### 5.1 CS, CR, and CN

#### Key Technical Features

CS (2-chlorobenzalmalononitrile), CR (2-chloroacetophenone), and CN (dibenzoxazepine) are all solids at room temperature.

CS, CN, and CR are lachrymatory agents (tear forming) and interact with sensory nerve receptors to produce discomfort, severe pain, itching, and burning, principally in the eyes, respiratory tract, and skin.

#### Human Rights Concerns

Inappropriate and excessive use of these chemical irritants is widespread, which can result in serious injury or death through suffocation, allergic reaction, hazardous overdose, or other side effect.

Individuals may react differently to the effects of CS, CR, or CN. Reactions may be affected by excessive application, delivery in an enclosed space, prolonged exposure, pre-existing medical conditions, and, for skin reactions, high temperature and relative humidity.

Use of these weapons can be indiscriminate, if used at a demonstration, bystanders can be affected even if they are not the target.

#### Statements and Standards from Human Rights Bodies

**ODIHR and Venice Commission:** "Devices with indiscriminate effects such as tear gas ... should be used for the purpose of dispersal only and should not be used where people (participants / bystanders; violent / peaceful persons) cannot leave the scene. They should only be used if violence has reached such a level that targeting individuals engaged in violence is not a possible or sufficient response."\(^{105}\)

**Special Rapporteur on the rights to freedom of peaceful assembly and of association:** tear gas is indiscriminate in nature as it does not differentiate "between demonstrators and non-demonstrators, healthy people and people with health conditions."\(^{106}\)

**OHCHR:** "A chemical irritant should only be used where sufficient toxicological information is available to confirm that it will not cause any unwarranted health problems."\(^{107}\)

#### Examples of Existing Controls

The EU includes chemical irritants on the EU Military List and requires Member States to license their export.

Some national export control regimes include these weapons on their list of equipment that requires an export licence.

#### Proposed Control

Manufacture should be controlled.

Trade and transfer should be controlled.

Use should conform with international human rights standards.

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\(^{107}\) OHCHR, UN Human rights guidance on less-lethal Weapons in law enforcement, 2020, para. 7.2.3.
Visual guide to law enforcement and security equipment

- Structural formula of CN
- Structural formula of CS
- Structural formula of CR
### 5.2 OC AND PAVA

<table>
<thead>
<tr>
<th>Key Technical Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>OC (Oleoresin Capsicum) is an oil at room temperature and is naturally derived from the capsicum species of plant (such as chili peppers).</td>
</tr>
<tr>
<td>PAVA (Pelargonic Acid Vanillylamide) is a solid at room temperature, and is a synthetic version of OC.</td>
</tr>
<tr>
<td>Both OC and PAVA are inflammatory agents, which interact with sensory nerve receptors to produce discomfort, severe pain, and itching or burning, principally in the eyes, respiratory tract, and skin.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Human Rights Concerns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inappropriate and excessive use of OC and PAVA is widespread and can result in serious injury or death through factors such as suffocation, allergic reaction, or hazardous overdose.</td>
</tr>
<tr>
<td>Individuals may react differently to OC and PAVA. Conditions affecting different reactions include excessive application, delivery in an enclosed space, prolonged exposure, pre-existing medical conditions, and, for skin reactions, high temperature and relative humidity.</td>
</tr>
<tr>
<td>These weapons lack differentiation; if used at a demonstration, for instance, bystanders can also be affected even if they are not the target.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Statements and Standards from Human Rights Bodies</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPT: &quot;Pepper spray is a potentially dangerous substance and should not be used in confined spaces.&quot;(^\text{108})</td>
</tr>
<tr>
<td>European Court of Human Rights: pepper spray &quot;can produce effects such as respiratory problems, nausea, vomiting, irritation of the respiratory tract, irritation of the tear ducts and eyes, spasms, chest pain, dermatitis or allergies. In strong doses, it may cause necrosis of tissue in the respiratory or digestive tract, pulmonary oedema or internal haemorrhaging&quot;(^\text{109})</td>
</tr>
<tr>
<td>ODIHR: &quot;OC... [is] designed to be sprayed into the face of an individual. This is not appropriate for dispersal purposes or to gain compliance, but only as a defence against violent individuals&quot;(^\text{110})</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Examples of Existing Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>The EU Anti-Torture Regulation controls the export of these chemical irritants.</td>
</tr>
<tr>
<td>The US CCL controls the export of these chemical weapons.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Proposed Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacture should be controlled.</td>
</tr>
<tr>
<td>Trade and transfer should be controlled.</td>
</tr>
<tr>
<td>Use should conform with international human rights standards.</td>
</tr>
</tbody>
</table>

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\(^{108}\) CoE: CPT, Preliminary observations made by the delegation of the CPT which visited Bosnia and Herzegovina from 19 to 30 March 2007 and Response of the authorities of Bosnia and Herzegovina, 16 July 2007, CPT/Inf (2007) p. 34.

\(^{109}\) Oya Ataman v. Turkey, 74552/01, Council of Europe: European Court of Human Rights, 5 December 2006.

\(^{110}\) OSCE/ODIHR, Human rights handbook on policing assemblies, 2016, p. 79.
▲ Structural formula of OC molecule

▲ Structural formula of PAVA molecule
### 5.3 MALODORANTS

#### Key Technical Features

A range of chemicals that have a foul and, deeply unpleasant smell. 

The smell can linger and be difficult to remove from clothing and furniture.

Means of dispersal include by hand-held spray, grenades, launched projectiles, drones, and water cannon.

#### Human Rights Concerns

It is not known what chemicals are used in malodorant devices, nor has there been research undertaken as to their effects on the people they are used against. Any proposed device and or method of use should be independently tested to assess the medical and health risks.

The use of malodorants to disperse a public gathering is indiscriminate, affecting all of those in the contaminated area, and could amount to collective punishment.

The use of malodorants chemicals as a method of punishment or humiliation should be classed as ill-treatment and should be prohibited.

#### Statements and Standards from Human Rights Bodies

Special Rapporteur on Torture: "certain "less lethal" weapons may have foreseeable long-term or other effects, which must be considered when assessing the proportionality of their use, such as the ... humiliating effect of the use of dyes or malodorants."

#### Examples of Existing Controls

To the best of Omega’s knowledge, there are no trade controls on this type of equipment.

#### Proposed Control

Chemical composition should be published.

Manufacture should be controlled.

Trade and transfer should be controlled.

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111 UN HRC, *Extra-custodial use of force and the prohibition of torture and other cruel, inhuman or degrading treatment or punishment: note by the Secretary-General*, 2017, para 68.
▲ Bottle of malodorant

▲ Malodorant spray
## 5.4 GRENADERS OR CARTRIDGES CONTAINING CHEMICAL IRRITANTS

### Key Technical Features

Chemical irritant grenades can be hand-thrown or weapon-launched. Cartridge-launched projectiles can be fired from specialist less lethal launchers and shotguns.

Grenades and projectiles may contain any kind of chemical irritant, and mixtures thereof, and may also include secondary effects such as dye, smoke, or impact projectiles.

Some grenades or cartridges separate into two or more ‘submunitions’.

Some grenades or cartridges contain an explosive charge to disperse powdered irritant, and some contain a pyrotechnic to disperse irritant smoke through burning.

### Human Rights Concerns

The people targeted, as well as bystanders, could easily be injured by the kinetic impact of the munitions, or by fragments, submunitions, or shrapnel.

Due to the high risk they may cause injury, grenades or cartridges that contain explosives should not be used.

### Statements and Standards from Human Rights Bodies

OSCE/ODIHR and Venice Commission: “Tear gas canisters should never be fired directly at or against a person”.112

### Examples of Existing Controls

Some national export control regimes include this type of projectile on their list of equipment that requires an export licence.

As some countries class this equipment as 'civilian' or 'policing' rather than 'military', they are not always adequately controlled and reported.

The EU may prohibit the export of this equipment under its sanction regime when the objective of the sanctions is to prevent the export of equipment that might be used for internal repression in the destination state.

### Proposed Control

Manufacture should be controlled.

Trade and transfer should be controlled.

Use should conform with international human rights standards.

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▲ 38 mm CS cartridge

▲ 40 mm CS grenade

▲ 40 mm CS grenade

▲ Chemical irritant grenades
### 5.5 HAND-HELD SPRAYERS

<table>
<thead>
<tr>
<th><strong>Key Technical Features</strong></th>
<th>These sprayers disperse irritant as a fine spray, mist, fog, or as a liquid stream. The dispersal range of different sprayers varies. Sprayers vary in size from small ‘personal’ 25ml sprayers, to larger 500ml sprayers. Sprayers may contain any chemical irritant or mixture thereof.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Human Rights Concerns</strong></td>
<td>The use of hand-held sprayers could cause serious injury or death through asphyxiation or agent toxicity, particularly if they are used in enclosed spaces or against restrained individuals. Most sprays allow continuous spraying with no cut off, and this capability risks excessive amounts being used against a person. If chemical irritants are sprayed directly in to the eye they can cause eye damage. There are no common standards on the concentration or amount of irritant, safety of solvents, or the pressure of sprays, which may lead to inconsistency and more dangerous products being used. Use of these weapons can be indiscriminate; if hand-held sprayers are used at a demonstration, bystanders can be affected even if they are not the target.</td>
</tr>
<tr>
<td><strong>Statements and Standards from Human Rights Bodies</strong></td>
<td>ODIHR and Venice Commission: “Devices with indiscriminate effects such as tear gas ... should be used for the purpose of dispersal only and should not be used where people (participants / bystanders; violent / peaceful persons) cannot leave the scene. They should only be used if violence has reached such a level that targeting individuals engaged in violence is not a possible or sufficient response.”[113]</td>
</tr>
<tr>
<td><strong>Examples of Existing Controls</strong></td>
<td>The EU Anti-Torture Regulation controls the export of portable sprayers that target one individual or affects a small area.</td>
</tr>
<tr>
<td><strong>Proposed Control</strong></td>
<td>Manufacture should be controlled. Trade and transfer should be controlled. Use should be in line with international human right standards.</td>
</tr>
</tbody>
</table>

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Various sizes and volumes of handheld sprayer
## 5.6 FIXED CHEMICAL IRRITANT SPRAYERS

### Key Technical Features

These sprayers are designed to be mounted or attached to a wall, ceiling, or fence. They can be used indoors or outdoors, and can either be manually operated (i.e. activated by remote control or a remote-control panel) or automatically (using motion sensor technology).

### Human Rights Concerns

These dispensers are designed to be both fixed and, in some cases, potentially automatic or semi-autonomous. As such, if they are used inside detention facilities, there is a possibility that the threshold for use will be too low, and they will be used inappropriately. Use of these weapons can be indiscriminate; if used at a demonstration, bystanders can be affected even if they are not the target. If used outside, those targeted must be able to disperse from the area.

### Statements and Standards from Human Rights Bodies

ODIHR and Venice Commission: “Devices with indiscriminate effects such as tear gas ... should be used for the purpose of dispersal only and should not be used where people (participants / bystanders; violent / peaceful persons) cannot leave the scene. They should only be used if violence has reached such a level that targeting individuals engaged in violence is not a possible or sufficient response.”

### Examples of Existing Controls

The EU Anti-Torture Regulation controls the export of fixed sprayers that can be fixed inside a building or outdoors.

### Proposed Control

Manufacture should be controlled. Trade and transfer should be controlled. Use should be in line with international human rights standards.

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Chemical irritant dispenser for wall or ceiling

Chemical irritant dispenser for outside use
### 5.7 LARGE MUNITIONS CONTAINING CHEMICAL IRRITANTS

#### Key Technical Features

These weapons are designed to deliver chemical irritants over a very wide area or extended distances.

These munitions are fired from a mortar, howitzer, or artillery system. Some munitions are rocket-propelled to increase their range.

#### Human Rights Concerns

These large munitions are inherently indiscriminate, and the large amounts of chemical irritant dispersed could cause injury to both those targeted and to bystanders.

Both those people targeted, as well as bystanders, could be injured by the kinetic impact of the munitions, fragments, or shrapnel.

The munitions could easily be used to collectively ill-treat or punish large groups of people.

As the munitions contain a large amount of chemical irritant intended for law enforcement use, they may contravene the Chemical Weapons Convention, and should therefore not be used by States party to the Convention.

#### Statements and Standards from Human Rights Bodies

ODIHR and Venice Commission: "Devices with indiscriminate effects such as tear gas ... should be used for the purpose of dispersal only and should not be used where people (participants / bystanders; violent / peaceful persons) cannot leave the scene. They should only be used if violence has reached such a level that targeting individuals engaged in violence is not a possible or sufficient response."

#### Examples of Existing Controls

These munitions may be prohibited under the Chemical Weapons Convention. The Convention only permits the trade of chemical irritants and associated dispersal mechanisms intended for law enforcement purposes where the "types and quantities [of toxic chemicals] are consistent with such purposes". Without further clarification from State Parties to the Convention, it is impossible to determine whether these large munitions are in violation of the Convention.

If they are not covered under the Convention, some national export control regimes include this type of projectile on their list of equipment that requires an export licence.

#### Proposed Control

- Manufacture should be prohibited.
- Transfer should be prohibited.
- Use should be prohibited.

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120 mm rifled CS mortar bomb

64 mm CS cartridge projectile with 4 submunition disks
### 5.8 LARGE PORTABLE SPRAYERS

**Key Technical Features**

One or two large tanks or canisters carried on the back or over the shoulder (depending on size and model). These usually have a capacity between 1 and 5 litres. The trigger and nozzle designs vary.

Chemical irritant can be dispersed via short bursts or through a continuous spray until the tank is empty. These systems can disperse a spray or a liquid stream.

Could contain any chemical irritant or a malodorant ([see pp. 88-93](#)), or mixture thereof.

**Human Rights Concerns**

Use of large portable sprayers to disperse chemical irritants can cause serious injury or death through asphyxiation or agent toxicity, particularly if they are used in enclosed spaces or against restrained individuals.

Although certain sprayers can be used to target individuals or small groups, the employment of large capacity foggers or sprayers risks indiscriminately affecting everyone in the area.

The use of these sprayers increases the risk of a panic-driven stampede, and the high volume of irritant dispersed and the wide area effect could prevent persons from escaping.

Such systems could be readily employed to collectively ill-treat or punish large groups of people.

**Statements and Standards from Human Rights Bodies**

ODIHR and Venice Commission: "Devices with indiscriminate effects such as tear gas ... should be used for the purpose of dispersal only and should not be used where people (participants / bystanders; violent / peaceful persons) cannot leave the scene. They should only be used if violence has reached such a level that targeting individuals engaged in violence is not a possible or sufficient response."\(^{116}\)

OHCHR: "A chemical irritant should be used only...when its delivery against a target is accurate".\(^{117}\)

**Examples of Existing Controls**

The EU Anti-Torture Regulation controls the export of equipment.

**Proposed Control**

Manufacture should be controlled.

Trade and transfer should be controlled.

Use should be in-line with international human right standards.

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\(^{117}\) OHCHR, UN Human Rights *Guidance on less-lethal weapons in law enforcement*, 2020, para 7.2.3
▲ Backpack sprayer

▲ Shoulder/underarm sprayer