**Sensitive: Law Enforcement** 

T1(f), T2(b)

# OLEORESIN CAPSICUM DEFENSIVE SPRAY

## Manual

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Education and Training Command have developed this resource to support the operations of the NSW Police Force to reflect the needs of the learner and deliver on the strategic intent of the organisation.

#### Copyright and contact details

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#### BACKGROUND

The Education and Training Command (ETC) supports the education and training for personnel across the NSW Police Force. The aim of the Education and Training Command is to ensure that best practice, quality training is delivered to over 20,000 employees (sworn officers and unsworn staff) across the NSWPF.

The vision of the NSWPF is for a 'Safe and Secure NSW'. This is achieved by police working with the community to reduce violence, crime and fear. This vision addresses:

- The basic community right to live, work and play in safety; and
- Confidence in our ability to deliver quality policing, professionally and ethically.

Through best practice, operations support and management, the NSWPF provides policing services, appropriate to local needs and available resourcing. A core component of this capability is built through the ongoing education and professional development of personnel.

The Education and Training Command ensures that world-class education and training resources are available to support the diverse and dynamic range of roles across the NSWPF. The Education and Training Command's educational philosophy is to maximise the capabilities of the policing workforce by developing and delivering education and training programs based on best available evidence from research and practice. The foundations of this approach include:

- Practical application of theory
- Learner centred teaching
- Commitment to ongoing development and learning

#### **OVERVIEW**

After reading this manual, individuals will be aware of:

- the purpose and basic characteristics of OC spray
- the tactical and operational context for use of OC spray
- how and when to use OC spray in different environments
- how to assess the effects of OC spray from an operational perspective
- how to respond to any adverse reaction to OC spray
- OC spray decontamination procedures
- · administration and accountability procedures.

#### INTRODUCTION

OC spray is a defensive spray used for self-defence to assist in the restraint of a subject, or to limit a subject's actions. It is a hand-held aerosol canister delivered to the target in the form of a directed stream or in a mist or fog.

- OC sprays have been used by law enforcement agencies since the early 1970's and have been issued to trained general duties officers in the NSWPF since 1998.
- Since 2010, officers in the NSWPF use T1(f), T2(b) This is waterbased and non-flammable.

For more information about the historical use of OC in the NSWPF please see Appendix A.

#### **OC - General Information**

OC is an oily resin which comes from processing and distilling certain 'hot' peppers such as cayenne. The actual ingredients causing the heat in OC are called capsaiciniods. OC is not a gas or a chemical agent.

For more detailed information about the properties and origins of OC, please see Appendix B.

#### Comparison between CN, CS and OC

In the past, the two most commonly used chemical agents have been CN and CS gas:

- CN (Phenacyl chloride) gas is classed as a lachrymator, hence the common term 'tear gas'. It causes tearing, irritation of the upper respiratory tract, mucous secretions and burning and itching of the skin.
- CS (2-chlorobenzalmalononitrile) is classed as a lachrymator and irritant. It causes profuse tearing (lacrimation), a severe sense of burning to the skin, a restricted sense of breathing and secretions from mucous membranes (rhinorrhoea).

Both CN and CS are most commonly delivered in a gaseous medium such as grenades or foggers but can also be used in aerosol devices. They are chemical agents and T1(f), T2(b)

Both agents are commonly referred to as Mace, which is a registered

brand name.

OC induces more severe and more immediate reactions than either CN or CS in most people. The involuntary inflammatory effects of OC tend to neutralise those posing a threat more reliably and immediately than the irritant effects of CN or CS. This includes:

- violent subjects
- emotionally disturbed or enraged subjects
- subjects having a high pain threshold
- subjects under the influence of drugs or alcohol.

#### **KEY FEATURES AND EFFECTS OF OC**

#### **KEY FEATURES OF OC**

OC is classed as an inflammatory agent.

• OC spray is biodegradable and leaves no long-lasting residue.

T1(f), T2(b)

- OC spray causes pain (burning sensation) to exposed skin, tissue and membranes. On contact with the eyes it causes the eyelids to spasm and shut.
- OC spray also causes exposed blood vessels to dilate, bronchial tubes to constrict, mucous membranes to secrete profusely.
- Because of these reactions, the human body then rushes blood to the upper body, which in turn weakens the extremities making coordinated motor functions more difficult to achieve.

#### **EFFECTS OF OC:**

- Generally, occur within two to three seconds after contact with OC spray.
- generally last between 45 minutes to 2 hours, but in rare cases may be 24 hours or longer
- can vary depending on the amount of OC spray that meets the subject's eyes, nose and mouth
- can also be experienced by indirect exposure, such as walking through a cloud of OC, having
  the wind blow the spray back in your face or from handling a person or clothing which has
  received a lesser exposure this is commonly referred to as secondary contamination
- will vary from person to person depending on the level of exposure and decontamination being conducted. Decontamination can include washing the affected area with water and facing into the wind or any breeze.

#### DO NOT EXPECT EVERYONE TO REACT IN THE SAME WAY

**BE AWARE** – Always use OC spray in conjunction with other tactical options currently used by the NSWPF. Do not consider as an isolated tactical option, e.g. as the only option against subjects armed with knives. OC spray is not an alternative to lethal force, merely a further option in the use of force Tactical Options Model

#### Is OC safe?

Independent evaluations have concluded that OC spray has no long lasting or hazardous effects on the human body.

#### Is OC toxic, carcinogenic or mutagenic?

Dr J Bowden of the Flinders Medical Centre, South Australia, writes:

"I have reviewed the reports prepared for the British Home Office regarding the health effects of Capsaicin. Taken together, these studies suggest it is extremely unlikely Capsaicin has any significant mutagenic or carcinogenic effect."

In a review prepared at the request of the Canadian Police Research Centre, the author, Joseph A Ruddock writes:

"The characteristically described burning of topically applied capsaicin is not toxicologically detrimental to tissue...Furthermore, it can be noted Sodium Chloride, ordinary table salt, has the same toxicity rating."

#### Effects on the eye

Joseph A. Ruddock writes:

"Unlike burns caused by acids or bases, the passing discomfort apparently does not permanently scar the cornea or sclera of the eye."

Be aware that the spray might not be 100 percent effective against all subjects. Some people will be affected to different degrees than others.

#### **NSWPF OC DEFENSIVE SPRAY**

Types of sprays issued:

T1(f), T2(b)

- T1(f), T2(b)
- T1(f), T2(b)
- Height approx. 11cm, 3.8 cm diameter, Formulation weight 42 grams (1.47oz NET)
- Water based T1(f), T2(b)
- Oleoresin Capsicum spray in aT1(f), T2(ls)olution
- Does not contain an ultraviolet dye
- Streamer type unit capable of T<sub>1(f), T2(b)</sub>
- Maximum effective range T1(f), T2(b)
- Shelf life 5 years.

T1(f), T2(b)

- T1(f), T2(b)
- T1(f), T2(b)

T1(f), T2(b)

- Height approx. 11.7cm, 3.7cm diameter, formulation weight 19 grams (.68oz NET)
- Water based
- Streamer type unit capable of T1(f), T2(b)
- Maximum effective range of T1(f), T2(b)
- Shelf life 5 years.

T1(f), T2(b)

T1(f), T2(b)

For technical specifications, please see Appendix C.

Do not carry or use any type of defensive spray other than that issued by the NSW Police Force. This includes defensive sprays manufactured for self-defence purposes or for protection against attacking animals. Only operational personnel are authorised to carry and use the issue OC defensive spray (this does not include members of the Tactical Operations Unit).

#### **ISSUE PROCEDURES**

- OC is issued to officers as part of their arms and appointments.
- OC issue is recorded on the officer's appointment card.

Visually and physically check the canister to ensure that it:

- js T1(f), T2(b)
- · is not damaged
- · has not expired.

If the canister does not satisfy any of the above checks, return it to the Police Armoury for destruction. Transport it in a sealed POLYPROPYLENE bag.

Shake the canister for 10-15 seconds on issue and at the start of each shift, to ensure the carrier and the OC particles are fully mixed.

#### **CARRIAGE OF SPRAYS**

Only operational police trained in the use of OC spray are issued with OC spray, i.e. officers who have attained the required standard of proficiency through the approved training course conducted by suitably qualified Operational Safety Instructors or a specialist course conducted by the Tactical Operations Unit.

Carry OC spray in an approved carrier and wear on the appointment belt for the duration of the rostered shift.

#### **Safe Work Practices**

Use defensive sprays only as per instruction prescribed in the approved training course.

#### **TRAINING**

- You will receive initial OC spray training at the NSW Police Academy.
- Ongoing training is conducted as required as part of Defensive Tactics Mandatory training.

#### WHEN AND HOW TO USE OC DEFENSIVE SPRAYS

Defensive sprays may be used for:

- protection of human life
- a less than lethal option for controlling people, where violent resistance or confrontation occurs (or is likely to occur),
- protection against animals.

### **DECONTAMINATION PROCEDURES**

The decontamination process:

T1(f), T2(b)

**INSTRUCT** the subject to remain calm and not to rub the eyes; tell them they must obey all instructions.

**REMOVE** affected person from the spray area to an area of fresh air, reducing the possibility of secondary contamination.

**REASSURE** subject that the effects will wear off shortly and that you have the knowledge and ability to help them.

**DECONTAMINATE** using procedures such as applying cool water to affected areas. More extensive decontamination, such as showering, can take place when operationally safe.

MEDICAL assistance from ambulance or hospital casualty staff.

**OBSERVE** the person until effects have worn off.

#### **Duty of Care**

Police have a Duty of care for any individual that is affected by OC spray. Start decontamination procedures as soon as possible after the subject has been sprayed but only after:

- taking precautions to reduce the possibility of secondary contamination to the arresting officer/s, such as wearing of disposable gloves and allowing enough time for airborne OC to sufficiently disperse
- the subject has stopped resisting and is under enough control, and
- the possibility of injury from other people in the vicinity is minimised.

Continuously verbally reassure the subject throughout the decontamination process.

#### Subject, officers and bystanders

Use the following decontamination procedures when possible:

- Rinse affected areas with cool water (consider sources such as garden taps, drinking fountains, sinks or basins).
- Spray affected area with water from a garden type water bottle with a mist spray (stored ready in patrol vehicle).
- Move to another area if atmosphere still contaminated to any degree. Advise subject not to rub eyes or face.
- Face subject into any available wind or breeze (e.g. outdoor breeze, fan or air conditioner, or seated in a moving car next to an open window).
- Have the subject remove contact lenses after washing hands and face.
- **Do not** use salves, creams or oils.
- When suitable, allow the subject to fully shower to wash remaining OC residue from skin and hair, using a non-oil-based soap.
- Avoid secondary effects from exposure to OC contaminated clothing.
- If irrigation of the eyes is considered, ensure the stream is directed from the inner eye towards the outer eye.
- You may also provide access to "No tears" type baby shampoo to cleanse the face and
  eyes by placing a quantity into the subject's hand and allowing them to wash their face
  and eyes.

The use of one or more of these procedures may reduce the length of the effects of OC spray exposure. However, due to operational circumstances you may not have the necessary equipment to carry out the decontamination process as listed above.

If you have been involved with the arrest or handling of a subject who has been sprayed with OC spray:

- Wash hands as soon as possible unless disposable gloves were worn.
- Consider decontamination of clothing if direct contact was made with the subject's contaminated clothing.

If you did not have direct contact with the subject but were in the vicinity when OC spray was deployed, remember that airborne particles of OC may have settled on hair, exposed skin or clothing, later causing some secondary exposure and symptoms.

#### **DECONTAMINATION PROCEDURES - CLOTHING**

Wash clothing contaminated by OC spray in a normal washing machine on a normal cycle. Grossly contaminated clothing might need to be washed several times. Take preventative measures, such as wearing gloves, to avoid secondary contamination.

#### **DECONTAMINATION PROCEDURES - BUILDINGS AND FURNITURE**

Open doors and windows as soon as possible and wash grossly contaminated areas with soap and water. Take preventative measures, such as wearing gloves, to avoid secondary contamination. The building and area should be clear of the airborne OC within approximately 30 minutes.

#### **MEDICAL WARNING SIGNS AND SYMPTOMS**

Medical attention must be arranged and provided as a matter of course. If you have any concern about a subject's condition, you must call an ambulance immediately.

Be alert for signs that may indicate an extraordinary reaction to OC spray:

- rapid breathing rate (more than 20 breaths per minute)
- shallow, restrained or difficult breathing lasting more than two to three minutes
- audible wheezing or noisy breathing
- blue discolouration of lips and tongue (cyanosis)
- deteriorating consciousness
- chest or neck pain
- profuse sweating
- vomiting or severe dry retching.

#### PRISONER MANAGEMENT CONSIDERATIONS

When you take a prisoner, who has been exposed to OC spray to a charging station, provide the custody manager or person in charge with the following information:

- confirmation that prisoner has been exposed to OC spray
- time of the exposure to the spray
- approximate amount of OC spray used, e.g. how many sprays and of what duration.
- normal effects observed following exposure to the spray
- abnormal effects observed following exposure to the spray
- whether the prisoner is or is not an asthmatic
- what restraint techniques were used following the spray and the duration of use
- what decontamination procedures have been used
- any other relevant information which will help the person/s taking custody of the prisoner.

This information is to be recorded in the custody record on COPS, for easy reference by officers who are, or might, become responsible for the custody and management of the prisoner.

#### **POSITIONAL ASPHYXIA**

Positional Asphyxia is described as a condition where a person is prevented from breathing properly because of their body position. Positional Asphyxia is linked to sudden and unexplainable death.

During arrest and restraint procedures and while conveying a subject, ensure they are not restrained or conveyed in any manner that may induce positional asphyxia. You must adhere to the following guidelines:

- If you subdue and restrain a subject who is violent, free the subject when operationally safe allowing them to breathe freely.
- If when restraining a violent subject, your body weight is used with control techniques you must closely monitor and assess the suspect's breathing. Immediately abandon or alter control and restraint techniques at any sign of breathing difficulties or lack of pulse.
- Where practicable, roll the subject onto their side as soon as possible. Alternatively place the subject in an upright sitting position.
- Do not leave a restrained subject lying on their stomach or in any position where pressure is exerted onto the stomach or diaphragm.
- Always monitor the subject closely until restraint devices are removed.
- If a subject is restrained with restraint devices or weaponless control techniques on both hands and feet, so that the hands and feet are joined or positioned closely together in some manner behind the back, as soon as practicable, place the subject on their side. **Do not** transport a subject in this type of position or restraint.
- If the subject is conveyed in a sedan vehicle, **do not** place them on the back floor behind the front seats, as lying face down over the top of the transmission well will cause breathing difficulties.
- If the subject is placed on the rear seat of a sedan, place them on the side and so that the face is not obstructed by the back of the rear seat.
- Optimally place the subject on his / her side on the rear seat facing forward and further restrain in that position with the rear seatbelts, ensuring no portion of the seatbelt crosses the subject's throat or face.
- Continuously observe and monitor the subject until removed from the vehicle.

#### **ADMINISTRATION AND ACCOUNTABILITY**

#### REPORTING USE OF OC DEFENSIVE SPRAY

- Complete a 'use of force' entry on COPS.
- Report any type of operational or tactical problems with the deployment of OC spray in any situation and contact Weapons & Tactics Policy & Review Unit direct as soon as possible.

#### STORAGE, TRANSPORT AND DISPOSAL OF OC DEFENSIVE SPRAYS

- Store OC spray canisters in a secure area at normal room temperature.
- Do not expose to direct sunlight.
- Do not store in vehicles.
- When on duty, secure the OC in the issued carrier worn on your appointment belt for the duration of the rostered shift.

If you are an Officer in Charge of a smaller country station, or a person authorised for personal issue of departmental OC spray, you must ensure the canister/s are stored away from unauthorised people or children.

#### **RECORDS OF STOCK**

OC spray canisters are subject to audit and require appropriate records of all instances of issue and movement like that required for portable radios, alcometers etc. All canisters details must be recorded in the OC spray register and the officers Electronic P395 system.

#### **Audits**

Include inspection and audit of all OC spray canisters as part of regular inspection and audit procedures.

#### Transport of OC defensive sprays

- Transport OC spray canisters by hand, in police service vehicles.
- Do not send in internal mail, public mail, parcel express system, or courier as it is prohibited by law.
- Put canisters in some type of airtight container i.e. a sealed POLYPROPYLENE bag, or securely wrapped in several plastic bags or several layers of plastic to contain any leakage.
- Do not carry canisters on commercial aircraft under any circumstances. If you wish to take OC defensive spray canisters on police aircraft or aircraft chartered by the service, liaise with either the Police Air Wing or the charter company before travel.

#### **Used or damaged canisters**

Send used, damaged or expired canisters to the Police Armory following the transport precautions.

#### **Disposal of OC canisters**

T1(f), T2(b)

# APPENDIX A: HISTORICAL BACKGROUND TO USE OF OC IN THE NSWPF

In 1998, the NSWPF first issued OC spray to trained general duties officers. This was the T1(f), T2(b) is an oil-based spray.

A change to a water-based OC spray was identified as a result of the NSWPF adopting and issuing Conducted Electrical Weapons (CEW) to First Response Officers. This change arose from concerns about the potential flammability of solvents used in the manufacturing process and chemicals found in the carrier solution.

Although the T1(f), T2(b) was labelled as non-flammable, the testing of OC spray flammability in other Australian States recorded instances where the OC spray ignited after discharge of a CEW. Police were alerted to the fact that the use of OC spray with extended exposure to the electrical current associated with Conducted Electrical Weapons may result in the ignition of solvents used in the manufacture of oil-based OC.

T1(f), T2(b) contains small trace amounts of flammable solvents resulting from the distillation process. These solvents are associated with the initial distillation and subsequent dilution of the oleoresin capsicum in the oil-based carrier.

These solvents require controlled conditions and extended exposure to electrical discharge to ignite. The likelihood of OC spray on issue to NSWPF officers igniting is minimal. Oil based OC can be used in conjunction with any type of Conducted Electrical Weapon on issue to NSW police officers.

As a result of the above incidents and studies conducted, the NSWPF ceased issuing T1(f), T2(b) During 2010 there was a changeover to T1(f), T2(b) T1(f), T2(b) (water-based non-flammable). This is a water-based OC spray and has a concentration of T1(f), T2(f) mpared to the T1(f), T2(f) the previous OC spray issued to officers within the NSWPF. The increase in concentration level is due to the manufacturing process requirements for water-based OC.

# APPENDIX B: DETAILED INFORMATION ABOUT OC DEFENSIVE SPRAY

#### **OC Defensive Spray**

Is a device which uses an airborne delivery system to convey an inflammatory agent to a subject's location to assist in the restraint or limit a subject's actions.

#### Concentration

The term concentration in relation to OC spray relates to the amount of active ingredient (oleoresin capsicum) within the canister. In general terms, the greater the concentration the greater the time period the individual will be affected by the OC spray.

In 1998 the NSWPF adopted and issued OC spray for all Police. The OC spray used was T1(f), T2(b) which used a concentration level of T1(f), T2(b) he NSWPF now issues T1(f), T2(b) with a capsaicinoid Strength of T1(f), T2(b)

- This OC was first issued under the label of but T1(f), T2(b) has since dropped the T1(f), T2(b)
- There is no change to the formula from (f), T2(a)the current 1(f), T2(b)
- Although this OC has capsaicinoid strength of only 1(f), T2(b) it is still the equivalent active OC concentration of T1(f), T2(b) using the oil-based measurements of strength.
- This increase in concentration is due to the adoption of water-based OC.

Water based OC sprays have a higher capsaicinoid concentration than that of oil-based OC solutions as the micelle (OC at its purest and pungent state) from which it is produced is processed further than oil-based OC solutions to remove natural oils, waxes and fats. This is required to allow for a quicker decontamination process to occur and removes the need for solvents. This removal of oils, waxes and fats however initially results in a lower concentration of capsaiciniods. To ensure the effectiveness of water-based solutions, a greater dispersal of capsaiciniods in the solution is required. This is achieved by having a lower dilution ratio than in oil-based solutions.

#### Oleoresin Capsicum (OC)

- OC is classed as an inflammatory agent.
- It is a naturally occurring oily resin derived from *capsicum* plants.
- The genus encompasses some 20 species and 300 different varieties of plants. The particular plants of interest here are the common chilli peppers.
- The property which separates the capsicum family from other plant groups is an alkaloid called *capsaicin*. (cap-sa-i-sin), an unusually powerful, crystalline substance found in no other plant. Capsaicin is the source of pungency and heat in capsicums. OC affects the eyes, skin/mucous membranes and respiration. It produces an intense burning like sensation coupled with involuntary closure of the eyes and difficulty in breathing due to inflammation to the nasal passages and respiratory system.

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T1(f), T2(b)

#### **Propellant/Carrier**

There are three substances in most OC aerosol canisters: the OC itself, the propellant (nitrogen) and the carrier. The propellant forces the OC and the carrier out of the nozzle of the canister, while the carrier suspends the OC in a liquid medium in the canister and transports it to the target.

#### **SHU (Scoville Heat Units)**

"Scoville heat units" were invented in 1912 by a pharmacist named Wilbur Scoville. These units measure the amount of capsaicin (the chemical that provides the heat) in a pepper and were originally devised in order to rate peppers for culinary purposes. Modern measuring uses high-performance liquid chromatography to accurately measure capsaicinoid content.

#### Reference

NSW Police Force Handbook, Chapter A, Arms & Appointments – Oleoresin Capsicum (OC) Sprays.

T1(f), T2(b) Material Safety Data Sheet, dated 11/01/2004.

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