

**THE BILL BLACKWOOD
LAW ENFORCEMENT MANAGEMENT INSTITUTE OF TEXAS**

**Oleoresin Capsicum
Another Option**

**A Policy Research Project
Submitted in Partial Fulfillment
of the Requirements for the Professional Designation
Graduate, Management Institute**

**by
William D. Pue**

**Live Oak Police Department
Live Oak, Texas
September 1996**

***449**

ABSTRACT

In law enforcement the use of force is always under scrutiny. The citizens want to be protected by, not scared of, law enforcement. Citizens have spoken through the court system. Officers must learn from the mistakes of others. From these mistakes courts have ruled and from these rules comes forth policy. Policy is written to conform to the courts decisions where citizens have spoken. Officers must learn what is reasonable, just and fair in light of the circumstances confronting them. Training and enforcement of policy is a must to protect the subject, citizens, officers and the department. Law enforcement must continue to look for better ways of controlling assaultive behavior. The purpose of this research project is to justify a change in policy that would permit the use of pepper spray, by the Live Oak Police Department , as a tool in stopping assaultive behavior. Sources of information will come from journals, newspapers, books, legal opinions, personal exposure and an independent survey of police departments using pepper spray. These sources will provide public opinion, scientific study, and independent evaluation of pepper spray. The conclusion of this research indicates that Oleoresin Capsicum (AKA: pepper spray or OC spray) is tactically effective, medically safe to humans and animals and would meet the legal requirements of being a reasonable less-than-lethal use of force option, when officers act in accordance with proper training and strict policy guidelines. This option indicates a reduction in legal cost due to fewer injuries to subjects and officers.

TABLE OF CONTENTS

Section	Page
Abstract	
Introduction	1
Historical, Legal, and Theoretical Context	2
Review of Literature and Practice	5
Discussion of Relevant Issues	7
Conclusion and Recommendations	10
Bibliography	13

Introduction

Police officers and their departments have been under the magnifying glass over use of force for decades. The Live Oak Police Department is looking for a better way of controlling a subject without losing their ability of protecting themselves or cause permanent injury to the subject. The purpose of this project is to justify a change in policy that would permit the use of pepper spray, by Live Oak Police Department officers, as another tool in stopping assaultive behavior.

Oleoresin Capsicum, "pepper spray" or "OC spray," is a current hot topic of decision making in law enforcement and by the public. It has been called a great breakthrough by law enforcement and a dangerous option by some citizens. The active ingredient in pepper spray is made from an extract found in cayenne pepper (U.S. Department of Justice 1995 1). Cayenne peppers are used in food products and pepper spray to add that spicy sensation. Pepper spray is rated by Scoville Heat Units which is a taste test and Scoville Content is the scale to rate peppers pungency or heat of a capsicum pepper. To determine the Scoville Content, the Capsicum level in the canister is multiplied by 150,000 (SHU from one full percentage point of pure Capsicum). (Logman 32).

The issues are many. The main issue is whether pepper spray causes death.

Javier Trejo's death was one of more than more than 60 deaths nationwide during the last five years that authorities say may be linked to a chemical agent designed as a non-lethal way to subdue violent suspects and embraced by a crime-weary public searching for personal protection. Autopsies generally indicate that the victims were under the influence of alcohol, methamphetamines, rock cocaine or PCP, making it difficult to pinpoint pepper spray as the primary cause of death. Others suffered from asthma, bronchitis or enlarged hearts, or "positional asphyxia," a respiratory failure caused by being laid face-down while restrained (Pinsky 1996).

We say - and all we ever said - there needs to be a much more objective review of these cases to identify just what contributes to what, said ACLU's Allan Parachini. We're not saying there is a single death caused by pepper spray, but that it may contribute to death in connection with other factors (Fischer 1996).

Pepper spray will be evaluated on three issues in this project. (1) How effective is it as a viable tactic. (2) What medical studies have been done? (3) What are the legal issues involved with its use? (Siddle 1-6). Sources of information will come from journals, newspapers, books, legal opinions, personal exposure and surveys from police departments that currently use pepper spray. These sources provide public opinion, scientific studies and practical uses of the product. The intended outcome of this project is to provide officers with a less-than-lethal use of force option that emphasizes safety to the officer, suspect, and public.

Historical, Legal or Theoretical Content

The application of chemical agents in the context of armed conflict is as old as organized warfare. Chemical weaponry was first used in the United States in the Civil War at the siege of Charleston. Wood was saturated with sulphur and burned under the parapets around the city hoping that favorable winds would propel huge clouds of choking smoke to drive out the defenders. French law enforcement is reputed to have been the first police organization to have used a chemical lacimator (tear-producing) in a hand-thrown device. At the start of World War I (1914-1918) the French Army had limited stocks on hand and rifle grenades, loaded with a liquid tear-producing agent called Ethylbromacetate (Logman 3). In 1923, the United States Government financed the development of chemical agents at Edgewood Arsenal. A great deal of time and expense went into the research of non-lethal irritants that could be successfully used in law enforcement. CN was successfully developed in a form very similar to what we have today in canisters. CN is the active ingredient of Chemical Mace, an aerosol irritant acquired by many U.S. police agencies in 1965 (Logman 10). The Federal Bureau of Investigation, U.S. Department of

Justice and the National Institute of Corrections, as well as many others, have researched and reported on the use of chemical agents. These reports have information on the pro's and con's of many chemical agents. They are best summed up by Logman the founder of Oleoresin Capsicum technology. DM (Diphenylaminochlorarsine) due to its arsenic content has caused numerous fatalities, and CN (Chloroacetophenone) has been replaced by CS (Orthochlorobenzylidenemalononitrile) due to its lethal concentration level, allergenic nature and lack of effectiveness. CS and CN have caused serious contamination problems and were not effective on those under the influence of narcotics, alcohol or emotionally enraged. It took several seconds before the effects of CS or CN could be realized. Tearing and irritation were not sufficient to stop driven and highly agitated individuals. Dissatisfaction with the available tools and tear gas agents led law enforcement to search for an alternative agent giving rise to the U.S. Attorney General's Report of less-than-lethal weapons which initiated the search for an effective and safe non-lethal weapon alternative (Logman 18).

It took from 1974 to 1985 to decide the case of Tennessee v. Garner where a teenager was shot and killed by police as he ran from a burglary scene which netted \$10.00. Deadly force against fleeing felons came into question when there was not an immediate threat to the officers or probable cause to believe that the suspect had committed a crime involving the infliction or threatened infliction of serious physical harm, the deadly force was necessary to prevent the escape, and the officer had to give a warning of the imminent use of deadly force if feasible (Tennessee v Garner 1985). In short the teenagers loss of life was not worth the potential loss of property. In the case of Gilmore v City of Atlanta, excessive force issues were examined. The force issues were: the need for the application of force, the relationship between the need and the amount of force used, the extent of injury, and whether the force was applied in good faith or maliciously or sadistically applied (Gilmore v City of Atlanta 1986).

In June 1986, Attorney General Edwin Meese convened a conference to reassess the progress of less-than-lethal weapons development. A one-hundred-fifty federal, state, and local law enforcement officers, Department of Defense representatives, scientists and academicians attended this conference. They looked for the development of non-lethal weapons to address law enforcement needs to include: to avoid serious injury and death of fleeing felons; to deal with hostage-terrorist situations; to decrease the number of law enforcement officers shot with their own weapons; to provide adequate force options for the increasing number of women officers; to respond effectively to potentially violent emotionally disturbed persons; and to decrease high insurance rates and lessen the number of lawsuits involving police officers (U.S. Department of Justice 1987).

By 1989, other questions were raised in the Graham v Conner case. The questions raised were whether the officers actions were objectively reasonable in light of the facts and circumstances confronting them that would pose an immediate threat to the safety of officers and/or others (Graham v Conner 1989).

From 1987, through 1989, the Federal Bureau of Investigation conducted research on the use of Oleoresin Capsicum (O.C. or pepper spray). The firearms Training Unit and the Special Operations and Research Unit at the FBI Academy, Quantico, Virginia conducted these studies. Since personal exposure testing of O.C. since 1987, over 2,000 people have been in a test environment that was contaminated with pepper spray, or were sprayed directly in the face with pepper spray. None of these people experienced a rash or blister after being exposed to OC (Jett 6). Attorney, John Crew, who heads the Police Practices Projects of the Northern California American Civil Liberties Union reports, "Pepper spray when used effectively, may be an appropriate method of subduing violent suspects. When used improperly and along with other dangerous types of police restraints, it is clear that fatal outcomes can result. The ACLU research convinces us that many, if not most, of these deaths are avoidable" (American Civil Liberties

Union of Southern California). Policies and proper training is a must when it comes to the safety of all involved in any use of force option to include Oleoresin Capsicum.

Review of Literature and Practice

I interviewed many officers from various law enforcement agencies that have gone through pepper spray training in which they were sprayed with pepper spray. Most of these officers were from the Universal City Police Department. They report that pepper spray worked on them and on the violent suspects they have encountered. However, pepper spray did not work on subjects one-hundred percent of the time. None of the officers liked the idea of being sprayed but some felt it helped build confidence in the effectiveness. I had the mind set of pepper spray being just another type of tear gas spray. I personally have experienced both types of chemical sprays and can say the old tear gas does not come close to the effectiveness of pepper spray. None of the officers had any long term effects after being sprayed and neither did the suspects they encountered. After being sprayed with pepper spray, I am convinced I will be more likely to get the suspect treatment quicker after the suspect is under control. Training made me a better judge when it comes to what action to take when pepper spray does not work. There is a higher probability the subject may experience sudden death when the following indicators are present: bizarre/violent behavior; obesity; drug and/or alcohol involvement; or the apparent ineffectiveness of pepper spray. The officer should seek emergency medical treatment immediately for the effected subject and constantly monitor the suspect in an upright position when possible.

Two of the largest manufacturers of pepper spray aerosol units in the United States have advised that since 1977, they have sold over half a million aerosol grenades and Individual Protection Devices (IPDs) that contain OC. These manufacturers have not received any reports of long-term health risks based on its use. A two year study conducted by the FBI Firearms Training Unit in cooperation with the U.S. Army Chemical Research and Development Center (CRDEC), revealed no long-term health risks associated with the use of OC. The FBI reported that no ill

effects or adverse reactions were experienced by 899 subjects who were exposed to OC agents (Weaver and Jett 6). The CRDEC further reported that neither mutagenic nor carcinogenic effects were found on laboratory animals exposed to OC via gastrointestinal doses, subcutaneous injections, droplets to the eyes, and skin patch tests. (Weaver and Jett 2). Regarding pepper spray used on persons with pre-existing respiratory conditions, resulted in no significant difference in either the magnitude or duration of broncho-constriction between normal, smoking, or asthmatic subjects (Fuller, Dixon and Barnes 1080-1084).

A sampling of police departments across the United States were requested to participate in a research questionnaire. The questionnaire focused on the effectiveness of pepper spray, the suspect and officer injury rate (increase or decrease) due to its use, number of complaints filed over its use, the dosage concentration used and where pepper spray resides on the use of force continuum. Twenty-two (22) agencies were sent surveys and thirteen (13) responded. The effectiveness of pepper spray was reported between 65 percent to 100 percent, with a mid-range average of 81 percent, of the 3002 times pepper spray was reported deployed. A comparison of this study with the Baltimore County, National Institute of Justice Study, revealed the officers were spraying the subjects at too close of a range to be totally effective. That study proved pepper spray to be 90 percent effective in the 174 cases where humans were sprayed (U.S. Department of Justice. 1995: 28-33). Proper training and deployment would possibly increase the effectiveness. A 38 percent reduction in officer and suspect injuries were reported after the use of pepper spray was permitted. Three agencies reported a reduction in the number of complaints filed against officers after the permitted use of pepper spray. The National Institute of Justice three year study, revealed complaints alleging force were reduced from 109 complaints (July 1991 - March 1992) and 85 complaints (July 1992 - March 1993) to 51 (July 1993 - March 1994) after the use of pepper spray was permitted (U.S. Department of Justice 1995 Figures 15-16).

In June 1993, the International Association of Chiefs of Police Executive Brief reported the following results of a survey of police departments.

Significant reductions in officer and arrestee injuries have been reported. After 360 documented uses, occurring over a two-and-a-half year period, the New Britain, Connecticut, Police Department reports that OC was effective 95% of the time with no injuries to officers or subjects (Nowicki, 25). Similarly, the Springfield, Missouri, Police Department experienced a 30% decrease in subject injury complaints within one year of OC adoption (Ijmes, April 28, 1993). No official complaints have been lodged against the Kansas City, Missouri, Police Department after 409 documented OC uses (Mitchell, October 1, 1992). The Sarasota County, Florida, Sheriff's Department likewise notes that during the first six months of OC field use, no complaints were filed (Hoffmeister, April 1992) (Onnen, 1993).

Discussion of Relevant Issues

The question was raised on the effectiveness of pepper spray (OC). Is it tactically sound? The answer is yes to a great degree. No chemical agent is 100 percent effective due to improper use, weather condition, and situational circumstances. Pepper spray has proven to be effective 81-90 percent of the time. Law enforcement agencies have reported that it has been effective on subject under the influence of alcohol and drugs, subjects that are extremely excited agitated and emotionally impaired by mental illness.

The medical soundness of OC has proven to be a great concern. This can be overcome by documentation of all situations involving OC and evaluation of current tactical, medical and legal issues and adjusting policy and training to meet any new requirements.

Many pepper spray manufactures offer several OC concentrations with differing size spray units and spray patterns. My study revealed that 53 percent (7 agencies) use a 10 percent

concentration of OC and 47 percent (6 agencies) use a 5.5 percent concentration. Further, each pepper spray product is not the same depending on the manufacture. One manufacture of pepper spray uses an alcohol-based delivery system. Isopropyl alcohol has been used for many years in households and hospitals for cosmetics and pharmaceutical products. Many of these products like perfume and after-shave are applied in and around the face (Logman 36). However, when using an alcohol-based carriers caution should be used around open flames, just as one would with any product that contains alcohol. Other manufactures carriers that are non-flammable are freon, Dymel, or methylene chloride. These chemicals, in sufficient quantities, may be ozone depleting, toxic or carcinogenic.

The effects of pepper spray range from eyes tearing up, involuntary closing of the eyes, temporary blindness, temporary redness and burning sensation to exposed areas; to temporary coughing, gagging and shortness of breath; to loss of motor skills and/or muscle coordination. All of the studies recommended fresh air and water to fresh air and soap and water for decontamination when OC is not mixed with CS or CN. All effects are temporary lasting 15-45 minutes. If the subject reports the effects are not going away medical attention should be summoned (Jett 35,37). Chemists assigned to the FBI's Forensic Science Research and Training Center did not see any long-term health risks associated with the use of pepper spray (Jett 1).

Examination of in-custody deaths that occurred subsequent to OC (pepper spray) use has excluded the agent as a contributory factor. To date, OC (pepper spray) has not caused any deaths, even among persons with pre-existing conditions (Grandfield, Onnen and Petty 1994). The individual died from a variety of other causes including positional asphyxia, excited/cocaine delirium, drug and/or alcohol overdose and neuroleptic malignant syndrome. OC (pepper spray) use will not result in dermatitis, skin depigmentation or burns (U.S. Department of Justice 1995 8-9).

My study, as well as others, indicated a reduction in excessive force allegations against the departments after adopting the use of pepper spray. Officer and subject injuries also went down. This indicates less civil liability and subsequent cost to those agencies. The cost of training and purchasing an OC product is under \$1,200.00 for a department of twenty (20) full time and ten (10) reserves. Without affording officers this option would be much more costly due to going to court more often.

As with all tactics and tactical devices, there are limitations to each of them and pepper spray is not an exception. It would appear that the lack of training on a good policy ranks at the top. As in the Baltimore Maryland, National Institute of Justice, U.S. Department of Justice Study, some of the ineffectiveness was due to spraying at too close of a range. This is a limitation of the OC product. Deploying too far or too close impairs its' effectiveness.

Not all pepper sprays are biodegradable due to added chemicals. To void this limitation select a biodegradable pepper spray product. This assists with decontamination processes, which are minimal with proper product selection.

During selection of a pepper spray product one should always check the product safety record and contents. Exposure to high temperatures, such as, leaving the aerosol unit locked inside a trunk or passenger compartment of a police vehicle, may cause the can to leak, rupture, or explode.

Eye-wear, and clothing can greatly reduce the exposure to sensitive areas of the face limiting its' effectiveness. Pepper spray causes inflammation of the upper respiratory system and may have detrimental effects on people with preexisting respiratory problems. Once the subject is sprayed, the officer must monitor their condition continually until all effects are gone (U.S. Department of Justice 1994 3).

The officer should always be ready to go to another force option if the spray doesn't work with the first or second try. Emphasize should be placed on immediate and compassionate decontamination procedures. Technically, once a subject has been sprayed, the subject is the officer's sole responsibility. Consequently, the sooner the subject is decontaminated, the sooner the officer is freed from subject responsibility. Pepper spray should never be used as punishment (U.S. Department of Justice 1995 52).

Conclusion and Recommendations

This research project provides insight into another alternative of less-than-lethal use of force. Reports indicate a reduction in injury to officers and subjects, reduced use-of-force complaints and civil litigation. This report does not suggest doing away with any other option. The use of pepper spray is less offensive to the public eye because they are use to spraying themselves with perfumes, bug repellents and antiseptics. They are not accustomed to seeing someone strike another with a baton. This project did not examine all the carriers of pepper spray but found isopropyl alcohol to be known by most people due to its common uses as stated before. The public is also familiar with eating peppers or spicy foods and can relate to the difference in hot peppers and a hot stove.

The purpose of this project is to justify an addition to the use of force policy that would permit the use of pepper spray as a tool in stopping assaultive behavior with the officers' and suspects' safety in mind. This project has indicated that pepper spray is tactically sound when used properly. Pepper spray is medically sound in that there are no lasting medical effects on humans nor animals. It is far less likely to cause injury than a strike by a hand, foot or baton.

This project examined the legal aspects of pepper spray use. The project revealed, as in past studies, the number of suspects' complaints of excessive force were reduced as well as the complaint of injury by subject and officers. This indicates a reduction in the liability of worker compensation claims and civil litigation. It just makes sense that if the officer has the option, in

appropriate situations, not to come in physical conflict with the suspect, the officer is more likely not to be injured or killed.

"When a criminal attacks an officer with OC spray, he/she intends to harm the officer, escape or both. It is common knowledge that a high percentage of officers who are incapacitated or have their guns taken away from them are later shot with their own weapons. It would be unconscionable to ask an officer to take a chance that the OC spray attacker is merely going to walk away after incapacitating the officer. Therefore, it is illogical and unreasonable to compare an officer's use of OC spray and an assailant's use of a chemical spray against an armed officer" (U.S. Department of Justice 1995 58). The Legal Officer's Section of the IACP gave its opinion that "officers may use deadly force to protect themselves from the use or threatened use of OC spray when officers reasonably believe that deadly force will be used against them if they become incapacitated. Incapacitation includes situations in which officers may be unable to adequately defend themselves due to the effect of chemical sprays" (U.S. Department of Justice 1995 57). One must analyze the facts and circumstances surrounding a decision to use force against another individual. The officer's use of force response should consider the severity of the offense, the immediate threat to the officer's and third party's safety and the rapidly evolving circumstances that could escalate or de-escalate the use of force (Graham v Conner 1989).

On January 22, 1997, I personally experienced the effects of pepper spray through a training program at the Universal City Police Department. I did not experience any long term effects. I went into the exposure phase knowing that pepper spray would burn. I was going to fight the effects of the pepper spray and engage Sergeant Rogers, the instructor. I was surprised of the immediate effects and quickly turned to the water hose for relief. The burning sensation of the eyes was the main effect and I could not see for approximately fifteen minutes. I used water and fresh air circulated by fans to treat the effects. I experienced a slight amount of shortness of breath for five minutes.

I recommend a good use of force policy, effective training, follow-up reports to evaluate incidents and modify the policy and training needs as the process evolves. Training should extend to Emergency Medical Technicians as well. The department should buy fans, not only for the patrol cars but, for the booking area to treat the suspects as well as exposed officers. Several gallons of distilled water should be carried in patrol cars to help with decontamination of effected person(s). I recommend the use of Oleoresin Capsicum (Pepper Spray, OC) as a less-than-lethal use of force option for the Live Oak Police Department.

BIBLIOGRAPHY

American Civil Liberties Union of Southern California. "ACLU Of Southern California Report Reveals Pepper Spray Linked To 26 Deaths; Urges Research, Guidelines and Defeat of AB 830." The American Civil Liberties Union 18 June 1995: n. pag. Online. Internet. 21 August 1996.

Available: www.cops.gov

Bostic, Michael J. "A NEW LAW ENFORCEMENT CHALLENGE: LIMITING USE OF FORCE TO SOLELY NONLETHAL WEAPONS." Command college XVII Peace Officer Standards and Training. Sacramento, California. January 1994

Branswell, Brenda and Pat Brethour and Sheri Davis-Barron. "Angry Crowd Confronts Police." Ottawa Citizen 26 March 1995. Final ed.,: A1

Connell, Rich. "Deaths Prompt Shifts in Police Use Of Hogting." Los Angeles Times. 16 May 1994. Home Edition ed.,: A-1 NEWSBANK, INC. CD NewsBank Comprehensive 11 September 1996

Corwin, Miles. "Public's Demand for Pepper Spray Is Bigger Than Supply in L. A. Area." Los Angeles Times 2 March 1994. Home Edition ed.,: B-1 n. pag.. NEWSBANK, INC. CD NewsBank Comprehensive 11 September 1996

Fischer, Jack. "Pepper Spray Remains Hot Issue." San Jose Mercury News 28 August 1994. n. pag. NEWSBANK, INC. CD NewsBank Comprehensive 11 September 1996

Fuller, R. W., C.M. Dixon, and P.J. Barnes. "Bronchoconstrictor Response to Inhaled Capsicum in Humans." Journal of Applied Physiology, 58 (4): 1080-1084.

Graham v. Conner, 490 U.S. 386, 104 L. Ed.2d 443, 109 S. Ct. 1865 (1989)

Granfield, John and Jami Onnen and Charles S. Petty, M.D.. "Pepper Spray and In-Custody Deaths." Executive Briefs March 1994. n. par. Internet. 21 August 1996. Available: www.cops.gov

Hermann, Peter. "Baltimore police retire the twirling nightstick, ending a century of use." The Baltimore Sun 27 March 1995. Final ed.,: 1A. n. par. NEWSBANK, INC. CD NewsBank Comprehensive 11 September 1996

Hoffmeister, Lt., G.K. "CAP-STUN." Defensive Tactics Newsletter. April, 1992: I (4)

Hughes, Jose. "Police fear seasoned crooks may be hot for pepper spray." The San Diego Union-

Tribune 27 March 1994. 1,2 ed.,: A-1. n. par. NEWSBANK, INC. CD NewsBank Comprehensive 11 September 1996

Johnson, Rob. "HOT DEBATE-Police sniff paper trail to start study on pepper spray." The Commercial Appeal. 9 June 1994. Final ed.,: A1. NEWSBANK, INC. CD NewsBank Comprehensive 11 September 1996

Leukhardt, Bill. "Pepper Spray Gaining Popularity With Police." The Hartford Courant 3 July 1994. Statewide ed., : B1. NEWSBANK, INC. CD NewsBank Comprehensive 11 September 1996

Logman, Cameron. CAP-STUN WEAPONS SYSTEMS. Maryland: 1993

Murphy, Chuck. "Trooper Sues to Stop Use of Spray." St. Petersburg Times 1 June 1994. City ed., : 1A. NEWSBANK, INC. CD NewsBank Comprehensive 11 September 1996

Nowicki, E. "Oleoresin Capsicum: A Non-Lethal Force Alternative." Law Enforcement Technology. January, 1993.

O'Connor, Christina. "Stun, spray or shoot?" "Choices for self defense aim at fears." The Commercial Appeal 11 July 1994. Final ed., : A1 NEWSBANK, INC. CD NewsBank Comprehensive 11 September 1996

Onnen, Jami. "Oleoresin Capsicum." Alexandria VA. International Association of Chiefs of Police, June, 1993

Parish, Norm. "MARCHERS PROTEST POLICE KILLING MALLETT RALLY USES DAY OF FIESTA PARADE." The Arizona Republic 1 January 1995. Final Chaser ed., : B1. NEWSBANK, INC. CD NewsBank Comprehensive 11 September 1996

Pinsky, Mark I. "Assault on Pepper Police: Increase in fatalities and growing popularity of the spray among officers and civilians raise concerns." Los Angeles Times 18 June 1995. Home Edition ed., : A-3. NEWSBANK, INC. CD NewsBank Comprehensive 11 September 1996

Reich, Kenneth. "L.A. Police Deploy 'Less Lethal' Weapons" "Law Enforcement: Foam rubber projectiles and beanbags replace tear gas and batons as crowd dispersal tools." Los Angeles Times 31 May 1994. Home Edition ed., : B-1. NEWSBANK, INC. CD NewsBank Comprehensive 11 September 1996

Sanchez, Roberto. "PEPPER SPRAY MISUSE GROWS, AUTHORITIES SAY." The Phoenix Gazette 4 July 1994. Final ed., : B1. NEWSBANK, INC. CD NewsBank Comprehensive 11 September 1996

Steinberg, James. "Bite tips given to letter carriers." The San Deigo Union-Tribune 15 June 1995. 1,6,7,8 ed., : B-2 : 7,8. B-10 : 1,6. NEWSBANK, INC. CD NewsBank Comprehensive 11 September 1996

Siddle, Bruce K. Defensive Tactics Instructor's Curriculum. Waterloo, Illinois: 1985

Stanton, Sam and Kimberly Moy. "PEPPER SPRAY GOES PUBLIC- AND TAKES HEAT." Sacramento Bee 1 March 1994. Metro Final ed., : A1. n. pag. NEWSBANK, INC. CD NewsBank Comprehensive 11 September 1996

Tennessee V. Garner, 471 U.S. 1, 85 L. Ed.2d 1, 105 S. Ct. 1694 (1985)

U.S. Department of Justice. Federal Bureau of Investigation. Chemical Agent Research Oleoresin Capsicum (OC). Quantico, Virginia (1989) : n. pag. Online. Internet. 21 August 1996. Available : www.cops.gov

U.S. Department of Justice. National Institute of Justice. Oleoresin Capsicum: Pepper Spray as a Force Alternative. Technology Assessment Program (March 1994): 3

U.S. Department of Justice. National Institute of Justice. Pepper Spray Evaluation Project. Baltimore County, MD, Police Department (1995)

Weaver, Wayne and Monty B. Jett. Oleoresin Capsicum Training and Use. Firearms Training Unit, FBI Academy. Quantico, Virginia. 1989.

Research Participants

A special thanks goes out to the following police agencies that participated in this research project:

Austin (TX) Police Department

Boston (MA) Police Department

Denver (CO) Police Department

Houston (TX) Police Department

Los Angeles (CA) Police Department

Metropolitan (DC) Police Department

New York City (NY) Police Department

Philadelphia (PA) Police Department

San Francisco (CA) Police Department

Seattle (WA) Police Department

Springfield (MO) Police Department

Texas Department of Public Safety (TX) State Police

Universal City (TX) Police Department