LETHAL IN DISGUISE 2

How Crowd-Control Weapons Impact Health and Human Rights

New Frontiers
Overview

The market for CCWs continues to expand and evolve. Every year, manufacturers make more CCWs and develop new ones, increasing the likelihood of people being injured or killed by them. It is not possible to adequately assess the risk of CCWs developed in secret until either manufacturers become more transparent in their testing processes or civilians become unwitting guinea pigs in the streets. In this report, we have attempted to note the technological developments shaping existing CCWs in the respective sections describing each weapon type. But in this section, we highlight novel, emerging technologies being used for crowd control and attempt to describe the potential risks of these newer weapons. Some of these weapons have been available for decades for policing or military purposes but are now increasingly being used for crowd control. Other weapons are still in development.

Electronic control devices

Weapon profile

An electronic control device (ECD), also known as a conducted energy device or electric shock weapon, refers to any of several weapons that use painful electric currents to immobilise or deter aggressors. Primitive ECDs - cattle prods - gained notoriety after their use in suppressing protests during the Civil Rights movement in the United States during the 1960s. In the recent past, ECDs are occasionally used for crowd control either during protests or during...
sporting events, but elsewhere their use is uncommon outside of carceral settings. ECDs are extensively used in prisons worldwide, both as instruments of individual control and to suppress mass dissent within the carceral system. Their increasing appearance on the streets represents a disconcerting shift in policing philosophy, wherein a technology of prisoner control is leveraged against civilians exercising their basic rights.

There are three main kinds of electric shock weapons (direct contact weapons, projectile electric shock weapons, and body-worn electric shock devices), although only direct contact and projectile electric shock weapons are discussed in this report.

**Mechanism of action**

ECDs function by passing a high-voltage, low-amperage current between two electrodes. These electrodes may be placed in handheld devices (known as “shock prods,” “stun guns,” or “shock shields”) that must be pressed against an individual to take effect, or they may use compressed air to fire hooked barbs that serve as electrodes and can shock an individual from a distance (the TASER XREP). They may also be capable of both modes of operation (TASER X26) or be part of body-worn electric conduction devices (such as stun belts or cuffs). Newer, wireless, long-range ECDs consist of projectiles containing electrodes that are shot from firearms and use a remote power source.

If the electrodes are in contact with the human body, the body completes the circuit and the current is passed through the individual, resulting in pain and possibly electrical injury. They are advertised as non-lethal because they generate pulses of very high open-circuit voltages (at times in excess of 50,000 volts) and very low average amperages (several milliamperes or less). However, in practice, closed-circuit voltages and actually measured amperages can differ significantly from the values advertised by manufacturers. Furthermore, some professional-grade ECDs can generate over ten times the electrical charge per pulse (typically measured in micro coulombs).
than their commercial counterparts. This electrical charge generated is sufficient to cause severe pain and involuntary muscle contractions.

### Health effects

Electronic control devices are considered by law enforcement to cause significant pain but carry a limited risk of death, but this claim is controversial. Although the risk of death from electrocution from better-tested models of ECDs has been shown to be low, the use of ECDs is associated with potentially fatal injuries, and ECDs have been identified as contributing factors in over 100 in-custody deaths in the United States. Repeated shocks can result in more significant injuries, as can extended shock durations. Electrical conduction devices that carry more powerful electrical charges can also produce more significant injuries. Cardiac arrhythmias, muscle damage, and electric burns (both on the skin and internally) may result from the electrical conduction itself. There are numerous case reports of injuries from ECDs, but few systematic reviews examining the scope and scale of these injuries. Fatal and debilitating injuries can also occur as a result of falls secondary to loss of neuro-muscular control while the current is active or burns caused by arc ignition of flammable vapours. Barb-style electrodes are designed to penetrate skin and can result in serious traumatic injuries, such as skull penetration and enucleation of the eye. Wireless long-range ECDs are in effect KIPs, with experimental studies showing that

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malfucntioning wireless ECDs can penetrate the human body.296

So-called “shock shields” or “e-shields”—polycarbonate shields embedded with metal conductors designed to deliver electric shocks—have been carried by riot police in India297 and in the United States.298 Shock shields are commonly used by prison guards in the United States299 and South Africa.300 They have been implicated in at least one death—a corrections officer who suffered cardiac arrest after being subjected to compulsory training shocks from an e-shield.301 The amount of electrical charge permitted in these weapons is not public information and therefore challenging to measure.

As ECDs proliferate throughout the world, their risk is amplified. The lack of manufacturing transparency and regulation limits the ability of health workers and advocates to understand the quality and range of these weapons. A large number of the experimental and retrospective scientific studies found in this review were funded by and describe TASER-branded products (produced by Axon Enterprise, Inc). The conclusions drawn by these studies cannot be applied to weapons produced by other manufacturers, which may use different electrical parameters, pulse durations, and delivery systems.302 Of note, as ECDs were marketed and their use increased in the 1990s, research on and use of kinetic impact projectiles is thought to have concurrently dropped. But as more research on the dangers of ECDs has emerged, the manufacture, research into, and use of kinetic impact projectiles have once again risen.

Directed energy weapons

Active Denial System (ADS)

The previous version of this report described the Active Denial System (ADS), a “heat ray” developed by the United States Department of Defense. This vehicle-mounted device would direct millimetre-wave energy towards a crowd, heating the epidermis and generating radiation burns on the surface of the body of those it hit. To date no operational uses of this weapon have been recorded, in


spite of requests by US military police to use it against protesters,\textsuperscript{303} and requests by US Customs and Border Patrol to use it against migrants.\textsuperscript{304} There are several reasons for the reluctance to deploy the Active Denial System. These include safety concerns, ethical and human rights considerations, as well as practical concerns—such as the weapon’s weight and long warm-up time.\textsuperscript{305}

**Other directed energy weapons**

The laser “dazzler,” also known as the “blinding laser” or “blinding dazzler,” uses intense, directed radiation to temporarily disorient individuals with (purportedly temporary) blindness from very bright laser lights. Dazzlers have been quietly deployed by the United States military in Iraq as a less-lethal option to “deter non-combatants” in conflict settings.\textsuperscript{306} These devices—largely class 3B green lasers—were used as signalling or deterrent devices at checkpoints,\textsuperscript{307} similar to acoustic weapons such as the LRAD. They are designed to be flashed at vehicles or individuals to draw attention, warn off, or disorient/distract. Although no data are available on injuries to Iraqi civilians, the introduction of high-powered laser dazzlers was associated with a spike in accidental exposures to soldiers, including 45 injuries and one case of permanent blinding.\textsuperscript{308}

Newer devices under development blur the lines between directed energy weapons, distraction devices, and acoustic weapons. The US Department of Defense continues to invest in research and development of “laser-induced plasma effect” (LIPE) weapons. LIPE weapons use high-energy pulsed laser beams to produce and manipulate a cloud of plasma. Prototypes allow for effects including superheating a surface, creating a series of loud explosions, or transmitting spoken instructions over long distances.\textsuperscript{309}

**Remotely-operated vehicles (drones)**

**Weapon profile**

Remotely-operated vehicles (ROVs) have been increasingly used over the six years since our previous report, both to provide


The use of ROVs to deploy surveillance technologies against protests and protesters has increased sharply in recent years to the point that in many countries, it is now a routine element of law enforcement’s response to demonstrations. This raises concerns about ROVs being used to create a chilling effect on civil activism and infringe on the right to privacy of protesters and bystanders. There was a consensus among the interviewed INCLO-affiliated civil liberties experts that the use of drone technology is the most concerning CCW development in the past five years. One expert noted that drones are “regularly used in large cities for surveillance. We can’t confirm, but we speculate they are used for facial recognition because people are detained several days later after a rally.” Another noted, “They are always watching.”

The increased use of ROVs with the capacity or express design to be used as dispersal mechanisms raises many concerns, including potential violation of privacy rights and the possible indiscriminate use of CCWs fired from ROVs. An additional, less obvious concern is the potential reduction in the number of police physically present in crowd-

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312 From interviews with civil liberties experts, October 2021 to March 2022.

313 General Comment No 37 below n 353 at para 10.
control situations, with officers replaced by ROVs. The judicious use of force is heavily dependent upon police judgement in these complex and dynamic settings. The removal of vital scene-specific context through the use of ROVs may lead to greater use of unnecessary or disproportionate force, likely with no feedback on the consequences of this use of force.

Mechanism of action

ROVS include unmanned aerial vehicles (UAVs, or “drones”). Since the mid-2010s, UAVs have possessed operational capabilities with clear application to crowd control, such as the capacity to fire CCWs, OC spray, and tasers. There are also land-based, remotely operated vehicles that have not been used in crowd-control settings. Israel has demonstrated their capability to drop “skunk water” from UAVs, while South Africa has also pioneered the development of weapons for use on UAVs, including grenade delivery systems and pepper-ball guns.

Although the deployment of CCW drones has only been confirmed in Israel and the Occupied Palestinian Territories at the date of this report, there has been an increase in countries procuring these types of ROVs. In 2015, police in the Indian city of Lucknow announced they had acquired five pepper-spraying drones for crowd-control purposes. In 2021, media reported that the Rapid Action Force, a wing of India’s Central Reserve Police Force specialising in crowd control, would deploy a suite of surveillance drones and at least one drone.

The first confirmed operational use of UAVs during demonstrations was by Israeli security forces, who have used them to drop tear gas grenades on protesters in the Gaza Strip, the West Bank, and Jerusalem.

In the United States, local law enforcement agencies have expressed interest in equipping drones with CCWs. In 2011, Texas media reported that a county sheriff’s department outside the city of Houston had acquired a $300,000 ShadowHawk drone that, according to the manufacturer, includes capabilities to fire lethal and “less-lethal” weapons. In 2015, the state of North Dakota passed a bill permitting law enforcement drones to be equipped with “less than lethal” weapons (though the bill prohibits law-enforcement drones being equipped with lethal weaponry).\footnote{The Daily Beast, ‘First state legalises taser drones for cops, thanks to a lobbyist’, 26 August 2015, available here: \url{https://www.thedailybeast.com/first-state-legalizes-taser-drones-for-cops-thanks-to-a-lobbyist}.}

The first confirmed operational use of UAVs during demonstrations was by Israeli security forces, who have used them to drop tear gas grenades on protesters in the Gaza Strip,\footnote{Daniel Hilton, “Drones over Gaza: How Israel tested its latest technology on protesters,” \textit{Middle East Eye}, May 18, 2018, \url{https://www.middleeasteye.net/news/drones-over-gaza-how-israel-tested-its-latest-technology-protesters}.} the West Bank,\footnote{Josh Breiner, “Israel Using Drones to Tear Gas Palestinian Demonstrators in West Bank,” \textit{Haaretz}, April 28, 2021, \url{https://www.haaretz.com/israel-news/premium-israeli-police-using-drones-to-drop-tear-gas-on-palestinian-demonstrators-1.9752997}.} and Jerusalem.\footnote{Josh Breiner et al., “Israel Police Use Drone to Fire Tear Gas Grenades in Temple Mount Clashes,” \textit{Haaretz}, 22 April 2022, \url{https://www.haaretz.com/israel-news/2022-04-22/ty-article/premium/israel-police-use-drone-to-fire-tear-gas-grenades-in-temple-mount-clashes/00000180-655f-d4ca-a986-77f7fa1ad000}.} Within the Occupied Palestinian Territories, at least three types of drones deployed CCWs during sustained protests and conflict at the Gaza border in 2018. These include the Cyclone, which carries a set of light-weight aluminium cartridges that burn up after release; another model that sprays gas directly from the craft, like an aerosol; and a third that drops “rubber bursting grenades with metal tops that disperse gas as they fall.”\footnote{The Middle East Eye, ‘Drones over Gaza: How Israel tested its latest technology on protesters’, 18 May 2018, available here: \url{https://www.middleeasteye.net/news/drones-over-gaza-how-israel-tested-its-latest-technology-protesters}.}

The latest development for remotely operated crowd control technologies is a remote-operated shooter that was installed at a checkpoint in the West Bank city of Hebron/Al-Khalil in September 2022.\footnote{Hagar Shefaz, “Israeli Army Installs Remote-control Crowd Dispersal System at Hebron Flashpoint,” \textit{Haaretz}, September 23, 2022, \url{https://www.haaretz.com/israel-news/2022-09-23/ty-article/premium/israeli-army-installs-remote-control-crowd-dispersal-system-at-hebron-flashpoint/00000183-70c4-d4b1-a197-fc7b24f0000}.} The system placed in Hebron/Al-Khalil was apparently created by “Smart Shooter”, an Israeli company that designs fire control systems that follow and lock in on targets using image processing based on artificial intelligence.\footnote{Smart Shooter website at \url{https://www.smart-shooter.com/}.}

Although the Israeli army has said that it plans to only use sponge bullets in the pilot phase, this technology is capable of firing different kinds of projectiles, including stun grenades and chemical irritants.

**Health concerns**

Health concerns related to drone-deployed CCWs are directly linked to the type of weapon deployed and its impacts (as described
above). The utilisation of drones for weapon deployment may carry additional risks secondary to the lack of in-person monitoring, the height from which weapons are deployed, and changes in force or targeting from these weapons. There are concerns about the increased force of chemical irritant canisters that fall from great heights. Moreover, they may fall on protesters with no warning. These weapons may be far more indiscriminate in their deployment as visual feedback loops around the demonstration site will be limited. De-escalation could be rendered impossible if there are no officers with whom protesters can seek to communicate, and there could be challenges in allowing for the safe dispersal of demonstrators if airborne drones outmanoeuvre demonstrators. These concerns make the growing sale and early use of drone technology deeply concerning both from a health and human rights perspective.

Beyond any weaponry they may carry, drones themselves are increasingly causing injuries. They can cause injuries because of their function and mechanism: they can operate too close to the ground or hit objects and fall. Additionally, their rotating blades, sharp edges, metallic and plastic parts, and rapid and unpredictable movements can injure both users and others in the vicinity. News and social media reports describe numerous injuries from drones: children, bystanders, and others have all been struck, leaving some with head trauma and others with permanent disability. A 2021 review of emergency department visits in the United States between 2015 and 2020 identified more than 3,700 drone-related injuries. The most common injury diagnoses were lacerations (72%), followed by contusion/abrasion (10%), strain/sprain (5%), and internal injury (5%). The most frequently injured body parts were upper extremities (mostly fingers [56%]), head (24%), lower extremities (14%), and trunk (6%). Hearing injuries have been reported as well. The US National Electronic Injury Surveillance System recommends avoiding injuries by taking care where the drone is flown and not flying a drone over a crowd, among other precautions.
The first widespread use of this weapon was in 2018 during the weekly Gaza border protests. Along with firing live ammunition that led to the killing of about 200 Palestinian protesters and the injury of thousands, drones were used to fire tear gas canisters indiscriminately at the protesters, with no distinction made between peaceful protesters, including children and elderly, and violent ones.333 One foreign correspondent reported seeing a drone dropping tear gas about 500 metres beyond the Gaza border, above a communal tent occupied by women and children who were not engaged in protest.332 The UN Commission of Inquiry into the 2018 protests in Gaza found that a drone had dropped tear gas onto a field hospital that was clearly marked with medical insignia.333

Following its use against protesters in the Occupied Palestinian Territories, the Israeli police used drone-deployed tear gas for the first time against Israeli citizens in 2022.

In January 2022, thousands gathered in the Negev region in southern Israel to protest the dispossession of Palestinian Bedouin citizens of Israel.334 The Israeli police dispersed this demonstration brutally with sponge bullets, stun grenades, and tear gas launched from drones. In April and May 2022, the police used this weapon against Palestinian worshipers in the El-Aqsa mosque in Jerusalem in response to riots inside the mountain compound. The photos showed crowds of worshipers, including women, children, and the elderly,
fleeing in all directions while multiple tear gas capsules were falling onto them from a drone.

The tear gas-carrying drone includes a camera and can carry multiple capsules and fire them all together or individually. Israeli security forces purchase the system from two Israeli companies: the gas capsules from ISPRA by E.I LTD and the system that fires the capsules from SPECRYS LTD.

This is a new weapon whose risks are still unclear. It is clear, however, that this is a weapon that is inherently inaccurate, and it is doubtful whether it can be used proportionately. Another concern is that the capsules may fall directly onto protesters’ heads or into their eyes. Especially when several capsules are used at the same time, the chance of harming peaceful protesters is very high. Finally, the aerial deployment of tear gas risks sowing confusion and chaos among crowds rather than fostering an orderly dispersal.335

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