Module 10
Irritant Sprays

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Aims:
To provide officers/staff with training in the theory and techniques included within the irritant spray section of the programme.

Learning Outcomes:
Officers/staff will be able to:

- Explain the theory associated with irritant spray
- Demonstrate the techniques included within the irritant spray programme

Section 1 - Introduction

Officers are reminded that under S.5 of the Firearms Act 1968 it is classified as a firearm.

The high line carry position of the irritant spray is a tactical communication and can provide a visual presentation and creates a unique psychological effect on the subject, thus affording the officer/staff a tactical advantage. Officer/staff presence and bearing are important to their effectiveness.

The use of irritant spray can have physiological effect on a subject.

Section 2: Irritant Spray Theory

Officers/staff should bear in mind that not all subjects are affected by irritant spray, therefore, they should maintain alert throughout to the potential for it not working.

The information contained in this module is designed to provide officers/staff with an overarching, generic approach to the use of irritant spray. The guidance provided is for the benefit of officers/staff that may be required to use irritant spray.

The guidance should not be viewed in isolation, but seen as the guiding principles and fundamental approach, underpinning the specific training provided to all officers/staff issued with irritant spray.

The use of irritant spray should be seen in the context of the National Decision Model as a whole and its use viewed as one of the many tactical options that may be available to an officer/staff in the resolution of an incident.

The nature of policing is so diverse that it will never be possible to document guidance to cover every encounter or eventuality; what is important is that any action taken is lawful. Action must be proportionate to the competing rights of individuals and any force used should be no more than absolutely necessary in the circumstances. In this regard, individual officers/staff must be prepared to account for their decisions to show that they were justified in doing what they did and that they acted reasonably within the scope of the law on the use of force. Similarly, the chief constable will need to be in a position to justify any decision or action in order to avoid or defend civil claims.

Irritant sprays will not be effective in all cases, indeed it may even make some subjects more aggressive. The use of an irritant spray should therefore not be viewed as having the ability to solve all problems.

The canisters are designed to deliver a specific amount of spray. As a minimum they should contain sufficient for a continuous six second burst, however this may vary.

The content of the canister is therefore very limited, and should be discharged in short bursts.

Once the officer/staff has sprayed a subject, they should attempt to move to a more advantageous position, if possible outside the subject's fighting arc.

The officer/staff should then reassess the situation and consider their next tactical option.

PAVA Spray - Section 5 Firearms

An irritant spray (PAVA) has been defined as a firearm (also referred to as a 'prohibited weapon') by the Home Secretary, under Section 5(i)(b) of the Firearms Act 1968.

PAVA Irritant Spray

PAVA (Pelargonic Acid Vanillylamide) is Nonivamide (0.30%), in a solution of Mono Propylene Glycol (72%), Water (25%) and Ethanol (2.7%). Like CS, the propellant is Nitrogen.

PAVA has been used for some 50 years in unregulated pharmaceuticals such as pain relieving balms, and as a flavouring additive in foodstuffs available in the UK and Europe. The product goes under the trade name of Captor 2.

Captor 2- Irritant is dispensed from a hand held canister in a liquid stream that contains a 0.3% solution of PAVA in a solvent of monopropylene glycol, water and ethanol. The propellant is nitrogen.

Captor 2 - A 0.3% solution has been selected because this is the minimum concentration which will fulfil the purpose of the equipment; namely to minimise a subject's capacity for resistance without unnecessarily prolonging their discomfort.

Captor 2 has no known long term medical effects. It will only incapacitate if sprayed directly into a subject's eyes. Captor 2 is not a gas, so is specific to targeted subjects. It does not generally migrate from one person to another, however, occasionally other people close to the targeted subject may experience some effects of the spray due to splash back.

There is very little cross contamination and once any liquid mist has settled shortly after spraying, it will rapidly dissipate and should have no lasting effect.

Officers/staff must be aware that cross contamination with PAVA may occur following direct physical contact with the targeted subject.

The liquid stream is a spray pattern and has a maximum effective range of up to 4 metres. Maximum accuracy, however, will be achieved over a distance of 1.25 - 2 metres. The operating distance is the distance between the canister and the subject's eyes, not the distance between the officer/staff and the subject.

Effects of PAVA

PAVA primarily affects the eyes, causing closure and severe pain. The pain to the eyes is reported to be greater than that caused by CS. The effectiveness rate is very high once PAVA gets into the eyes. However, there have been occasions where PAVA has failed to work, especially when the subject is under the influence of alcohol. It should be remembered, however, that no irritant spray is universally effective and there may be individuals on whom the spray may not be effective at all, or only partially so.

For PAVA to work effectively it must enter the eyes. The effects of PAVA are usually instantaneous if this happens. Exposure to fresh moving air will normally result in a significant recovery from the effects of PAVA within 15–20 minutes.

Delivery System – PAVA

The delivery system for PAVA is based on the design of the canister and degree of pressure. These factors will affect the amount of agent discharged and the range and degree of coverage.

The spray is dispersed by a stream effect, which is a narrow type of spray similar to a water pistol.

The stream effect has been selected at the present time for use by officers/staff because:

- It can be directed accurately
- It has a longer range
- There is less risk of cross contamination

Where possible, officers/staff should attempt to spray downwind. Spraying upwind (i.e. against the wind) may cause a blow-back effect which could affect officers/staff or members of the public.

Deployment of PAVA Spray

Irritant spray should generally be used at distances of between 1 and 2 metres from the subject.

At distances closer than 1 metre there is a possibility that the stream of the irritant solution could exert sufficient hydraulic pressure to damage the eye. At distances greater than 2 metres, accuracy is lost and the spray is less effective, particularly in windy weather conditions.

The spray should be aimed directly at the subject's face and contact with the subject's eyes must be made.

In still air, officers/staff should use 2 short bursts. If one of these bursts misses the subject, officers/staff should spray again until they have made contact with a second burst.

The spray is primarily intended for use against one subject and the canister is designed to deliver approximately 6 seconds worth of spray.

In moving air, two longer bursts may be necessary to ensure accuracy.

Possible Failure of Irritant Spray

As irritant sprays will not work in all circumstances, and on all subjects, officers/staff must always be considering other tactical options, in the event of the irritant spray failing to take effect.

It is extremely unlikely that anyone can build immunity to irritant sprays, however, with repeated experiences of contact with an irritant spray, a subject may become less sensitive to irritant spray.

There is no evidence of lasting side effects from exposure to irritant spray.

Irritant spray may not work in all circumstances.

There can be a number of reasons why an irritant may not have the desired effect:

- The canister fails to function
- The subject is under the influence of drink and/or drugs
- The subject has a positive mental mind set/goal
- People with serious mental disorders
- The subject closes the officer/staff down, thereby preventing the use of the spray
- The subject protects the intended target area, thereby preventing the spray making contact
- The officer/staff misses the subject

When to use Irritant Spray

Irritant sprays are not a replacement for other use of force options, they are an addition. Only the individual officer/staff can decide when to utilise the spray, as they must justify its use.

Physiological Effects

Irritant spray affects the eyes, the respiratory system and the skin. The effect may be instantaneous or delayed, or there may be no effect at all.

The Eyes

Spraying to the face will cause dilation of the capillaries and closing of the eyes. The effects can range from severe twitching or spasmodic contraction of the eyelids, to involuntary closing of the eyes. Subjects who wear glasses or contact lenses will be equally affected. Following exposure, contact lenses should be removed by the subject or a doctor for faster recovery. Under no circumstances should an officer/staff attempt to do this.

People, who are affected by irritant spray, that wear contact lenses or glasses will be equally affected if the spray contacts the eyes in any way.

Contact lenses inhibit the natural effect of tears in flushing the surface of the eyes. In addition most modern soft contact lenses absorb chemicals, including irritant. Thus, for those wearing contact lenses, the irritant spray will stay in contact with the surface of the eye, especially the cornea, for longer. It is therefore thought that there is the potential for damage to the surface of the eye should contact lenses continue to be worn following exposure to irritant spray. Contact lenses must be removed as soon as possible following exposure to irritant spray.

Note. On no occasion should anyone attempt to remove contact lenses from another person. The subject, an optician or a medical practitioner should do this.

The Respiratory System

If an irritant spray is inhaled it can produce either respiratory inflammation or irritation which can produce uncontrollable coughing and shortness of breath. The inflammation of mucous membranes makes breathing through the nose difficult. Prior to aggressive behaviour, a subject's breathing can become more rapid and deeper than usual, which can increase the effects of the spray.

The Skin

Irritant spray can cause severe discomfort and irritation to the face and the membranes inside the nose. Depending on the subject's complexion, skin colour may range from slight discolouration to bright red.

With PAVA contact, the face will feel very hot, as will the inside of the nose and mouth if they have been in contact with the spray.

The subject's lips and eyelids may become slightly swollen. Normal skin colour should return within 30-45 minutes of spraying, however this may vary from person to person.

The effects may be instantaneous or delayed for anything up to 5 mins.

Other Physiological Effects

As well as causing the aforementioned effects, the following sympathetic symptoms may also occur, including:

- Hands move to face
- Legs become weak - may drop to knees
- Involuntary leg tremors
- Upper body bends forward
- Whole body shakes
- Impaired hearing - auditory exclusion
- Impaired thinking - cognitive dissonance
- Muscles tense
- Rocking from foot to foot (balance)
- Panic attacks due to the pain and the belief that they cannot breathe etc.

Aftercare - PAVA

- Immediately after spraying, the subject should be advised to keep their eyes closed and not to rub their eyes or face as this can aggravate the effects
- Experience has shown that the earlier a subject forces themselves to open their eyes and natural, unimpeded tearing takes place, the quicker their recovery. Trying to open the eyes is very uncomfortable but increases visual recovery rapidly
- Standing the subject facing cool moving air, such as from a fan or a breeze, can be most soothing
- If effective tearing takes place, recovery from the significant symptoms of exposure i.e. eyes opening, should take place within a maximum time of between 15-20 minutes
- If discomfort to the eyes and face persists beyond this period, ideally cool, running water should be used to flush the remaining spray from the eyes and face
- **Note: Experience has shown that flushing with water is soothing but this does sometimes prolong the recovery time of the subject. However, as the eyes will normally recover of their own accord in around 20-35 minutes after initial exposure, it may not be possible or necessary to provide irrigation immediately after exposure**
- Exposed subjects should be allowed to bathe their face and eyes if they so wish and proper facilities are available. Under no circumstances should warm water be used as this seems to aggravate the condition
- Application of water, or saline solution, too soon after spraying to the affected area can increase the burning sensation

- If any adverse reactions to the PAVA are observed, immediate medical assistance should be obtained. It is essential that the subject's breathing is monitored. If the subject is having difficulty resuming normal breathing, the provision of medical assistance must be given precedence over conveying the subject to a police station. In such cases the subject must be taken directly to a hospital

- Officers/staff should ensure that the restraint methods used, and the position the subject is placed in, does not adversely affect breathing. Subjects must not be left in, or transported, in a prone (face down) position for unnecessary periods of time

- The subject should be carefully monitored from the time of arrest, during transportation and whilst in custody, until effects of the PAVA have worn off. This is especially important in monitoring the recovery of subjects who are obese, or are known to be under the influence of drugs and/or alcohol

- Subjects wearing contact lenses may experience greater discomfort. They should be permitted to remove their lenses at the earliest opportunity. On no account should a police officer/staff attempt to remove contact lenses from a subject. This should be done by the subject, or a medical practitioner. Exposure to PAVA may cause damage to certain types of lenses and subject's who experience problems with their lenses after normal cleaning should consult an optician

- PAVA may saturate the subject's hair or clothes. Simple washing or showering with copious amounts soap and water should remove all PAVA

- There is always a chance that a subject could have a hypersensitive reaction to PAVA. Although such reactions are extremely rare they include symptoms such as swelling of the face and localised skin reactions - tingling, rashes, pain or blistering. If any of the above occur, the manufacturers of PAVA recommend that you should:

  1. Wipe the sprayed area with cotton wool soaked with a cooking oil e.g. olive oil, peanut oil or margarine.

  2. Apply ice packs or local anaesthetics to relieve the symptoms.

  3. In such extreme cases, do not wash the affected area with water, as this may spread the substance unnecessarily.

  4. Seek medical attention as soon as possible.

General Aftercare

It is also important to pay particular attention to any subject on whom irritant spray appears to be ineffective, and those exhibiting bizarre/ violent behaviour (Acute Behavioural Disorder), or experiencing breathing difficulties.

If the subject requests it, or if the symptoms persist, additional medical attention should be provided. This may include the recall of a medical practitioner, or on the advice of the doctor, the conveyance of the subject to hospital.

Until a full recovery has been made from the effects of the spray, the subject should be supervised and closely monitored. It is good practice to remove contaminated clothing to prevent recurrence of irritant effects. Arrangements should be made for replacement clothing or paper suits to be issued.

Aftercare Advice to Subject:

Following discharge of irritant spray, officers/staff have a duty of care to subjects affected and, as outline above, should give aftercare as soon as possible after the discharge. The following are simple phrases an officer/staff could consider, which will assist in the early delivery of irritant spray aftercare:

- You've been sprayed with PAVA/ irritant spray
- The effects are only temporary and you will recover
- Don't rub your eyes
- Face into the wind
- Breathe normally

After Effects

There is no evidence of any lasting physiological side effects to subjects sprayed with PAVA. Full recovery is usually achieved within 20-35 minutes of spraying. Different people recover from the spray in different ways dependant on their psychology (how they cope with stress and pain) and condition at the time of spraying (mental state, intoxication, drugs etc).

After full recovery from the immediate effects for anything up to a day or so after exposure, the subject may experience mild burning or stinging sensations to the eyes and face in contact with water, such as bathing or showering. This is normal and passes quickly and wears off within a short time.

Section 3: Irritant Spray Techniques

Draws and Carry Positions

Draws

Strong Side Draw

Breakdown:

- Adopt a defensive stance
- Use tactical communication
- Unclip the holder with strong hand
- Hold the pod with strong hand
- Pull pod from the holder and move to the carry position
- Keep support hand in a defensive position
- Take a position in the appropriate zone
- Take the appropriate tactical position
- Choose a tactical option
- Use tactical communication

Further points to consider:

To effectively draw the canister, the officer/staff should maintain a reaction gap between them and the subject. Additional time for drawing may be gained by performing a pattern of movement to create greater distance.

High-Line Carry

Breakdown:

- Adopt a defensive stance and use tactical communications
- The officer/staff should unclip the irritant spray holder with their strong hand and remove the holder in a firm grip with their fingers wrapped around the holder, clear of the nozzle
- The safety lid of the spray should be opened with the thumb, and the thumb placed on the button ready for deployment
- The officer/staff should raise the canister up to shoulder level, with the nozzle facing towards the subject
- The officer/staff should keep their support arm up in a defensive position throughout
- The officer/staff should use tactical communications and consider their tactical options

Further points to consider:

If an officer/staff cannot release and draw the spray with one hand, they could consider unclipping the holster with their support hand and drawing with the strong hand.

High-Line Carry

Low Profile Carry

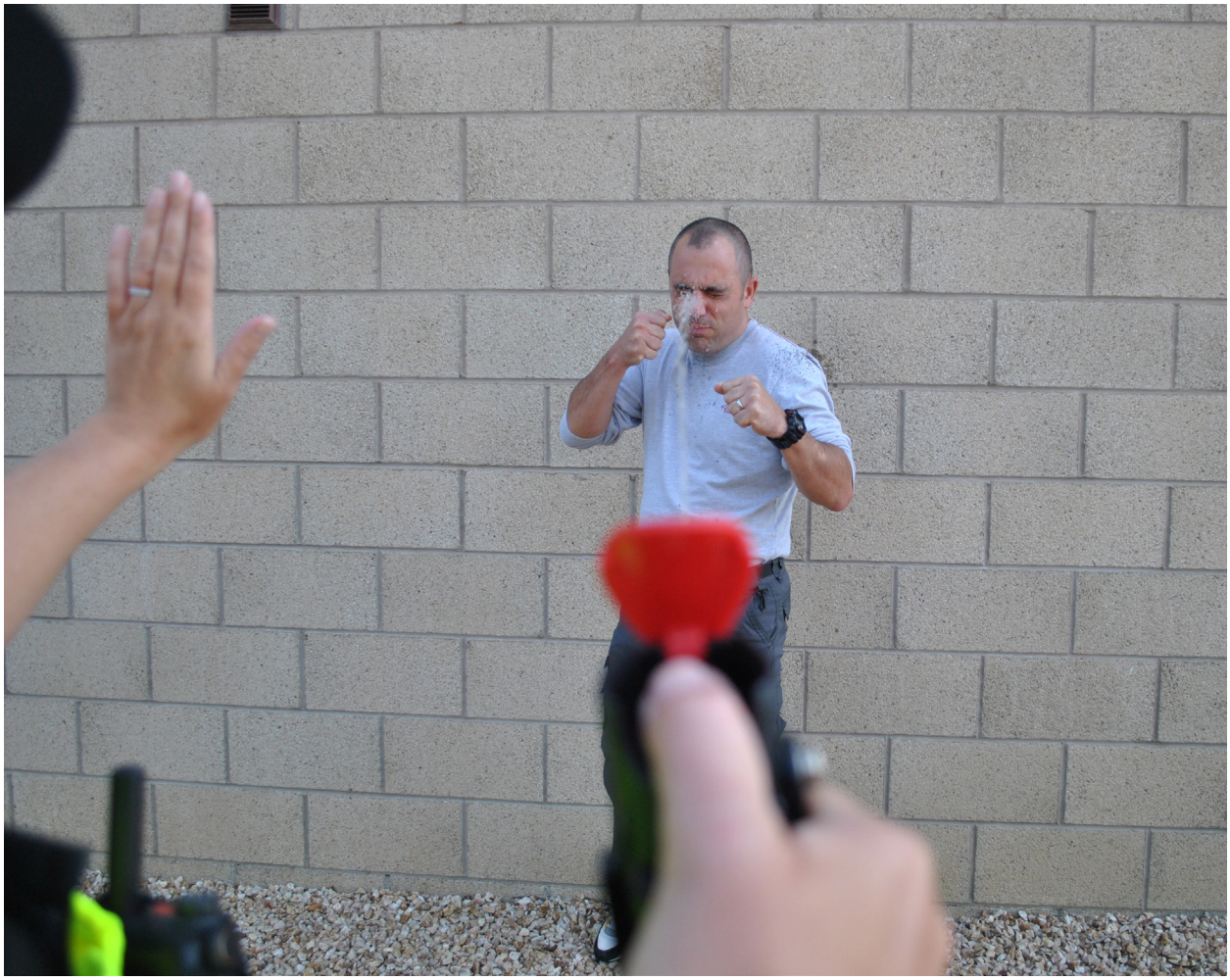
Breakdown:

- Adopt a defensive stance and use tactical communications
- The officer/staff should draw the canister with the strong hand
- Instead of raising the canister up the officer/staff should place the canister behind their back, or behind their strong leg
- The officer/staff should use tactical communications and consider their tactical options

Further points to consider:

Where possible the canister should be kept upright.

Single Aggressor Spray



Breakdown:

- Adopt a defensive stance and use tactical communications
- Using the thumb, the officer/staff should press down firmly, deploying the spray in two short bursts aimed at the subject's eyes
- The officer/staff should then allow the irritant spray canister to drop
- Aftercare procedures should then be employed
- The officer/staff should use tactical communications and consider their tactical options

Further points to consider:

The officer/staff should be aware that irritant spray may not be effective. Other tactical options should be considered whilst maintaining distance from the subject, until is deemed safe to approach.

Multiple Aggressors

Breakdown:

- Adopt a defensive stance and use tactical communications
- The officer/staff should draw the irritant spray into a extended carry position
- Using the thumb, the officer/staff should press down firmly, deploying the spray in one continuous burst, aiming to make contact with the eyes of each subject
- The officer/staff should then allow the irritant spray canister to drop
- Aftercare procedures should then be employed
- The officer/staff should use tactical communications and consider their tactical options

Further points to consider:

The officer/staff should be aware that irritant spray may not be effective. Other tactical options should be considered whilst maintaining distance from the subject until is deemed safe to approach.

Officer/Staff Grounded

From the ground defence position:

Should the officer/staff be unable to remove their canister from their utility belt:

Option 1: from Holster

Breakdown:

- Use tactical communications
- Using the thumb, the officer/staff should press down firmly, deploying the spray in two short bursts aimed at the subject's eyes
- The officer/staff should get to their feet as quickly and safely as possible
- Aftercare procedures should then be employed
- The officer/staff should use tactical communications and consider their tactical options

Further points to consider:

When deploying the spray from the holster position, the officer/staff must be aware that the accuracy of the spray may be diminished.

Option 2: from the Straight Arm

Breakdown:

- Use tactical communications
- The officer/staff should draw the irritant spray into a extended carry position
- Using the thumb, the officer/staff should press down firmly, deploying the spray in two short bursts aimed at the subject's eyes
- The officer/staff should get to their feet as quickly and safely as possible
- Aftercare procedures should then be employed
- The officer/staff should use tactical communications and consider their tactical options