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Report of Director of Public Health on Chemical Mace

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Director of Public Health



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FORWARD

Aerosol irritant projectors, the most widely used and undoubtedly the most discussed non-lethal weapons ever to emerge for police use, were conceived and developed in order to provide a police officer with an alternative for his traditional weapons. Generally speaking, they have proven to be extremely useful police tools when properly used and when their true function is understood.

It must be thoroughly understood at the outset that these devices are weapons -- non-lethal weapons, true, but with the emphasis on weapon. They should be used only in situations where a weapon is absolutely required, and only as an alternative to the potentially deadly weapons. They should never, under any circumstances, be used indiscriminately or punitively. As a general rule it would be safe to say that if a police officer is justified in using his nightstick, then he is justified in using an aerosol irritant projector. As a means of controlling a truly critical situation or effecting a forcible arrest these non-lethal weapons have been used successfully thousands of times in the several years since their introduction. In spite of this success, however, there are two very important points which should be brought to the attention of all concerned most strongly:

First, it must be stated that these projectors, if improperly used, can cause some degree of physical injury. They are, after all, weapons and do utilize irritants which in the best instance are unpleasant and which by the very manner in which they function physiologically do cause a greater or lesser degree of trauma. However, once the decision to use a weapon has been made, the possibility of some injury is implicit, but the risk is likely to be much less than that resulting from the use of conventional weapons.

The University of Michigan School of Medicine, in a report issued recently concerning one particular brand of aerosol irritant projector states: "The use of all anti-personnel weapons involves a calculated risk. The long history and the extensive use of chloroacetophenone (the principal active ingredient in most aerosol irritant projectors) 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".

Secondly, in addition to the hazard of over-use or misuse, there is also the possibility that the law enforcement agency may be sold an ineptly

made and/or inadequately tested aerosol irritant projector. A number of firms, many of them small and with scant technical resources, have entered what appears to them to be a lucrative and growing new business. Responsible police administrators should gather as much information as they possibly can on a particular product, especially information and test results from unimpeachable and reputable outside testing agencies, before deciding what product to procure for departmental use. The fact that one aerosol irritant projector utilizes the same can, and has the same outward physical appearance as another does not mean that data on one product can be used to establish the effectiveness and/or relative safety of another.

In the fall of 1968 the City of Berkeley, California, after a study of the CHEMICAL MACE aerosol irritant projector, issued a report which we are reproducing here. This report, which includes operational guidelines for police personnel, provides an excellent summary of the current state of the controversy and it is recommended that the report be read thoroughly, avoiding the tendency to emphasize one phase or statement or to take portions of the text out of context.

Thompson S. Crockett
Chemical Agents Program
International Association of
Chiefs of Police

Office of the
CITY MANAGER



CITY OF BERKELEY
CALIFORNIA

WILLIAM C. HANLEY
CITY MANAGER

October 3, 1968

To the Honorable Mayor and
Members of the City Council

Subject: Report of Director of Public Health on Chemical Mace

At the request of the City Council, the Director of Public Health has prepared the attached report of his study of Chemical Mace. In addition to the research material cited in City Manager Report 68-37, the Director of Public Health has made other inquiries and consulted other physicians and health agencies. He has also reviewed Police Department orders and directives concerning the use of Chemical Mace, and has made suggestions which have been incorporated into those orders. A copy of the current directive is also attached for your information.

If the Council concurs in the judgment of the Director of Public Health, no action is necessary, as the use of Chemical Mace was reinstated on August 7, 1968. Periodic reports to Council on the use of Chemical Mace will be continued, and we will continue to review all medical literature as it becomes available.

William C. Hanley
City Manager

2 Attachments

CITY OF BERKELEY

Memorandum

TO City Manager
FROM Director of Public Health
SUBJECT: USE OF MACE

DATE September 5, 1968

As requested by City Council, I have carefully reviewed the material on Chemical Mace submitted by Dr. Stuart Frank of the Medical Committee for Human Rights. In addition, I have studied the relevant reports of the Surgeon General and the University of Michigan Medical School, and have read scientific papers and correspondence prepared by Dr. Lawrence Rose, Dr. Walter Byers, and others, and have discussed the subject of Chemical Mace with Dr. Rose, Dr. Byers, and with Dr. Thomas Milby, chief of the Bureau of Occupational Health of the California State Health Department.

In the material thus made available to this office there is a substantial body of objective factual data upon which all well informed persons agree. In addition, there is an area of discussion based on inferences drawn from the objective data and on speculation based upon general biologic principles; in this area, dealing with the potential undesirable side effects of Mace, different authorities place different emphasis - some tending to minimize the potential damage and some tending to accentuate it. I believe a balanced judgment between the two extreme viewpoints (i.e., (1) Mace is completely innocuous, or (2) Mace is too dangerous to permit its use) presents the most constructive approach to the subject. The reasons for this belief are set forth below.

I. The basic facts are:

- A. The active ingredient in Chemical Mace is the same chemical as in tear gas. It is delivered from a pressurized cannister in a solvent mixture at a concentration of .9% to 1.2%.
- B. The active ingredient causes acute local tissue irritation, most commonly of the skin, eyes, and mucous membranes of the nose and throat.
- C. The longer the material is in contact with tissue, the more severe is the resulting irritation.
- D. The mixture of chemicals in the solvent and propellant are present in quantities and concentration well below the standards accepted for safety in industrial exposures, according to the Bureau of Occupational Health in the State Department of Public Health.
- E. About 125 persons have been seen at Highland Hospital Emergency Room following exposure to Mace. According to Dr. Byers, careful follow-up by the ophthalmology service of the hospital has revealed no permanent eye injury.

CITY OF BERKELEY

Memorandum

TO City Manager

FROM Director of Public Health

SUBJECT: USE OF MACE, continued

DATE September 5, 1968

I. continued

F. Dr. Rose has seen twelve cases in San Francisco with lesions as follows: Nine had chemical burns of the cornea which subsided in 48 to 72 hours. Three had more persistent lesions of the eye, but recovered vision completely in 2 - 3 weeks. One of these has a small residual corneal scar that does not interfere with vision. Four of the twelve persons had second degree skin burns of the face, including blistering and peeling. All healed with no permanent residual effects. Four had mental confusion and anxiety lasting one to two hours.

It is important to note that in each of these twelve cases the Mace was used in a manner that all authorities consider improper. It was used at a very short distance from the subject (6 in. to 2 ft.) and there was no post-exposure irrigation or other immediate treatment.

G. In 1967, the State Department of Public Health received reports of 22 policemen and one fireman in California having incurred injuries from Mace (14), Peacemaker (2), or similar devices, the type not stated (7). These reports come to the State Health Department as reports of industrial injuries under Workmen's Compensation. The injuries were either skin burns and/or conjunctivitis, with time lost from work varying from no lost time in 17 cases to a maximum of 7 days lost in one case. Some of the injuries occurred while subduing prisoners, some in training, and at least one from a leaking Mace cannister.

H. The Berkeley Police Department has developed standing orders and policies regarding precautions to be taken in the use of Mace. The Health Department reviewed these and made some suggestions for increased safeguards, which were subsequently incorporated into the Police Department's policies.

The above information is fairly clear and I believe there is general agreement regarding those facts.

II. This section attempts to summarize the major inferences and speculations upon which there are few "hard data" and which represent an area of honest differences of judgment among competent observers.

A. "Tear gas, delivered in ways other than as Mace, has produced permanent eye damage." Such damage has most commonly occurred with use of the so-called "tear gas pen." With this device there is a blast that is produced by an explosive charge and the eye may be injured by a combination of the shock force, fragments of wadding, metallic fragments, or by solid

CITY OF BERKELEY

Memorandum

TO City Manager

FROM Director of Public Health

SUBJECT: USE OF MACE, continued

DATE September 5, 1968

II. A. continued

particles of the tear gas itself being forced into the eye under great pressure. In my opinion, these cases of injury are of doubtful relevance to the problem under discussion because Chemical Mace is delivered as an aerosol under far less pressure and unaccompanied by solid particles or by explosive force.

- B. "Tear gas may have a selective neurotoxic potential." This concern that tear gas may injure nerve tissue derives from chemical studies and clinical observations of anesthesia of the fingers that has occurred following accidental discharge of tear gas pens in people's hands. More basic biochemical research is needed in order to clarify this point. However, as in "A" above, this problem is not highly relevant to the major issues concerning Mace since dosage and mode of delivery of Mace are so different (less penetrating of tissue) from the reported cases of suspected nerve damage.
- C. "The solvents found in Mace, alone or in combination, may produce systemic damage." To date, there is no evidence to support this hypothesis. One of the chemicals in the solvent, methyl chloroform, is quite toxic in concentrations above 500 parts per million. However, the concentration of methyl chloroform resulting from use of Mace is far below the toxic level.
- D. "Casual and careless use of the material, stemming from the belief that it is completely innocuous, can cause damage." This is undoubtedly true. Like most toxic biologic reactions, as the time-dose exposure increases, the resulting body damage increases. Therefore, the material must be considered a potent part of the law enforcement arsenal, to be used with as much care and prudence as any other weapon.
- E. "Persons with poor reflexes, or with cardiovascular disease may be more severely effected than otherwise healthy people." This is probably true and is consistent with general observations regarding response to any biologic stress. It is a problem to be considered in all situations where force is applied, whether the force is by means of a chemical agent such as Mace or a physical agent such as a baton. Which force is biologically more stressful in any given situation is a matter of individual judgment that must be based upon intelligent assessment of the unique circumstances in each situation.
- F. "The ill effects of many chemicals (such as beryllium and the chemicals in cigarette smoke) take years or decades to develop, and this could be the case with Mace." This possibility cannot be denied. However, the same can be said of hundreds of synthetic chemicals in our modern en-

CITY OF BERKELEY

Memorandum

TO City Manager
FROM Director of Public Health
SUBJECT: USE OF MACE, continued

DATE September 5, 1968

II. F. (continued)

vironment , and there is little reason for Mace to be unusually suspect in this regard. The problem of long term effects of new drugs and chemicals is one that is almost unavoidable in a rapidly changing technological society.

III. After consideration of the facts and inferences outlined above, it is clear that Chemical Mace is a potent product of current technology. Like most other new technical developments it has potential for constructive social usage, i.e., when employed correctly it can be used for society's benefit in intelligent law enforcement with minimal risk. However, like most other new technologies, it also has a potential for misuse, in which case it can be medically and socially harmful. Therefore, I believe that:

- 1) At this stage of our knowledge, the most rational posture to adopt is mid-way between the extreme views that Mace is either: a) completely innocuous and harmless or, b) its potential for damage is too great to ever permit its use.
- 2) At all times Mace should be viewed as a potent weapon whose use must be carefully regulated.
- 3) With proper and prudent use, the danger of serious or permanent damage from this weapon is minimal. With improper use (too close to the person, person lacking normal reflexes, in a closed space), or delay in post-exposure treatment, the hazard increases sharply.
- 4) As with all other weapons, the persons employing it must be thoroughly trained and supervised in its use and related limitations.
- 5) As with all other weapons, the relative hazard must be balanced against the relative value in law enforcement.

Alvin R. Leonard, M.D.
ALVIN R. LEONARD, M.D.
Director of Public Health

ARL/lr

To: ALL OFFICERS
Subject: USE OF CHEMICAL MACE

Without exception, the following policy will prevail in the use of Chemical Mace by members of this Department:

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 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. The required reports, explaining why Mace was used, must also include information concerning the length of time between use and flushing with water.
3. After initial treatment, the subject will be inspected and interviewed not less than 30 minutes after exposure nor more than one hour from the time Mace was used. If the subject is in 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 be taken to Herrick Emergency for examination.
4. 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.
5. Only under conditions which represent an extreme hazard to the officer will Mace be used at a distance of less than two feet.
6. Regardless of the circumstances, the following conditions require that the subject be taken to the HMH Emergency Room for such treatment as the doctor on duty feels necessary:
 - a. Discharge of the weapon directly into the eye or face at very close range.
 - 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.

W. P. BEALL
Chief of Police