656/photo/3>.
- Lorentze, Christian. 2018. "The Riot Stuff." *Bookforum*, no. Summer 2018. <https://www.bookforum.com/print/2502/covering-the-chaos-outside-1968-s-presidential-conventions-19685>.
- Los Angeles Times. 1969. "People's Park Not Worth the Battle so Far." *The Delta Democrat-Times*.
- MacGregor, Alexander Hugh 'Sandy'. 1966a. "Double Acetylene Generator and a Mighty Mite Air Blower Used to Blow Fumes into Viet Cong Tunnels." Phuoc Tuy Province, VN: Australian War Memorial. <https://www.awm.gov.au/collection/C239314?image=1>.

- _____. 1966b. "Mighty Mite Machine Used to Contaminate Viet Cong Tunnel Systems with Acetylene." Phuoc Tuy Province, VN: Australian War Memorial. <https://www.awm.gov.au/collection/C239314?image=1>.
- MacKenzie, Bev. 1976. "Pepper Fogger." Windsor, OR, CA: The Windsor Star.
- Macomber, Frank. 1970. "Alternative to Violence: The Shape of Nonlethal Weapons," 6.
- Maryland State Police. n.d. "Manual on Civil Disturbances." 26778. MD, USA: National Criminal Justice Reference Service. <https://www.ojp.gov/ncjrs/virtual-library/abstracts/maryland-manual-civil-disturbances>.
- McArdle, T. 2018. "How Three Violent Days Gripped a Black Miami Neighborhood as Nixon Was Nominated in 1968." *The Washington Post*. <https://www.washingtonpost.com/news/retropolis/wp/2018/08/07/how-three-violent-days-gripped-a-black-miami-neighborhood-as-nixon-was-nominated-in-1968/>.
- Michals, Gene. 1970. "Quiet Way to Quiet a Rioter," May, 5.
- Miller, Todd. 2019. "Empire of Borders." *Tucson Weekly*. <https://www.tucsonweekly.com/tucson/empire-of-borders/Content?oid=26230690>.
- Monhollon, Rusty L. 2002. *'This Is America?' The Sixties in Lawrence, Kansas*. New York, NY, USA: PALGRAVE.
- Morman, A., Z. Williams, D. Smith, and A. C. Randolph. 2020. "Riot Control Agents: Systemic Reassessment of Adverse Effects on Health, Mental Stability, and Social Inequities." Portland, OR, USA: Don't Shoot PDX. https://www.dontshootpdx.org/wp-content/uploads/2020/06/DSPFinal-RCAreport4SocialChange-AM.AR_.ZW_.DS-.pdf.
- Nixalite. 2009a. "TF-35 Thermal Fogger Brochure." Casper, WY, USA. <https://www.nixalite.com/SiteContent/Documents/PDFs/TF35.pdf>.
- _____. 2009b. "TF-35 Thermal Fogger Owners Manual." Casper, WY, USA. <https://www.nixalite.com/SiteContent/Documents/PDFs/IGEBA%20TF35%20OWNERS%20MANUAL.pdf>.
- Oates, Walter. 1970. https://www.flickr.com/photos/washington_area_spark/27910799119/in/album-72157631184115662/.
- Orlando Evening Star. 1968. "Fogger Belches Smoke." Orlando, FL, USA: Orlando Evening Star.
- Patterson, Paul. 1976. "Their Business Is Riot Guns, Armor, and Nebulizers." Windsor, OR, CA: The Windsor Star.
- PB2020 Team. 2021. "Police Brutality During Us Protests." <https://2020pb.com/>.
- Robinson, Michael. 1972. "Learning How to Curb Riot," B10.
- Rottman, Gordon L. 2006. *Viet Cong and Nva Tunnels and Fortifications of the Vietnam War*. Vol. Fortress. 48. New York, NY, USA: Osprey Publishing Limited.
- Rottman, Gordon L., and Brian Delf. 2012. *Tunnel Rat in Vietnam*. Vol. Warrior. 161. New York, NY, USA: Osprey Publishing Limited.
- Safariland, LLC. 2020a. "Pepper Fogger Generator Golden Each Technical Specifications." Casper, WY, USA: Defense Technology.
- _____. 2020b. Casper, WY, USA. <https://www.defense-technology.com/product/pepper-fog-generator/>.
- Sal. 2020a. RE: Portland. Portland, OR, USA: Recompiler Magazine. <https://pdx.recompilermag.com/2020/10/17/protests-for-october-17/>.
- _____. 2020b. RE: Portland. Portland, OR, USA: Recompiler Magazine. <https://pdx.recompilermag.com/2020/07/30/protests-for-july-29/>.
- _____. 2021a. RE: Portland. Portland, OR, USA: Recompiler Magazine. <https://pdx.recompilermag.com/2021/01/20/january-20-2021-protest-abolish-ice/>.

- _____. 2021b. RE: Portland. Portland, OR, USA: Recompiler Magazine. <https://pdx.recompilermag.com/2021/01/23/january-23-2021-protest-abolish-ice/>.
- Samuels, David W., Donald O. Egner, and Donald Campbell. 1969. "Riot Control: Analysis and Catalog." 69-14. Aberdeen Proving Ground, MD, USA: US Army Limited Wat Laboratory.
- Schrader, Sutart. 2019. *Badges Without Borders: How Global Counterinsurgency Transformed American Policing*. American Crossroads 56. Berkeley, CA, USA: University of California Press.
- Schreiber, W. L., S. K. Billingsley, R. E. Schafer, J. G. Rogers, and E. W. Rounds. 1971a. "The Identification, Description, and Evaluation of Law Enforcement Command and Control Problems Related to Crowds and Demonstrations." *NCJRS*, no. I. <https://www.ojp.gov/ncjrs/virtual-library/abstracts/identification-description-and-evaluation-law-enforcement-command>.
- _____. 1971b. "The Identification, Description, and Evaluation of Law Enforcement Command and Control Problems Related to Crowds and Demonstrations." *NCJRS*, no. II. <https://www.ojp.gov/ncjrs/virtual-library/abstracts/identification-description-and-evaluation-law-enforcement-command>.
- Schultz, John. 1969. *No One Was Killed: The Democratic National Convention, August 1968*. Chicago, IL, USA: University of Chicago Press.
- Simonis, Juniper L. 2021. "Impacts of Chemical Weapons on the Cottonwood School of Civics and Science." In. Portland, OR, USA: Presented to Cottonwood School of Civics; Science.
- _____. 2020. "Quantifying Use of Lethal Zncl2 on Black Lives Matter Demonstrators by United States Homeland Security." <https://doi.org/10.5281/zenodo.4059329>.
- Spicknall, T. E. 1969. "Civilian Repairs and Utilities in the Combat Zone." *The Military Engineer Vietnam Commemorative Issue*: 74–77. <http://www.jstor.org/stable/26357660>.
- Staab, M. 2021. Portland, OR, USA. <https://twitter.com/MaranieRae/status/1352394871080816641/photo/1>.
- Star Tribune. 1973. "Border Patrol Agent Released from Charges." *Valley Morning Star*.
- _____. 1972. "Guard Moves to 'U' After Antiwar Violence." *Star Tribune*, May.
- Taylor, David, and Sam Morris. 2018. "The Whole World Is Watching: How the 1968 Chicago 'Police Riot' Shocked America and Divided the Nation." *The Guardian*. <https://www.theguardian.com/us-news/ng-interactive/2018/aug/19/the-whole-world-is-watching-chicago-police-riot-vietnam-war-regan>.
- The Courier-Journal. 1982. "Fire-Training Smoke Wasn't Tainted." *The Courier-Journal*.
- The Gastonian Gazette Sun. 1970a. "Many Police Carry Mace, Some Not Willing to Use It." *The Gastonian Gazette Sun*. Gastonia, NC, USA.
- _____. 1970b. "PEPPER Fogger." *The Gastonian Gazette Sun*. Gastonia, NC, USA.
- The McHenry Plaindealer. 1971. "Hold Country Field Day Problem Demonstration." *The McHenry Plaindealer*. McHenry, IL, USA.
- The Rag. 1975. "Oklahoma Prison Guards Indicted in Death of Prisoner." *The Rag* IX.
- Trump, Donald J. 2020. "Executive Order on Protecting American Monuments, Memorials, and Statues and Combating Recent Criminal Violence." <https://web.archive.org/web/20200726002840/https://www.whitehouse.gov/presidential-actions/executive-order-protecting-american-monuments-memorials-statues-combating-recent-criminal-violence/>.
- Tschenschlok, Eric G. 1995. "Long Road to Rebellion: Miami's Liberty City Riot of 1968." Master's thesis, Florida Atlantic University.
- _____. 1996. "Long Time Coming: Miami's Liberty City Riot of 1968." *The Florida Historical Quarterly* 74: 440–60. <https://www.jstor.org/stable/30148880>.
- United Press International. 1968a. "Gas Routs Berkeley Protesters." *The Honolulu Advertiser*, 5.

- _____. 1968b. "Berkeley Violent." *Paterson Evening News*, 1.
- _____. 1968c. "Officer Wounded in Clash at Berkeley." *The Hanford Sentinel*, 1-2.
- _____. 1968d. "Policeman Shot as Violence Erupts at Berkeley Protest." *The Capital Times*, 2.
- _____. 1968e. "Policeman Shot in Radical Rally." *El Paso Herald-Post*, A1-A2.
- _____. 1968f. "Riot Control by the Nose." *St. Louis Post Dispatch*, 1.
- _____. 1968g. Berkeley, CA, USA.
- _____. 1968h. *The News-Herald*, 1.
- _____. 1969a. "Gas Gun." Greenville, MS, USA.
- _____. 1969b. San Bernardino, CA, USA.
- _____. 1970. "Ex-Lawman Shot Because "Not Practical to Arrest"." *The Press Democrat*.
- _____. 1972. "Border Cop Held in Arms Selling." *Daily News*, 8.
- _____. 1975a. Ft. Lauderdale, FL, USA.
- _____. 1975b. "US Jury Acquits Prison Guards." *Sapulpa Daily News*.
- _____. 1975c. "In Prison Probe – Us Grand Jury Indicts Officers." *Sapulpa Daily News*.
- _____. 1976a. "New Year's Revelers, Police Clash." *Pasco Tribune*.
- _____. 1976b. "Tear-Gas Guns." *Berkeley Gazette*.
- _____. 1981. "Prisoners Moved After Disturbance." *Tallahassee Democrat*, 1.

University of Kansas Archives. 1970. Lawrence, KS, USA.

USAES. 2003. "How Army Engineers Cleared Viet Cong Tunnels," The army engineer in vietnam,, no. 62. <https://www.usace.army.mil/About/History/Historical-Vignettes/Military-Construction-Combat/062-Viet-Cong-Tunnels/>.

US Army. 1966. "Mighty Mite." *Military Review* XLVI (8). <https://cgsc.contentdm.oclc.org/digital/collection/p124201coll1/id/632>.

USCB. 1971. "1970 Census." Washington, DC, USA.

USCBP. 2014. "Border Patrol Tactical Unit Fact Sheet." Washington, DC, USA. <https://www.cbp.gov/sites/default/files/documents/Border%20Patrol%20Tactical%20Unit.pdf>.

_____. 2018. "Border Patrol Special Operations Group Fact Sheet." Washington, DC, USA. <https://www.cbp.gov/sites/default/files/assets/documents/2018-Aug/border-patrol-special-operations-group.pdf>.

_____. 2006. "CBP Border Patrol Tactical Unit Graduates 20th Class." *U.S. Customs and Border Protection Today*, May. https://web.archive.org/web/20090514211514/http://www.cbp.gov/xp/CustomsToday/2006/may/tactical_unit.xml.

USDHS. 2020. "DHS Announces New Task Force to Protect American Monuments, Memorials, and Statues." <https://www.dhs.gov/news/2020/07/01/dhs-announces-new-task-force-protect-american-monuments-memorials-and-statues>.

USMACV. 1965. "Operational Employment of the Mity Mite Portable Blower." Lessons Learned 52.

USTPO. 2018. "General Ordnance Equipment Corporation: Pepper Fog." <https://uspto.report/TM/72310456>.

Vance, Tyler. 1970. "Sgt. Jerry Austin ... Wiht [Sic] "Pepper Fogger" and Trusty Shotgun." *The Amarillo Globe Times*. Amarillo, TX, USA.

Washington Area Spark. 2013. <https://washingtonareaspark.com/2013/05/29/30-days-in-may-u-of-md-1970/>.

- Wayne Gaylord. 1971. "The Pepper Fogger with One Quart of Tear Gas Solution Does the Job of 300 Grenades." *The McHenry Plaindealer*. McHenry, IL, USA.
- Wills, Garry. 1971a. "Tear Gas Tears." *The Herald Statesman*.
- _____. 1971b. "Tear Gas Tears." *The Daily Item*.
- _____. 1971c. "Far, Far Too Many Tears over Tear Gas." *The Charlotte News*.
- _____. 1971d. "Tear Gas Is Humane in "Certain Situations""." *The Philadelphia Inquirer*.
- Wilson, S. D. 1993. "Coming Home: The Birth and Spirit in America's Gulag." In *The American Indian in the White Man's Prisons: A Story of Genocide. A Collective Statement by Native American Prisoners, Former Prisoners, and Spiritual Leaders of North America*, edited by L. R. Reed.
- Winter, Max. 1970. "Scott County Deputy Sheriff Jim Lewis, Left, Holds a New Grenade Launcher and a Riot Gun While Sheriff William Strout Displays a Pepper Fogger and Gas Mask." *Quad-City Times*. Davenport, IA, USA.
- Winter Soldier. 1975. "McAlester." *Winter Soldier* 5 (2): 11.
- Xue, Tian, Yong-he Han, Qi-zhi Zhao, and Ning Lyu. 2015. "Thermal Decomposition of Cs by Tg/Dsc-Fitr and Py-Gc/Ms." In *Proceedings of the 2015 International Conference on Mechatronics, Electronic, Industrial and Control Engineering*, 912–16. Atlantis Press. <https://doi.org/https://doi.org/10.2991/meic-15.2015.208>.
- Yetzer, C., B. Smith, P. Sheeran, L. Harris, and D. Pollock. 1971. "Police Use Tear Gas to Break up Fights at San Gorgonio High." *The San Bernardino County Sun*, 1, 3.