

NHS Greater Glasgow and Clyde

Health and Safety Services

Advice Note

Author: Sheena Gordon, Management of Aggression Co-ordinator

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Version 2

Guidelines on Decontamination Procedures for CS Spray

Background

CS Spray may be used by Police as an incapacitant in a violent situation. This could occur on a GG&C site with the potential of staff and patients or visitors being exposed to the CS Spray.

There is also the possibility of patients presenting at A&E after being exposed to CS Spray. In this case it is likely that the initial effects will have subsided but staff should still be aware of first aid and decontamination procedures if the patient displays symptoms or visible evidence (white crystalline powder) of CS is noted.

CS (o-Chlorobenzylidene Malononitrile) is a white crystalline powder and once deployed will drift in the air for a short time before falling to the ground and settling on any surface in the vicinity, where it may be clearly visible. It is generally used in the solvent MIBK (Methyl Isobutyl Ketone) as a spray. The solvent evaporates at a fairly rapid rate leaving CS particles.

These guidelines are based on current advice from the Home Office Police Scientific Development Branch. The guidelines advise on how best to deal with the effects of CS from both direct contamination or through cross-contamination.

Effects of CS Spray

CS causes irritation and pain to the eyes and facial skin, but it is safe and symptoms quickly pass without any lasting effects. However, CS is likely to cross-contaminate and affect, to a much lesser degree, persons and property in the near vicinity of a person who has been sprayed.

First Aid Measures - Immediate Actions

Disposable gloves should be worn when carrying out first aid or dealing with any contaminated clothing or surfaces. All waste items should be disposed of via the orange clinical waste stream

Skin and clothing

The first principle is to allow the small particles of CS to blow off of the skin and clothing. This is best achieved by removing the contaminated person from the area where the CS has been used into fresh air and allow them to face into the wind or moving air. You should avoid standing down wind of the person who has been exposed to the CS. The significant effects of CS will normally subside within 15 minutes. Where this is not practicable remove person to a well ventilated area.

Eyes

Whilst the eyes are forced closed do not encourage the person to try and open them, the eyes will naturally irrigate and clean out the CS. They should be encouraged to open their eyes only when it becomes comfortable to do so whereupon fresh, moving air will accelerate recovery.

Follow-up Actions

Use of water

When mixed with water CS hydrolyses and breaks down into other, harmless products. If water is used it is important to use copious amounts; otherwise there is the possibility of a weak solution of CS spread over a wide area increasing the initial discomfort.

Note: Using water should be viewed as a last resort as it will accelerate the irritancy of the CS on the more sensitive skin areas of the face and will become very painful for a short period. Only cold water should be used.

Hair

CS particles can become lodged in hair but can normally be removed by combing.

Face

If a person has been sprayed with CS there may be some liquid solvent (MIBK) visible on the face. If liquid solvent remains visible on the skin this should, where possible, be rinsed using copious amounts of cold clean water.

Clothing/linen

Disposable gloves should be worn when handling contaminated clothing or linen. After use gloves should be disposed of via the orange clinical waste stream.

Clothing which is heavily contaminated with CS should be removed as soon as possible. This may only mean removing outer clothing.

Any contaminated item which is sent to the laundry should be treated as infectious linen and placed in a red alginate bag. This will reduce the possibility of cross contamination. and ensure that it will not come into contact with anyone in the laundry prior to wash. Contaminated items should be washed separately to other linen to minimise the risk of cross contamination

Where clothing cannot be laundered it should be hung outside to air so that the particles of CS can blow off. It should thereafter be laundered or dry-cleaned as appropriate. Hanging clothing out to air will, in most circumstances, rapidly decontaminate the heaviest contamination. Contaminated clothing should be washed separately to other clothing to minimise the risk of cross contamination. In exceptional circumstances, or in cases of severe contamination, it may be necessary to repeat the cycle of washing and airing, in order to eliminate all traces of CS and the solvent.

Buildings

The first stage is to remove as much of the drifting powder as is physically possible. This can be done by ventilating the room or building. Opening external doors and windows will facilitate the removal of airborne particles. This will only be effective shortly after exposure. After this the CS particles will settle onto the floor, furnishings or other surfaces.

If there are significant deposits of powder they can be removed using a suitable closed vacuum cleaner, which has an appropriate filter that will ensure that CS particles are not blown back into the atmosphere. Replace filter and discard bag after cleaning. Dispose of filter and bag via the orange clinical waste stream.

Carpet cleaners which use water (e.g. aqua vacs) may also be an effective way of removing CS particles.

Curtains and other removable soft furnishings which are heavily contaminated should be hung out in fresh air, as with clothing, to allow any excess CS particles to be blown off. Laundering or dry cleaning, as appropriate, should adequately remove any residual CS.

Carpets and other soft furnishings are more difficult to clean and the relative economics will depend on the quality of the carpets and the extent of contamination. In some extreme cases, depending on the extent of contamination, it may not be possible to remove the CS particles by vacuuming or wet cleaning. In such cases replacement may be the only option.

Solid surfaces and walls can be cleaned with a mild alkaline solution (hard surface cleaner), which will facilitate the break down of CS. **Do not use** neutral detergent or acidic cleaners such as Actichlor plus.

CONTACT LENSES

For practical purposes contact lenses are divided into two broad categories:

1. Rigid contact lenses
2. Non-rigid "soft" contact lenses.

1. RIGID CONTACT LENSES

These include the older "hard contact lenses" and the more modern variant the gas permeable lenses. They are made of rigid plastic with varying degrees of permeability to small molecules. CS molecules and the solvent molecules MIBK are relatively large and cannot permeate these sorts of lenses.

There is no evidence to suggest that the wearer will be either more or less affected by CS than a non-lens wearer. It is believed that the normal weeping effect will irrigate the eye in the same way as a non-lens wearer. As these lenses will not absorb CS it should be relatively easy to clean them by normal care.

2. NON-RIGID "SOFT" CONTACT LENSES

There are a number of different types of "soft" contact lenses, including the disposable lenses. These lenses will allow CS to enter into and through the lens material. This may mean the wearer will suffer greater discomfort as the CS permeates and remains in the lens. There is little experience of whether this type of lens can be successfully cleaned or whether the CS will remain trapped in the lens.

There have been reported cases of CS causing this type of lens to shrink. The likelihood is that any soft lens that has CS or solvent permeate into it will not be able to be worn again and will have to be disposed of. Additionally the effect of solvents on soft lenses is unknown.

It must be emphasised that in any case of doubt over the condition or use of contact lenses as a result of exposure to CS, then an optician should be consulted.

REMOVAL OF LENSES

The wearer should remove contact lenses as soon as it is practically possible. If they are unable to do this then an optician or a medical practitioner should remove the lens.

On exposure to CS the eyes will water and close, and it is not easy to remove lenses under these conditions. Sprayed individuals should allow their eyes to close and water, as the tears act as natural irrigation to the eyes.

Once the subject feels able to remove the lenses it is important that they first clean their hands

with soap and copious amounts of warm water. CS particles may adhere to the fingers and, as the skin on the hands is less sensitive than the eyes, the subject may not be aware of their presence. Re-contamination of the eyes when touched by contaminated fingers is highly likely.

Once the immediate effect of the CS exposure has subsided CS particles may still be present on the face, but because the skin on the face is less sensitive than the eyes the individual may not be aware of this. It is therefore important that individuals do not put clean lenses back into their eyes without ensuring that they have thoroughly cleaned their hands and face. As a precaution all wearers of contact lenses who undergo general exposure should not replace their lenses for **24 hours** after exposure.

If lenses are uncomfortable after eventually being replaced then they should be removed. It must be emphasised that in any case of doubt an optician should be consulted.

Refer to Occupational Health

GUIDELINES

WEAR DISPOSABLE GLOVES

- If possible take affected person into fresh air and allow them to face into the wind or moving air.
- Do not encourage person to open eyes. Wait until comfortable when fresh moving air will accelerate recovery.
- If required use copious amounts of cold water to rinse skin and eyes.
- Comb out of hair if contaminated.
- Heavily contaminated clothing should be removed and hung outside to air prior to washing. Wash separately from other clothing. If necessary repeat airing and washing cycle. Where this is not practicable and the clothing cannot be sent to the laundry it should be sealed in a plastic bag and labelled as irritant. Take care when removing clothing from bag to avoid cross contamination.
- Remove as much CS powder as possible from site of exposure by ventilating area.
- Vacuum up deposits of powder. Clean hard surfaces with mild alkaline solution.
- Treat linen as infectious and place in a red alginate bag before sending to laundry.
- Dispose of gloves and any other contaminated items such as Vacuum cleaner filter, plastic bags etc via the orange waste stream.

Contact Lenses

The wearer should remove contact lenses as soon as practically possible.

Allow the eyes to close and water, the tears will act as a natural irrigation to the eyes.

Once the subject feels able to remove the lenses they should wash hands with soap and copious amounts of warm water before removing lenses.

Rigid lenses do not absorb CS and can be cleaned as normal.

Do not replace lenses for 24 hours after exposure. If lenses are uncomfortable remove them and consult an optician.

Non-rigid "soft" contact lenses are permeable to CS and should be discarded on removal.

Consult optician or refer to occupational health as required.