BERKELEY POLICE DEPARTMENT USE OF

"CHEMICAL MACE"

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Office of the
CITY MANAGER

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Subject BERKELEY POLICE DEPARTMENT USE OF "CHEMICAL MACE"

To the HONORABLE MAYOR AND MEMBERS OF THE CITY COUNCIL

In October of 1966, the Berkeley Police Department considered using "Chemical Mace", an aerosol tear gas projector manufactured by the General Ordnance Equipment Corporation. The department reviewed reports of several laboratory studies and conducted limited testing on a department member. The Director of Public Health was asked to review the laboratory reports and approve departmental use. Reports available at that time included laboratory tests conducted by Dr. Walter L. Byers, Chief Surgeon-Emergency Services, Alameda County Medical Institutions (letter dated February 17, 1966); Hazelton Laboratories, Inc. of Falls Church, Virginia, a reputable commercial test laboratory (reports dated March 8, 1966 and April 12, 1966); and others submitted by the manufacturer.

In a memorandum dated October 25, 1966, the Director of Public Health conditionally approved the use of "Chemical Mace" and recommended "...should you decide on acquisition of these units by your department, you should include in-service training in the decontamination procedures. In this regard, the use of tap water flushing is preferred..." Shortly after Dr. Leonard's memorandum, two cannisters were available for use within the Hall of Justice. The first recorded use of "Chemical Mace" was on February 7, 1967 in the jail. On April 28, 1967, the Patrol Division was authorized to use the "General MK II Pocket Tear Gas Projector" and a directive was issued describing the weapon and its proper use. Written reports were required in all instances of use, and a training program outline was prepared and issued to Patrol Division sergeants for their use in instructing Patrol platoon members.

The Patrol Division initially used the pen-type dispensers; these were later replaced by the "MK IV" cannisters which have a greater range and can be refilled. Both types were checked out at the beginning of each shift and returned each day by Patrol Division officers. Plainclothes officers were issued the smaller pen-type dispensers and were retained by the officers during their assignment to plainclothes duty. A total of 23 cannisters and 18 pen-type dispensers were available for daily issue.

The "Chemical Mace" was in use by the Police Department for approximately 18 months. During that time, 85 individual uses were recorded and a report prepared on each use. Each of those reports has been reviewed by this office. Although the principal purpose of the reports is to describe the circumstances of the use of "Mace", seventy of the reports also included information on the nature of the offense for which the subject was arrested. The remaining fifteen reports referred to other case records which were not researched for purposes of this report. The following list categorizes the principal offense or situation involved in seventy cases:

21 Drunk and disorderly
9 Drunk or reckless driving
8 Narcotics arrests
8 Mentally deranged persons or psychiatric commitments
7 Disturbances in jail (exclusive of other categories)

8 Public disturbances, battery, fighting, assault with a deadly weapon
5 Felony theft apprehensions-auto thefts, till-taps
4 Other arrests: brandishing a gun, gambling, and resisting arrest when served with warrants.

With two or three exceptions, all case reports stated that the officer or officers attempted to physically restrain the resisting subject before using the chemical. Many cases reported substantial struggles prior to use of "Mace". Every case involved physical resistance to arrest or other legitimate police duty. As the table above indicates, a large number of the arrest subjects were found to be in a belligerent or violent state before the officer arrived.

In several cases, the "Chemical Mace" was judged ineffective in calming particularly violent persons, and officers were required to use other force to subdue those persons. Apparently an extremely enraged person is able to ignore or over-ride the effects of the "Chemical Mace". Although this aspect is not discussed in laboratory findings, these cases indicate that the incapacitating agents in "Mace" are not sufficiently strong to subdue the extremely violent, and therefore depend largely upon psychological reaction to physiological irritation. This assumption is supported by the few cases in which BPD officers were accidentally squirted with "Mace" during scuffles with resisting persons; the officers were able to continue to function, although less effectively.

Fifty-one different officers employed "Chemical Mace" in the 85 cases reported above. Of the 85 uses, 24 were by sergeants or higher ranking officers, primarily when providing back-up for a junior officer. Of the 51, only four officers employed "Mace" on more than three separate occasions, indicating no particular pattern of predilection toward indiscriminate use. In addition to the 85 recorded cases, two other instances occurred in which display of the cannister was sufficient to eliminate resistance to arrest. Four uses of "Mace" are considered to have been unnecessary or improper, in that other reasonable means had not been exhausted. During the eighteen months that "Mace" was employed, the department made 6,612 arrests, exclusive of traffic arrests and warrants for other agencies.

On May 3, 1968, the Surgeon General of the U.S.Public Health Service issued a report of his review of available evidence regarding"Chemical Mace" which included the following statements:

> "The design of 'Chemical Mace' for use against individuals, together with the ability of the item to deliver an irritating substance to a localized tissue area and maintain the activity of the irritant at this spot for a period of time, clearly increases the possibility of more than transient effects to the exposed individual unless treatment is prompt. (emphasis added)
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> "Therefore, we recommend that law-enforcement officials be advised to see that subjects controlled by the use of agents of this type be treated promptly and specifically....
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> "Ordinarily, flushing the areas of the body exposed to Mace with water would constitute adequate treatment. If the exposure has been severe, gentle but copious flushing of the conjunctiva, fluorescein examination, and anti-inflammatory drops may be beneficial...
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> "A number of studies have been made regarding the effect of the item on

the eyes and the skin of animals. Direct addition of small amounts of chloroacetophenone-solvent mixture to the eyes of rabbits in FDA laboratories produced eye irritation whose duration and severity depends on the dose administered, but which disappears with time. Other investigators have reported similar effects on monkeys. It is generally agreed that if animals are exposed to the liquid stream or spray of Mace under the expected conditions of use the degree of eye irritation is less than that which is noted when the eyes are treated directly with the active liquid. A few studies (on dogs), on the possible irritant effects of liquid droplets deposited in the trachea by inhalation, have led to inconsistent findings."

Rather than recommending against the use of "Chemical Mace," the Surgeon General recommended prompt and specific treatment when it was used. On May 8, 1968, a departmental directive was issued and included the following:

"Without exception, the following policy will prevail:

1. Mace will only be used after all other reasonable efforts to control a violent person have failed. If you would not be justified in using your baton you are not now justified in using Mace.

2. If the Mace is used, the areas of the body exposed to the liquid must be flushed with water as quickly as possible. All reports covering the circumstances of its use must also include the lapse of time between use and the flushing with water.

3. If the liquid has struck the clothing of the individual and he is to be incarcerated, he will be given an opportunity to shower and will be furnished jail clothing to replace his own.

4. Only under extreme conditions will Mace be used at a distance of less than two feet.

5. If more than one short burst is used the subject will be taken to HMH Emergency for such treatment as the doctor on duty feels necessary..."

After consultation with the Health Department, this directive was amended to include:

"1. The duration of use will not dictate the type of treatment. It will not be necessary to take a subject to Herrick Memorial Hospital based solely on the amount of Mace he was subjected to.

2. All persons exposed to Mace will be treated as previously outlined, by flushing with copious amounts of water.

3. After initial treatment, the subject will be inspected and interviewed not less than 30 minutes after exposure nor more than 1 hour from the time Mace was used. If the subject is in the jail this inspection will be performed by the jailer, if not, it will be performed by the officer who used the Mace. If it appears warranted, the individual may then be taken to Herrick Emergency for examination."

Since issuance of the Surgeon General's report, other studies have been conducted or reported. On July 2, 1968, Dr. Walter L. Byers, Chief Surgeon-Emergency Services, Alameda County Medical Institutions wrote the following to Yehuda Sherman, M.D. of Berkeley who forwarded it to the Police Department:

"The following information is offered from our clinical observations and clinical experiments performed in this Department. I should like to emphasize that these observations are my own and should not be construed as being the official attitude of the County of Alameda.

"Approximately twenty months ago, I was first approached by Lawrence G. Waldt, Chief of the Criminal Division of the Alameda County Sheriff's Department, who explained to me the nature and action of CHEMICAL MACE as he interpreted it from the literature accompanying the product. He asked if there was any way that we could make reasonable tests on eyes to determine its safety. I personally then performed tests on the eyes of three rabbits from a distance of about three feet. Ten days of observation without treatment of the eyes of the rabbits revealed no evidence of complication externally and no apparent loss of vision. This was subsequently reported to Sheriff Waldt.

"In September of 1967, inquiry was made by Chief Charles R. Gain of the Oakland Police Department regarding the effect of CHEMICAL MACE on the skin. They quoted that they had been told of instances in which CHEMICAL MACE caused blistering in the general areas of the eyes, nose, and the mouth. They inquired if we could perform any experiments in order to determine whether there was any danger of permanent disability. We accepted the question and performed experiments with CHEMICAL MACE furnished by the Oakland Police Department in a recognized random fashion on the areas of the shaved skin of guinea pigs. All areas were abrased with medium coarse emery paper to the point of capillary bleeding in an attempt to simulate abrasions that might be incurred similarly in a combative individual. We were able to show that there was a reddenning or erythema on the abrased skin which subsided in approximately three days and, in summary, that we could not produce any blistering or evidence of permanent disability on the skin of the guinea pigs. During the same experimentation, we caused lacerations on the skin of the guinea pigs which were exposed to CHEMICAL MACE and found that there was no delay in the spontaneous closure or healing of these lacerations. The details of this experiment are in a medical paper that we have offered for publication in a national medical journal.

"During this period of some twenty months, we have had the opportunity to observe between 100 and 125 persons who had been subjected to CHEMICAL MACE on the skin and in the eyes who had been brought to Highland General Hospital Emergency for care. Neither the Emergency Department or the Department of Ophthalmology has seen any evidence of permanent disability to the eyes or the skin.

"I'm sure you are aware of recent claims that CHEMICAL MACE can cause blindness by its direct application from a distance of 6 inches to the eyes of rabbits. We recently, on or about June 20, 1968, again completed a study on the eyes of six rabbits in conjunction with the Opthalmology Department at Highland General Hospital. The eyes of six rabbits were

"subjected to a full three-seconds of a stream of CHEMICAL MACE from the same size dispenser carried by law enforcement officers. Five rabbits were subjected to this rather extensive application of CHEMICAL MACE from about a distance of three feet. One of the rabbits was subjected to the same extensive application from a distance of 6 inches. The latter rabbit showed a prompt superficial ulceration of the cornea by the next day. The others showed no evidence other than irritation. All the rabbits' eyes, including the one treated from a distance of 6 inches, cleared up within four days spontaneously without treatment. One rabbit developed a marked conjunctivitis of the lids which cleared up without treatment."

The letter then refers to a comprehensive report issued by the University of Michigan Medical School on June 6, 1968. That report has been received and reviewed. The Pharmacology Department conducted the following investigations:

"1. Reviewed the documents concerning Chemical Mace and its use prepared by the manufacturers, the General Ordnance Equipment Corporation, and submitted to us by Captain Hawkins of the Ann Arbor Police Department.

2. Taken cognizance of the ingredients and formulation of Chemical Mace, submitted to one of the undersigned on a confidential basis by Alan Litman, Technical Director of the General Ordnance Equipment Corporation.

3. Reviewed a large number of non-technical articles in newspapers, magazines and the like, concerning the extent of use of Chemical Mace by police in the United States and Canada.

4. Reviewed the scientific and medical literature concerning the toxicity and medical hazards of the lachrymator, alpha-chloroacetophenone, the active principle of Chemical Mace.

5. Reviewed the experimental data concerning the effects of Mace on the rabbit and monkey eye, conducted by the Hazelton Laboratories of Falls Church, Virginia.

6. Reviewed the medical literature on the effects of Chloroacetophenone when delivered by weaponry other than the Chemical/type propellant spray. mace

7. On our own initiative, using Departmental personnel, equipment and supplies, conducted several comprehensive experiments with Chemical Mace (using the Mark IV cannister) on the rhesus monkey and the rabbit, with principal reference to its effect on the eye, the skin, and the total behavior of the animal.

8. Conducted studies of the effects of Training Mace (the total formulation without Chloroacetophenone) on the rabbit eye...."

The body of the 20-page report details these investigations and experiments, and concludes with this summary:

"After reviewing all of the available evidence concerning Chemical Mace it is our considered opinion that,

"1. Chemical Mace can be used with comparative safety to the eye and to the total economy of the individual as a weapon to effect temporary incapacitation providing,

(a) The recipient is alert, in possession of his normal protective reflexes such as blinking, eye closure, breath holding, turning away from the spray, and the like;

(b) The spray is directed at the recipient at such a distance that his reflexes can be brought into play;

(c) The total duration of the spray is limited to the minimum required to be an effective incapacitant.

"2. Severe, long term, and possibly permanent ocular damage may occur if the cornea of the eye is exposed directly to Chemical Mace in liquid form. Such exposure resulting from discharge of the cannister would, in our opinion, constitute misuse of the weapon and result from:

(a) Discharge of the weapon directly into the eye or face at very close range in normally reactive persons;

(b) Prolonged discharge at any effective distance into the face of an already incapacitated person;

(c) Discharge of large quantities in a confined space such as a small room or closed automobile.

"3. There is neither evidence nor scientific rationale to support the view that significant systemic effects on the nervous system or other organ systems, other than the psychological responses to being rendered incapacitated, are induced by Chemical Mace, even by exposures which could produce significant injury to the eye, skin or mucous membranes.

"4. The irritant effect of Chemical Mace on the eye and probably on all other tissues resides almost exclusively in the Chloroacetophenone fraction of the formulation. The solvent and propellant fractions have been eye-tested individually by several investigators and found to be non-injurious. Control studies in this laboratory using "Training Mace" (the complete Chemical Mace formulation lacking only chloroacetophenone) produced only minimal and transient irritation to the rabbit eye.

"5. Hitherto the delivery of tear gas has relied largely on the use of explosive charges to propel and violatilize the solid, chloroacetophenone. The medical records of tissue damage have implicated flame, forceable penetration of tissues by solid chloroacetophenone, gun wadding and powder as the principal causative factors. Aerosolization represents a marked improvement in controllability of dosage and safety. Delivery of chloroacetophenone by aerosol technics requires the use of organic-carrier solvents due to its water insolubility.

"The choice of solvents in the formulation of Mace is fortunate since all are of negligible systemic toxicity for a man in the amounts which could conceivably be absorbed from the lung or skin in the use of the weapon.

"6. Good practice requires that exposed areas be washed with clear water as soon as possible after exposure in order to minimize local effects and that the application of ointments of any kind be avoided since they localize the irritant at the site of application.

"7. Officers charged with the responsibility of using Chemical Mace should be carefully indoctrinated in its proper use and instructed in the potential hazards of indiscriminate use or accidental misuse. The manufacturer would be well advised, if they have not done so, to prepare a brochure describing proper methods of use and the potential hazards of misuse.

"The use of all anti-personnel weapons involves a calculated risk. The long history and the extensive use of chloroacetophenone as a temporary incapacitating agent in the control of riots throughout the world since World War I; the minimal injury reported in the world medical literature even under conditions which have undoubtedly involved indiscriminate use or misuse of this agent indicate the risk to be quite small, and in most instances negligible, in comparison with conventional weaponry.

"Although speaking of weapons of war rather than riot control, a statement of Dr. Paul Weiss of the Rockefeller Institute, in relation to research needed for nonmilitary defense, when paraphrased, appears to be appropriate here. "'This implies preparing ourselves for defense against any sort of weapon an enemy may conceivably use against us, hoping at least that all parties will abide by the injunction against weapons that inflict undue and unnecessary suffering and pain. But, it is precisely on this point that I cannot follow the twisted thinking that considers it condonable to scorch a living person with a flame thrower (in this instance, night sticks, machine pistols, shotguns, and so forth) but feel squeamish about putting an opponent out of action temporarily and without lasting damage with biological or chemical agents of proper design. Of all warfare agents, the latter certainly seems to be among the least inhumane.'"

Current departmental directives and training conform to the recommendations and admonitions of reliable and respected authorities. The overwhelming evidence submitted by these authorities, demonstrated in over two years use by law enforcement agencies, states that discriminate use of "Chemical Mace" is "less inhumane" than the use of other weapons in the police arsenal. The genuine rather than semantic difference between "less inhumane" and "more humane" is very slight and reflects the obvious humanitarian caution of medical authorities. Few practitioners of the healing arts are likely to say, "Use this weapon." Rather, they are likely to recommend, "If you must use a weapon, this one has less potential for permanent damage, if any, than other weapons available to you."

In any consideration of reasonable exercise of police authority, the starting point for such consideration is the question, "Are there occasions when a citizen must be taken into physical custody?" Accepting centuries of human interaction

and the necessity for government, the answer is affirmative. The next question is, "If a citizen refuses to submit to physical custody, when ordered by legitimate authority, what is the appropriate priority of methods for securing custody?" This question implies a basic humanitarian approach to law enforcement; in other cultures and other times, recalcitrant resistors of legitimate authority have been summarily executed for their recalcitrance. In our society, this is not acceptable; it is abhorrent to the fundamental underpinnings of our system of government. A reasonable answer to the second question then lists the available methods of securing and retaining custody of an individual, starting with the least potentially injurious, concluding with the most dangerous, and eliminating some weapons such as the electric cattle prod and the "iron claw".

At this point it must be recognized that all known methods of restraining an individual have a potential for injury. Unarmed physical restraint has a potential for breaking bones or causing other physical trauma; placing of handcuffs can produce injury; the club can kill. Recognizing these potentials, enlightened law enforcement agencies conduct extensive training in methods of physical restraint and the use of weaponry such as night-sticks, in order to minimize injuries to citizens and officers.

In the judgement of reputable medical authorities and enlightened law enforcement officials, "Chemical Mace" is less potentially-injurious than the baton or club. Even if improperly employed, as demonstrated by laboratory tests on monkeys, "Chemical Mace" is systemically non-toxic and capable of impairing visual acuity only in the most extreme concentrations followed by no treatment. We are not aware of any reported cases of permanent damage when treatment was effected. The responsibility of effective and humane law enforcement requires that the individual officer be equipped with the broadest range of acceptable weapons commensurate with the potential situations into which he is thrust. That responsibility also requires that the officer be properly trained in their use. Most importantly, that officer must exercise judgement, discretion, and humanity. When he does not, he must be corrected or removed from law enforcement duty.

It is recommended that the City Council approve the following actions:

1. Re-instate the use of "Chemical Mace" by the Berkeley Police Department, in accordance with current directives as they may be amended by further experience and research.

2. Continue periodic reports to the City Council on the employment of "Chemical Mace" by the department.

3. Continue the review of medical research as it becomes available.

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